

PART II.

DISEASES OF THE RESPIRATORY SYSTEM.

I. DISEASES OF THE NOSE.

ACUTE RHINITIS.

Synonyms.—Acute Nasal Catarrh; Acute Coryza; Cold in the Head.

Definition.—An acute catarrhal inflammation of the Schneiderian membrane, resulting in more or less obstruction of the nasal passages, and attended by a serous or sero-mucous secretion.

Etiology.—Among the predisposing causes may be mentioned age, the disease being more common in early life, especially in children, while the aged are comparatively immune. Hypertrophy of the mucous membrane, with narrowing of the passages, polypi, and adenoids, favors the disease.

The most common exciting cause is exposure to draughts of air and sudden atmospheric changes, so common during the early winter and spring months. The chilling of the body by wet feet during inclement weather is a very common cause. It may arise from the inhalation of irritant vapors, dust, or pollen.

At times it appears in epidemic form, which would suggest a specific germ. It also occurs as a symptom of several diseases, such as measles, scarlet fever, and the febriculas.

Pathology.—During the early stage, the mucous membrane is dry, red, and swollen, which causes obstruction of the nasal passages and renders the breathing difficult; this condition is soon followed by a profuse serous or sero-mucous secretion, which in turn may become purulent.

Symptoms.—One of the earliest symptoms is sneezing, which announces to the patient the fact that he is taking cold; this is attended by chilliness, headache, and often slight fever, the temperature reaching 100° or 101°. The pulse is full and rapid, the face slightly flushed, the skin dry and hot, the urine scanty and high-colored, and

there is constipation.

The swelling of the mucous membrane obstructs nasal breathing, and the voice becomes nasal. When the inflammation is active the mucous membrane of the lachrymal ducts becomes swollen and the tears overflow—*weeping cold*. The sense of smell early becomes impaired.

Very early in the disease there is an irritating secretion from the mucosa, at first watery in character, soon changing to mucus or mucopus. In severe cases there may be an extension of the inflammatory process to the Eustachian tube, attended by ringing in the ears and more or less pain, or it may extend to the pharynx, larynx, or even the bronchi.



FIGURE 17. ACUTE RHINITIS.—(Foltz.)

Many times it is entirely of a local character, the only disagreeable symptom being a stuffy feeling in the head, attended by a profuse secretion, which necessitates the almost constant use of the handkerchief. Not infrequently the irritating secretion causes labial herpes—fever blisters. An attack usually lasts from three to six days.

Diagnosis.—Frequent sneezing, with catarrhal symptoms, renders the diagnosis very easy. We are to remember, however, that these same catarrhal symptoms are among the first evidences of measles and influenza.

Prognosis.—The prognosis is always favorable, though if neglected it is apt to assume the chronic form.

Treatment.—If seen at the very beginning, the disease can usually be aborted by a single dose of fifteen or twenty drops of specific gelsemium taken at *bed-time*, or a few drops of the following:

Camphor and	
Turpentine	2 ounces each.
Alcohol	1/2 ounce. M.

Sig. Of this eight or ten drops on sugar may be taken every three or four hours.

If it be a weeping cold, a half grain of powdered opium, taken at bed-time, rarely fails to cut short the disease. When this agent is used, the patient must be instructed to keep his bed the following half day to avoid the sickness that so often follows the use of opium.

Diaphoretic pwd. 3 grains, and quinine, 5 grains, taken at night, are also good to abort a cold. When these means fail to abort the disease, the treatment will vary according to the symptoms present.

Bryonia.—When the secretion is glairy, aconite and bryonia will give good results, while if the eyes burn or there is an acrid secretion from the nose and an overflow of the tear-ducts, rhus tox. will replace the bryonia.

Local Treatment.—Alkaline nasal washes may be used with benefit in the early stages; a weak solution of boracic acid, sodium bicarbonate, or common salt being among the best. Later, and when the secretion is thick, a few drops of camphor menthol and albolene solution, placed on cotton and introduced into the nostril, and allowed to remain for five or ten minutes, will give good results.

CHRONIC RHINITIS.

Synonyms.—Chronic Nasal Catarrh; Rhinitis Hypertrophica; Rhinitis Atrophica; Ozena.

Definition.—A chronic inflammation of the nasal mucous membrane, often involving the nose and pharynx, and characterized by hypertrophy of the membrane and turbinated bones, an offensive

secretion, and an impairment or loss of the sense of smell.

Etiology.—The most common cause is recurring attacks of the acute form, though syphilis and tuberculosis come in for a large share in giving rise to the disease. The inhalation of irritants, mentioned as a cause in the acute form, may also be responsible for the chronic variety. The disease is most common in children, and not infrequently is due to adenoids in the naso-pharynx.

Pathology.—The pathological changes noted in chronic nasal Catarrh depend upon the form or stage of the disease, there being three varieties:

1. In simple chronic catarrh there is irritability of the mucous membrane, which becomes congested and swollen, causing more or less obstruction to the free passage of air. There is a profuse secretion of a thick, tenacious mucus. In time the inferior tur-binate becomes hypertrophied, and the disease passes from the simple form to the hypertrophic.

2. In the hypertrophic variety, which usually follows the above mentioned form, there is thickening of the mucous membrane and enlargement of the inferior turbinated bodies, so that the passage is nearly or quite obstructed, the patient breathing through the mouth. Often adenoids develop in the naso-pharynx, which necessitates mouth-breathing altogether. There may be swelling of the Eustachian tubes, which renders the patient dull of hearing. As in the simple form, there may be profuse secretion of thick, viscid mucus.

3. In atrophic rhinitis there is thinning of the mucous membrane, with consequent widening of the air-passage. The membrane is pale, relaxed, and secretes an offensive, purulent material, which, drying, forms crusts or scabs, and, when removed, leaves an excoriated surface. In this form the sense of smell is destroyed.

Symptoms.—The most common and prominent symptom is the obstructed nasal breathing, due to hypertrophy of the membrane and turbinated bodies. The patient sleeps with the mouth open, the breathing being sonorous. The secretion drops into the naso-pharynx, and is removed by frequent hawking.

An examination of the nose reveals its true character. In the atrophic form, the fetid odor is the most characteristic symptom. Nasal breathing may be somewhat difficult owing to dried crusts; but when these are removed, the nasal passages are found abnormally roomy. The sense of smell is destroyed.

Inspection shows the mucous membrane thin and covered with grayish or yellowish crusts, the removal of which leaves an excoriated surface, though seldom an ulcer. Severe headache is quite common in this form.

Treatment.—Where there is much hypertrophy of the mucous membrane, and especially of the turbinated bodies, the patient should be referred to a specialist, as operative measures promise more speedy relief. In the early stages, and when the hypertrophy is not marked, the general practitioner may treat the case quite successfully.

The treatment will be both local and general. Where the patient is able to travel, mild, equable, and dry climates should be advised.

Cleanliness is of great importance in this disease. To attempt to medicate a case of chronic rhinitis without thoroughly cleansing the passages is to court defeat. This may be accomplished by the use of an atomizer throwing a coarse spray. Boracic acid, a three-per-cent solution of pyrozone, a normal saline solution, a Seller's tablet dissolved in water, and glyco-thymolin, are among the best remedies for this purpose. Having thoroughly cleansed the nostrils, we should use a tonic, astringent, or antiseptic solution, according to the condition of the membrane, care being used to avoid strong solutions. Hamamelis, potassium chlorate, and similar remedies will prove useful. For ozena, a douche or spray of glyco-thymolin, well diluted, will give good results.

Nearly all cases will need general treatment as well as local. There is either defective metabolism or impaired digestion, usually both, and the treatment will be to break down feeble tissue, stimulate the excretory organs to eliminate the detritus, and at the same time supply good, nourishing material, properly prepared, to build up the system.

Well-regulated outdoor exercise increases oxidation of the tissues, and also sharpens the appetite. A good tonic, like nux vomica and hydrastis or the compound tonic mixture, will be of great benefit.

If syphilitic, echinacea, Donovan's solution, potassium iodide, and like remedies should be given. If tubercularly inclined, a change of climate, outdoor life, and iron and arsenic, the hypo-phosphites, etc., would be suggested.



FIGURE 18. VERTICAL ANTEROPOSTERIOR SECTION UPPER RESPIRATORY TRACT.—{Fells.}

AUTUMNAL CATARRH.

Synonyms.—Hay Fever; Hay Asthma; Summer Catarrh; Rose Catarrh.

Definition.—An affection of the mucous membrane of the eyes, nose, and upper-air passages, characterized by coryza, laryngeal irritation, and asthma, and occurring during the summer months, usually August

and September, and disappearing with the first heavy frost.

Etiology.—The predisposing cause is the possession of a peculiar idiosyncrasy, which is so subtle as to escape detection. It develops suddenly, occurs each year with almost mathematical precision, and, once acquired, the habit is seldom ever lost, but grows more confirmed with each year. The conditions favoring this peculiar habit are race, temperament, mode of life, age, sex, education, and heredity.

Race.—It is a little singular, but the English and the Americans are the principal sufferers from hay fever, it being extremely rare in Norway, Sweden, Denmark, France, Italy, Spain, and Russia, and when found is generally confined to the English resident. Dr. Jacobi, of New York, a few years ago, stated that he never had met with a case in a German. The French people seem singularly exempt, though the nervous temperament largely predominates in that race.

Temperament.—While all persons suffering from hay fever are not necessarily extremely nervous or excitable, yet it is largely a nervous lesion, and is found most frequently in persons of an active, energetic, and nervous temperament.

Education.—Another peculiar feature of this disease is, that it is almost entirely confined to the educated or cultured class and those who enjoy social position. McKenzie states that he never met a case in hospital practice, while Blakely reports forty-eight cases, every one of which belonged to the educated class, and Wyman reports forty-nine out of fifty-five cases as belonging to the cultured class.

Mode of Life.—Although pollen is supposed to be the most common cause, it is a recognized fact that the class of people who are most exposed to this exciting cause seldom have the disease; namely, those residing in the country, and agricultural laborers. Beard found only seven cases, out of two hundred recorded, in persons living in the country. No doubt the quiet of the country allays the nervous irritability that is so often incited by city life.

Heredity.—Heredity undoubtedly plays some part in favoring the disease, since a history of the disease in some of the relatives can be found in from twenty to thirty per cent of all cases of hay fever.

Age.—It seldom occurs in the extremes of life, though Mc-Kenzie reports that he met with a case in a child two years of age, and cases have been recorded when it first occurred after the age of sixty. From puberty to the age of thirty is the most prevailing period.

Sex.—Males are more frequent sufferers than females, owing, no doubt, to greater exposure to the exciting cause.

Exciting Cause.—The most common cause is the pollen of various plants, though dust may act as the irritant, and sometimes emotional excitement is sufficient to bring on an attack in one possessing the peculiar idiosyncrasy.

Symptoms.—The disease comes on more or less suddenly with a sense of tightness or constriction of the head, a burning or itching sensation in the eyes, especially in the inner canthus, and also in the nose and throat. Soon violent sneezing occurs, accompanied by a profuse watery discharge from the nose and eyes.

The eyes, nose, and cheeks become swollen, and the patient has the appearance of having a long crying spell. The mucous membrane of the nose becomes hyperemic and swollen, which obstructs nasal breathing. Often the irritation extends to the larynx and bronchi, giving rise to hay asthma.

An attack may be confined to the nose and eyes, coryza being the troublesome symptoms; but in the most severe cases the throat and bronchi become involved, the asthma and coryza going together. The patient breathes with difficulty, paroxysms of coughing occur at intervals, and the patient presents a depressed and worn appearance. These attacks, varying from the mild to exacerbations of the most intense character, according to exertion, weather, and the presence of irritating pollen, dust, etc., last from four to six weeks, or till frosts cut short the disease.

Diagnosis.—The disease is easily recognized by the sudden onset of sneezing and severe coryza—these symptoms occurring in a person of a neurotic temperament—and the almost mathematical precision of its return, August and September, and its defiance to medication, leave no doubt as to its identity.

Prognosis.—The prognosis is favorable as to life, but unfavorable as to cure, unless the patient removes to some climate where the exciting cause possesses no power to influence the sensitive nervous system.

Treatment.—Where the patient is financially able to profit by such advice, he should be advised to visit the lake resorts of Michigan—Petosky, Mackinac, and the Soo being a few of the many places of this character where he may get relief; also the Adirondacks, the White Mountains, or a sea voyage. He should go a few days before the fever's annual return or as soon as it occurs, and remain till after frost.

Sterilizing the nasal chambers with Dobell's solution, as recommended by Hollopeter, and followed by plugging the nose with cotton saturated with a mild solution of menthol in albolene, affords great relief. Internally, specific belladonna, ten drops to a half a glass of water, a teaspoonful every one, two, or three hours, has given good results. *Sticta pulmonaria* is also a good agent where the coryza is marked, accompanied by asthma and a dry, hard cough. Specific *aralia* is another remedy that should not be overlooked.

EPISTAXIS.

Synonym.—Nosebleed.

Definition.—Hemorrhage from the nose, arising in the cavity or in sinuses leading into it.

Etiology.—Bleeding from the nose is quite a common occurrence, especially in early life and may be due to local or constitutional conditions. The most common local cause is injury to the vessels, which in the nose are very superficial; thus a fall, a blow, or picking the nose—a very common habit in children—or even sneezing, often results in obstinate bleeding. The introduction of foreign bodies, quite common in children, may be the exciting cause. Nasal polypi and malignant growths may also be responsible for the trouble.

The constitutional cause may be due to a change in the blood itself, or it may be due to a diseased condition of the blood-vessels, or it may arise from obstruction to the pulmonary circulation, and it may possibly, at

times, be vicarious. Hemophilia or the hemorrhagic diathesis often gives rise to the most severe and persistent types. Typhoid fever is often accompanied or preceded by nosebleed.

Symptoms.—In plethoric individuals there may be a sense of fullness in the head, flushing of the face, and throbbing of the carotids, as prodromes. The bleeding varies in quantity and character; thus it may slowly drip, drop by drop, for hours, or it may flow almost in a stream, passing downwards into the pharynx; the patient may swallow large quantities, to be vomited up as black coagula, which is sometimes mistaken for hematemesis.

Should the hemorrhage continue for hours, the patient becomes anxious and alarmed at his condition, the pulse becomes small and quick, and the patient shows marked depression.

Treatment.—Generally, local measures are the only ones that need to be used. Pressing the finger firmly against the affected side for several minutes is often sufficient, or firm pressure against the facial artery for several minutes may be effective.

The use of tannin and the iron preparations I do not like, as they are apt to irritate the mucous membrane, and when the hard clot is removed, the hemorrhage often breaks out afresh. The injection of very hot water is sometimes very useful.

Pledgets of cotton in chloro-septic has given me good results.

When the bleeding persists, notwithstanding these measures, the nose should be thoroughly tamponed. A pledget of common cotton (not absorbent), to which a string is firmly tied, should be pushed far enough back to get beyond the bleeding points; then more pledgets are to be crowded in till the nostril is firmly packed. The hemorrhage ceasing, the tampon may be allowed to remain ten, twelve, or twenty-four hours, though blood in the nose very soon decomposes and becomes quite offensive.

To remove the tampon, great care must be used or the hemorrhage will be renewed. The tampon should be softened with warm water, when it will readily slip from the nostril upon slight traction of the string, which has been carried to the side of the nose and fastened by an adhesive

strip.

Where the hemorrhage is passive and consists of a continued oozing, the first trituration of charcoal will give good results, three to five grains every two hours. Oil of erigeron, or cinnamon, may be used successfully, and ergot hypodermically, when the hemorrhage is very stubborn.

II. DISEASES OF THE LARYNX.

ACUTE CATARRHAL LARYNGITIS.

Synonym.—Croup.

Definition.—An acute catarrhal inflammation of the larynx, characterized by a hoarse croupal cough.

Etiology.—The most common cause is cold, induced by sudden atmospheric changes so common in the early spring and late fall months. The inhalation of irritating vapors may give rise to it and certain articles of food may produce it; thus, in one of my own children, hot oyster-soup would invariably bring on an attack, usually while the child was still at the table.

The disease occurs most frequently in children between the ages of two and six years, and when appearing in the adult is of a different type than croup in children, and will necessitate a separate description.

Pathology.—Although a true inflammation of the mucous membrane, there is not such marked changes as one would expect from the severity of the clinical symptoms. There is hyperemia of the mucous membrane, which is red, tumid, and slightly swollen.

At first the membrane is dry, but soon a glairy, tenacious mucus is secreted. Edema of the larynx is seen in several types. There may be slight hemorrhage in the mucous membrane, and erosions may be seen on the vocal cords and portions of the larynx. The changes, however, are not sufficient to account for the severe dyspnea so often met with in croup, and must be accounted for by spasmodic contraction of the intrinsic muscles of the larynx. In rare cases ulceration of the larynx is noted.

Symptoms.—The symptoms vary with the age of the patient. In the child the croupal symptoms are characteristic, while in the adult they are entirely different, each needing a separate consideration.

In the Child.—Catarrhal or Mucous Croup.—Dr. Scudder's description of the disease being so realistic, I reproduce it here.

“Frequently, for a day or two before the attack, the child will have had symptoms of cold, with a slight cough. Both the cough and voice are frequently a little hoarse and rough, and would be recognized by a person acquainted with the disease as croupy.

“The attack of croup occurs most frequently in the night, though it may be in the daytime. The child seems to be suffering from a cold during the evening, but is put to bed without probably a thought of danger. But about the middle of the night the parents are aroused by the child starting out of sleep with difficult respiration, a hoarse voice, and croupal cough.

“The respiration is rough and whistling, the cry hoarse and feeble, except when a great effort is made, when it becomes shrill and piping. At first the difficulty of respiration is intermittent, but after an hour or two it becomes permanent, and there is a peculiar whistling or gurgling sound as the air passes into and out of the larynx.

“As the disease progresses the difficulty of respiration becomes more marked, and the cough is hoarser, has a peculiar metallic tone, and the voice sinks to a whisper. If the child sleeps, mucus accumulates in the throat, the breathing becomes more and more difficult, until at last the child wakes with symptoms of asphyxia.

“At first the skin is dry, the temperature is increased, and the pulse is full and hard; but as the respiration becomes more difficult, a cold, clammy perspiration breaks out, the extremities become cold, and the pulse frequent and feeble. The disease runs its course in from twelve to twenty-four hours, terminating in a subsidence of the disease or death.”

Laryngitis in the Adult.—It usually commences with a slight chill, soreness, and stiffness of the throat, difficulty of swallowing, a sense of constriction and a desire to clear the throat. Following the chill, febrile

action comes up, and is quite intense, considering the extent of the inflammation. Then a dull pain is felt in the throat, the sense of constriction is markedly increased, and there is tenderness on pressure; the voice is harsh, hoarse, or stridulous, and there is a frequent dry, short cough.

If the throat is now examined, the fauces will be found red and tumid, and when the tongue is pressed down, the epiglottis may be seen erect, swollen, and red. In the course of from twelve to twenty-four hours the inflammation has markedly diminished the aperture of the glottis, the voice becomes small, piping, whispering, and soon suppressed. The breathing is difficult, inspiration being sibilus, shrill, prolonged, and laborious, the larynx being forcibly drawn down on each attempt to inflate the lungs.

The cough is stridulous and convulsive, and is attended by attacks of spasm of the glottis, which threaten suffocation; the expectoration is scanty and viscid, and removed with difficulty. In the last stage of the disease, the patient exerts all his power in respiration, sitting upright and grasping objects in reach to bring into play the external inspiratory muscles. The countenance is pale and anxious, the lips livid, and the eyes almost start from their sockets, the extremities are cold, and covered with a clammy perspiration. Soon a low delirium, or coma, comes on, the pulse becomes more feeble and intermittent, imminent symptoms of asphyxia appear, and the patient rapidly sinks.

Fortunately, the termination is not so serious in most cases, and, after twenty-four or forty-eight hours, the cough is attended by expectoration of mucus, with relief to the dry, sibilant respiration and a subsidence of all the grave symptoms, though the voice remains hoarse for several days.

Diagnosis.—In the child, the hoarse, metallic (croupal) cough, with hoarseness and change of voice, is sufficient evidence of croup, but it does not inform us which of the three varieties it is.

In mucous croup, there is the slight febrile action to distinguish it from the spasmodic variety, and the evident presence of mucus in the larynx manifested by the rattling sound heard on auscultation and in coughing, which distinguishes it from the pseudo-membranous form.

In the adult, the hoarse voice, sibilant respiration, cough, and sense of soreness and constriction in the larynx enables one to recognize the disease.

Prognosis.—The prognosis is nearly always favorable.

Treatment.—Aconite seems to possess a peculiar affinity for the larynx, and in acute cases it is one of our surest remedies. Add two to five drops of the specific tincture to a half a glass of water, and give a teaspoonful every ten, twenty, thirty, or sixty minutes. It quiets the irritable larynx and favorably influences the fever and inflammation. In connection with this, drop doses of stillingia liniment may be used, and also rubbed over the larynx. It is a good plan to alternate one drop of the stillingia with one teaspoonful of the aconite mixture every ten minutes.

When the respiration is dry, sibilant, and labored, wring a sponge out of hot water, and drop a few drops of stilling-ia liniment on it, and hold to the mouth, the patient inhaling the medicated steam. In very severe cases, however, inhalations of steam from hot water and vinegar and hops will give better results.

Lobelia.—When there is dyspnea, add fifteen or twenty drops of specific tincture of lobelia to the aconite solution. Cloths wrung out of hot water and pinned snugly around the throat, with a dry binder over the wet one, assists in producing relaxation.

Potassium, bichromate is often used with benefit after the inflammation has spent its force, the voice remaining hoarse and husky. Of the second trituration, add five grains to a half a glass of water, a teaspoonful every hour.

The acetous tincture of lobelia and sanguinaria, used by the early Eclectics, is a very successful remedy, though not pleasant. It should be given often enough to produce nausea, but not carried to emesis.

Acetous Emetic Tincture	1/2 ounce.
Simple Syrup and Water	2 ounces each. M.

Sig. A teaspoonful every twenty, thirty, or sixty minutes, till relaxation

is produced.

CHRONIC LARYNGITIS.

Synonym.—Ministers' Sore-throat.

Definition.—Chronic catarrhal inflammation of the larynx.

Etiology.—Repeated attacks of acute laryngitis may finally result in the chronic form, though continuous use of the voice, especially in the open air, is the most common cause. The inhalation of tobacco-dust is also a not uncommon cause, cigar-makers frequently being sufferers from this disease.

Pathology.—The mucous membrane is red or violet-colored, is thickened and sometimes presents a granular appearance. The vocal cords share in the alteration, while erosion of the mucous membrane, with occasional ulceration, is a rare condition.

Symptoms.—Chronic laryngitis usually comes on slowly and insidiously, the patient being hardly aware that he is suffering from a serious disease until it is confirmed. The first symptom is soreness of the throat when speaking, with a sense of constriction, slight alteration of the voice, cough, and expectoration, which comes on after slight exposure, or overexertion of the larynx. These symptoms are ameliorated in a short time, and the patient thinks it is only a slight cold, from which he is recovering. As time passes, however, the attacks become more frequent, last longer, and do not so readily disappear.

When the disease is fully established, there is a constant uneasy sensation in the region of the larynx; the voice is seriously altered, and there is a constantly annoying cough, with expectoration. The expectoration is at first scanty and mucous; but as the disease advances it is muco-puriform, sanious, concreted into lumps, or consists of almost pure pus. Hemorrhage occurs in the latter stages, sometimes in very large quantities.

If the throat is examined, we notice the evidence of chronic inflammation of the fauces, pharynx, epiglottis, and we reasonably suppose that the mucous membrane of the larynx corresponds in

appearance; with the laryngoscope we are enabled to view the internal surface of the larynx, and determine its condition quite accurately.

A person suffering from “ministers’ sore-throat,” or chronic laryngitis, is very subject to cold, and every change in the weather or slight exposure is followed by an increase of the disease. A very important part of the treatment of every case, therefore, will be directed to obviate this.

The impairment of the general health is usually in direct ratio to the severity of the local affection. At the commencement, the patient complains simply of debility, with some failure of the digestive organs, and sometimes torpor of the secretions. When it has progressed for some months, he is unable to attend to business; there is loss of flesh and strength; there is marked impairment of the digestive functions and of the excretion.

Frequently the system becomes so depressed that tubercles are deposited in the lungs, the symptoms of phthisis are developed, and the disease runs a rapid course to a fatal termination.

Diagnosis.—We diagnose chronic laryngitis by the unpleasant sensations in the region of the larynx, the cough, and by inspection of the throat, and the absence of physical signs of other diseases of the respiratory apparatus.

Prognosis.—Ministers’ sore-throat can be readily cured in the majority of cases, if the person will give the vocal organs rest usually from four to twelve months will be required. The prognosis in confirmed laryngitis is not favorable, as but few have the patience necessary to persist in the use of remedies until a cure is effected. It can be cured, but it requires time and perseverance; otherwise the disease is as fatal as confirmed phthisis.

Treatment.—The treatment will be both local and systemic, A careful examination is to be made, and if there be an elongated uvula or enlarged tonsils, these conditions must be corrected if we are to derive the best results from medication.

The chief remedies that specifically influence the larynx are specific collinsonia, stillingia, penthorum, potassium bichromate, calcium sulphide, and sanguinaria. Where the tissues are congested and dusky,

collinsonia will be found a reliable agent. Add one dram to water four ounces, and give a teaspoonful every three hours.

Penthorum.—Where the tissues are dry, with violet color, penthorum will be the agent, one or two drops every three or four hours.

Potassium Bichromate.—Where, the voice is hoarse, and where there is loss of voice, the second trituration of potassium bichromate in two or three grain doses will be efficient.

Sanguinaria.—Where there is a tickling sensation in the larynx, causing an almost constant, hacking cough, use sanguinaria.

Stillingia.—The hoarse, husky voice will require stillingia; the tincture may be used, but the stillingia liniment, I think, gives the better results. One drop on sugar every one, two, or three hours.

Calcium Sulphide.—Where the expectoration is of a muco-purulent character, calcium sulphide, second trituration, will be found to give good results.

When there is great irritability, causing a hard cough, with loss of sleep, a quarter of a grain of codein should be given till the irritability subsides.

It seems almost superfluous to say, the patient must rest the voice while undergoing the treatment. Local measures are very important, and consist of gargles, sprays, and packs to the throat. Where the tissues of the pharynx are involved and show the same dusky hue as the larynx, a gargle of hamamelis will be found useful. If ulceration be present, listerine is beneficial used in the same way.

The most successful local treatment, however, is that obtained by the use of the spray. The small hand-spray atomizer may be used, though better results follow the use of the steam or compressed-air atomizer. The remedies used will be selected with reference to the condition of the part affected, and will be sedative, stimulant, narcotic, tonic, and astringent. Where there is irritation with dryness, and a tenacious secretion of viscid mucus, an infusion of lobelia will be found beneficial. When there is an irritable cough, preventing rest, vinegar of opium and lobelia is a useful spray. If the tissues are lax, and a tonic is needed,

hydrastis may be used, or an astringent solution of tannic acid, alum, or an infusion of red-oak bark or yellow root, as used by the early Eclectics. For ulceration, potassium or iodine may enter the mixture. The physician has a large field of remedies from which to select, and if he be careful as to the *condition* of the larynx, he can select the remedy with a great deal of confidence.

The cold pack at night, with a dry binder pinned snugly around the throat, followed by flushing the throat and chest with cold water in the morning, will do much to prevent taking cold.

A change of climate is nearly always beneficial; an ocean voyage or residence in the pine woods for a few weeks, often accomplishes wonders. Smoking and the use of alcoholic liquors are to be positively forbidden.

SPASMODIC LARYNGITIS.

Synonyms.—Spasmodic Croup; Laryngismus Stridulus; Spasm of the Larynx.

Definition.—A disease of the larynx occurring in neurotic individuals, usually in children from six months to six years old, though occasionally in the adult.

Rickets predispose to this affection, and, in those susceptible, the disease may arise as a reflex disturbance from intestinal parasites, from dentition, from irritation of the prepuce, from indigestion, or it may arise from the ordinary causes that give rise to croup, cold being the most common. In rare cases the disease, a spasmodic contraction of the adductor muscles of the larynx is due to emotional excitement.

Pathology.—Soon after a severe attack, the mucous membrane becomes congested and swollen, which continuing the spasmodic action of the intrinsic muscles, may result in inflammation. Edema of the glottis and neighboring tissues is not uncommon.

Symptoms.—The disease usually comes on suddenly, the child being aroused from sleep with a start, there being great difficulty in breathing. The child has a hoarse, croupal cough, the voice soon sinks to

a whisper, and the breathing becomes shrill and stridulous. Spasm of the glottis occurs, the child becomes cyanotic, and for several seconds holds his breath; this is followed by relaxation of the spasm, when the child utters a shrill, piping cry. In a few minutes relief is experienced, and the child drops to sleep, the breathing being comparatively easy. After a short period the child is again awakened by another paroxysm, and a repetition of the first attack occurs: thus the disease is made up of paroxysms and remissions.

During the remissions the skin is moist and the pulse regular, showing an absence of inflammatory symptoms. These attacks follow two or three nights in succession.

At other times the child will be attacked suddenly with difficult breathing, there being no cough or hoarseness. These attacks terminate in a high-pitched crowing inspiration. They may occur during the day as well as at night. During an attack, the child's face becomes livid and anxious, and in rare cases convulsions occur. Occasionally it proves fatal, the child choking to death.

Diagnosis.—We diagnose spasmodic croup by an absence of inflammatory symptoms, the dry, sibilant respiration, the shrill, piping cry, the absence of the mucous rattle, and the spasmodic character of the attack.

Prognosis.—Although a severe attack presents a frightful picture, the disease very rarely terminates fatally.

Treatment.—The remedies for spasmodic croup will form the basis for laryngitis stridulus in the older patient. If the disease is not very severe, drop doses of stillingia liniment on sugar every ten or twenty minutes, and an application of the same rubbed over the larynx every hour, will often be the only remedy needed. When very severe, the compound tincture of lobelia and san-guinaria (King's acetous emetic tincture) may be given every ten, twenty, or thirty minutes, till relaxation is produced. It is not necessary to produce emesis.

A flannel cloth wrung out of hot water and applied to the throat, and a dry binder covering the wet one, will assist greatly in producing relaxation. Should the child be unable to get its breath, insert the finger into the larynx and hook up the epiglottis.

In addition to the above treatment, inhalations of steam from hops, tansy, or lime-water should be used. An ordinary teapot may be used, to the spout of which may be attached a short piece of hose and conveyed to the face of the child.

Intubation or tracheotomy should be resorted to only in extreme cases, and where the patient's life is threatened.

After the attack is over, the case should be thoroughly examined to ascertain the exciting cause. When due to reflex disturbance, we may expect a return of the disease unless the exciting cause be removed; hence any wrongs of the stomach, digestion, or of the bowels, parasites, hemorrhoids, or other rectal troubles, or wrongs of the reproductive apparatus, should be corrected.

Spasmodic croup is often distinctly periodic, when quinine should be administered. For the hoarseness, that sometimes continues for several days, stillingia liniment or potassium bichromate, the second or third trituration, will usually be all that is required.

EDEMATOUS LARYNGITIS.

Synonyms.—Edema of the Larynx; Submucous Laryngitis.

Definition.—An infiltration of the mucous membrane of the larynx with serum, usually due to inflammation.

Etiology.—Edema of the larynx may arise from injuries to the mucous membrane by swallowing a hard, rough, or sharp body, as a spicula of bone, or by the application of a caustic to the larynx. It may be due to an extension of inflammation of the neck and pharynx, or, in rare cases, to acute catarrhal laryngitis. Some drugs will give rise to it, notably potassium iodide.

It may arise as a complication in certain infectious diseases,—diphtheria, erysipelas, typhoid fever, hydrophobia, scarlet fever, influenza, etc. Tubercular, syphilitic, and malignant diseases of the larynx may be accompanied by edema.

It generally accompanies dropsy, due to kidney or cardiac lesions.

Pathology.—The mucous membrane of the upper portion of the larynx, the rim of the glottis, and the covering of the epiglottis are infiltrated with serum. The effusion into the sub-mucous tissues of the aryteno-epiglottis folds may be so extended as to include the respiratory passage.

Symptoms.— “The disease commences with a continually increasing impediment to respiration, and a feeling of fullness and constriction and continuous desire to clear the throat, as if caused by some foreign body; the voice becomes hoarse, croupal, then sharp, stridulous, whispering, and is then lost completely; there is a hoarse, convulsive cough, with fits of suffocation, causing great agony. While inspiration is prolonged, stridulous, and exceedingly difficult, expiration is comparatively easy. This feature is so marked as to be pathognomonic of the disease.

“There is no fever, but as the disease progresses the pulse becomes frequent, small, and irregular. The difficulty of breathing increases; the fits of coughing and suffocation are more frequent; symptoms of asphyxia are very apparent; the cerebral functions are disturbed; and at last death ensues from inability to inflate the lungs.”

Diagnosis.—The difficult, labored respiration and easy expiration will suggest the character of the disease, while a laryngoscopic examination removes all doubt.

Prognosis.—The prognosis is unfavorable unless relief be obtained by prompt surgical interference.

Treatment.—If due to inflammation,—

Aconite	3-5 drops.
Apocynum	5-10 drops.
Water	4 ounces. M.

Sig. Teaspoonful every hour.

Cloths wrung out of ice-water and applied to the throat, with small bits of ice held in the mouth, affords some relief. If no fever be present, cactus, convallaria, or strophanthus may be combined with the

apocynum. Jaborandi and pilocarpin have been used with benefit by producing profuse diaphoresis. Where no relief is experienced by medication or scarification, intubation should be tried, and, this failing, as a last resort tracheotomy should be performed.

PSEUDO-MEMBRANOUS LARYNGITIS.

Synonyms.—Membranous Croup; Laryngeal Diphtheria.

Definition.—An inflammation of the larynx, characterized anatomically by the formation of a false membrane; clinically, by a shrill, piping respiration, dry, metallic cough, the voice sinking to a whisper.

Etiology.—There has been much discussion as to whether membranous croup and laryngeal diphtheria are one and the same disease, and although it is now generally recognized by the profession as one disease, and although health officers require membranous croup to be reported as infectious, I am sure that I have seen cases where there is no evidence of infection and no symptom of diphtheria; hence it may be classed a non-contagious membranous croup.

As proof I report a recent case: I was called to see a child two years old who had been suffering, as I learned, for five days with cough and difficult breathing. Home remedies had been faithfully used, but the child grew gradually worse. At my first visit I found the child laboring for breath, interrupted by the dry, metallic, croupal cough; the cry was piping, and the labored breathing showed the opening of the larynx was very small. The tongue was but slightly coated, appetite good, no odor from breath, skin moist, secretions from kidneys and bowels good. In fact, had it not been for the labored breathing and croupal cough the child would have needed no medical aid. The membrane gradually lessened the caliber of the larynx, and, despite steam inhalations and internal medication, the child grew gradually worse so that intubation was required to preserve life. Within ten minutes after the tube was in place, the child dropped into a quiet sleep, the breathing was as quiet as that of a healthy babe, and, to all appearance, the disease was at an end. The tube was allowed to remain four days, during which time the child drank freely of milk, slept quietly, and made no complaint. There was not a single symptom of diphtheria.

The cause of *non-contagious* membranous croup is no doubt the same as that of catarrhal croup, although just why in the one case a plastic exudate is formed, it is impossible to say.

Pathology.—This is a true inflammation of the mucous membrane, which is attended by a plastic exudate, forming the pseudo-membrane, which varies in thickness from one-sixth to one-fourth of an inch, and consists of mucus, epithelial cells, and an obscure fibrous structure. In some cases it is but loosely attached, while in others it is removed with difficulty.

Symptoms.— “The coming on of an attack of pseudo-membranous croup may sometimes be recognized for three or four days, or even a week. The child does not seem sick, and plays about the house as usual, but has some cold, and the parents notice some hoarseness of voice and cough. We will notice, however, a peculiar metallic resonance to the voice, cry, and cough, but more especially that there is a dry and whistling respiration. This is so marked that the breathing may be heard across the room.

“The attack of croup most frequently comes on at night, as in other cases. In the evening it is noticed that there is more hoarseness of the voice and the cough is somewhat croupal, but as the child breathes pretty well and does not seem sick, the parents flatter themselves that it is but a cold, and will give no trouble. The mother has told me of going to the child's bed or crib, attracted by the peculiar whistling respiration, impressed that there was something wrong, but fearing ridicule if she sent for the physician.

“As the time passes, the child becomes restless from difficult breathing, has slight attacks of cough in his sleep, which are clearly croupal. In another hour or two he awakes with a start, and assumes a sitting position, evidently suffering much from difficult respiration, which is increased by the attacks of coughing.

“The symptoms are now very marked, the respiration is sibilus or whistling, and difficult, the cough hoarse and metallic, the voice roughened or sunk to a whisper, and the cry shrill and piping; the skin is dry, the pulse hard and increased in frequency, the urine scanty, and the patient restless and uneasy.

“As the disease progresses, there is a gradual increase of all these symptoms, but especially of difficult respiration, which is constant. The cough is spasmodic in its character, and when it comes on, the patient suffers very greatly from want of air. After a time, evidences of asphyxia appear in the bluish lips, distended veins, leaden appearance of the surface, cold extremities, dullness of the nervous system, and finally coma and death.

“The entire duration of the final attack will be from six to forty-eight hours.”

Diagnosis.—The constantly increasing difficulty of respiration, the whistling, sibilant sound of the air as it passes through the narrowed larynx, the dry, ringing, metallic cough, and the piping cry can hardly be mistaken for any other form of croup.

Prognosis.—This is a grave disease, and the prognosis must be guarded. In very young children the outlook is unfavorable, owing to the small size of the larynx. An unfavorable prognosis will be made where the pulse becomes small and feeble, the skin relaxed, extremities cold, the respiration gasping, and the face cyanotic.

Treatment.—I can not do better than reproduce the treatment as given in Scudder's “Diseases of Children,” which is as follows:

“The indications of treatment in this case are: To produce relaxation of the intrinsic muscles of the larynx, and thus give freedom to the respiration while we pursue the main treatment; to lessen inflammatory action and obtain free secretion of mucus, for the purpose of effecting the detachment of the false membrane; and, finally, to effect the removal of this.

“To fulfill the first indication, we employ inhalations of the vapor of water, or water and vinegar, or lime-water, as will be hereafter named. With this we direct the continuous application to the throat of flannel cloths wrung out of hot water, in the meantime bathing the throat with the compound stillingia liniment. These are important means, and should never be neglected.

“There are two plans for accomplishing the second indication. The one is

by the use of the tincture, of veratrum viride or aconite, aided by inhalations of lime-water, and is very good treatment and much pleasanter than the use of nauseates. I prescribe the veratrum in the proportion of ten drops to water four ounces, a teaspoonful every fifteen minutes, until it produces a marked influence upon the pulse; then in smaller doses, to continue its effect.

“Aconite is preferred where the pulse is small and frequent, and it is administered in the usual small doses: Tincture aconite. 2 drops; water, 4 ounces; a teaspoonful every fifteen minutes. If the child is very sensitive to the action of the remedy, the dose should be still further reduced, and if we find the lips dry and contracted, and the child grasping at its mouth with its hands, it should be suspended and veratrum administered.

“If the tongue is pallid, and shows small spots of red, phytolacca may be combined with the medicine. If the little patient is dull and stupid and wants to sleep, give belladonna. If there is a sharp stroke of the pulse, and the child moves its head restlessly backward and forward, throwing it backward as if it would bury the occiput in the pillow, give it rhus. This remedy is also indicated by the shrill cry as if frightened, and sudden starting from sleep. Gelsemium is indicated by the flushed face, bright eyes, and contracted pupils, with restlessness and great irritation. These remedies are secondary, it is true, but it is a case that requires all that we can do, and if by one of these we strengthen the aconite and veratrum, we give our patient an additional chance.

“What the physician needs most of all is a steady hand. The treatment requires time, and we must not get excited. If the patient is growing no worse, we should feel satisfied for a time; if there is but slow improvement, as marked by more ease of respiration, a better circulation, warmth, and moisture of the feet, legs, and forehead, we feel encouraged, and hold fast to the treatment.

“The use of lime-water as an inhalation is a very important part of the treatment. It is claimed that it alone is sufficient to arrest the inflammatory action and cause the detachment of the membrane; and I have employed it with success when other means have failed. The veratrum has also proven very successful alone, and the two will fulfill the first two conditions.

“The other and older plan of treatment is by the use of the nauseant emetics, and, if properly used, will give excellent results. I may add that if improperly used—i. e., so as to irritate the stomach with retching and ineffectual efforts to vomit—they will hasten the fatal termination.

“Of these remedies I prefer: Acetous tincture of lobelia, acetous tincture of sanguinaria, 1 ounce use; molasses, 1 ounce; chlorate of potash, finely powdered, 1/2 ounce; let them be combined with heat, and add the potash. We give this in doses of a teaspoonful every ten or fifteen minutes, until nausea is induced; then in smaller doses, so as to continue the nausea without vomiting. The greater and more constant the nausea without efforts at vomiting, the greater the success of the treatment.

“Using the hot applications to the throat, and the inhalations of vinegar and water, we continue the nausea for some hours, at least until we have evidence of secretion, and the commencing detachment of the false membrane. This will readily be detected by the moist sound of respiration, and a gurgling, napping sound in the act of coughing. If the child is breathing pretty freely, we may wait for the removal of the membrane by the cough, as it will be brought away by shreds.

“But if, with the loosening of it, it seems to be drawn upward in expiration, and downward with inspiration, tending to block up the passages and producing evident symptoms of asphyxiation, we carry our remedies to thorough and prompt emesis.

“Generally it will be well enough to prepare an infusion of the compound powder of lobelia and capsicum for use at this time, as we will have established a degree of tolerance for the other preparation. Occasionally we will meet with a case requiring prompt relief. Here the child will be turned on its abdomen; and a finger introduced into the mouth, drawing the tongue forward, and exciting the fauces, will be followed by a forcible expulsive effort, and the membrane will be detached. A case of this kind occurred in my practice; the membrane became detached and entirely stopped the larynx, the child was asphyxiated, and would have died in five minutes. I snatched it from the mother, turned it on its face, inserted my finger as far down as the larynx; a forcible effort at vomiting ensued, and the whole membrane was removed at once, being a perfect cast of the larynx. The child recovered.

“To the above treatment I would add the nitrate of sanguinaria when the membrane becomes loosened and is coughed up in small shreds: Nitrate of sanguinaria, 1/8 grain; rub in mortar with boiling water, 4 ounces; when dissolved, add a teaspoonful of good, sharp cider-vinegar. The dose is a teaspoonful every hour.

“Where the child grows worse despite the above treatment, and struggles for breath, intubation should be performed. The tube should remain three or four days.

“Convalescence demands much care. The child should avoid draughts of air. A good tonic should be administered and stillingia liniment or potassium bichromate given for hoarseness that follows, and to strengthen and tone up the weakened laryngeal tissues.”

III. DISEASES OF THE BRONCHI.

ACUTE BRONCHITIS.

Synonyms.—Tracheo-Bronchitis; Cold on the Chest.

Definition.—An inflammation of the mucous membrane of the bronchial tubes, varying greatly in intensity; hence it has received different classification. Thus, in the milder forms, it is termed subacute or cold on the chest; in the more severe types, acute or sthenic bronchitis, while in elderly people and those of feeble vitality it is termed asthenic bronchitis. The inflammation also involves the mucous membrane of the trachea; hence the more proper name, tracheo-bronchitis, and where the disease is actively acute, the nares, pharynx, and larynx share in the inflammatory process.

Formerly the extension of the inflammation to the bronchioles. was termed capillary bronchitis; but as this is attended with an involvement of the air-cells, giving us pneumonia as well, it is now classed as broncho-pneumonia. Should the inflammation stop short of the lungs, capillary bronchitis would be a proper term. The disease is both acute and chronic.

Etiology.—Among the predisposing causes are: Age, children, and

elderly people being very susceptible; debility, resulting from malnutrition; defective drainage, poor ventilation, overcrowding, insufficient food and clothing, or other diseases; occupations, certain trades, whereby irritant particles are inhaled, such as steel, brass, wood, coal, and tobacco working, etc.; also the fumes of sulphurous acid, chlorine, and bromine. Sedentary habits also render one more susceptible than a more exposed life. Children shielded from every draft of air by overanxious mothers, and who wear an excess of woollens whereby the system is weakened, are very susceptible to inflammatory conditions of the chest.

The exciting cause is usually atmospheric changes; sudden changes in the weather, which so frequently occur in the spring and fall, whereby the patient catches cold, are fruitful sources. Also getting the feet wet, or sudden chilling after exertion, may insure the disease. There is also an epidemic condition different from influenza, that prevails during some seasons.

Bronchitis is also a common attendant on some diseases, as typhoid fever, whooping-cough, measles, and other exanthematous affections. The disease may be acute or chronic.

Pathology.—The mucous membrane of the trachea and bronchi is congested and swollen, at first dry, but soon covered with mucus, which at first is clear, glairy and viscid, but soon becomes opaque, and finally muco-purulent. There is swelling of the mucous glands, and some of the smaller bronchial tubes are dilated; in the more severe cases the smaller tubes are choked with mucus. The ciliated epithelium desquamates and the sub-mucosa becomes infiltrated with leukocytes.

Symptoms.—Simple catarrhal bronchitis, or cold on the chest, begins as a common cold; there is languor, with frequent chilly sensations, which are alternated with flashes of heat. There is increased secretion from the nose; the throat is dry and rough, which causes the patient to make frequent attempts to clear it. The voice is hoarse, and a short hacking cough soon develops. The skin is dry, the urine scanty, and there is constipation.

As the cough develops, there is a sense of constriction of the chest, with a dull pain in the median line. The first twenty-four or forty-eight hours the cough is tight, and there is but little expectoration, the mucus being

clear and viscid; but within another twenty-four hours the cough is not so dry and hard, the mucus becomes more profuse, changes color, becoming yellow, and is raised more easily. There is now an abatement of all the symptoms, and the patient is convalescent by the sixth or eighth day. In the more acute forms the chill is quite marked, followed by an active grade of fever.

The skin is hot, dry, and constricted, the urine is scanty and high-colored, and there is constipation. The throat is dry, red, and somewhat swollen, the voice hoarse and rough. A hard, dry bronchial cough follows reaction, which is attended by a dull pain in the chest. The respiration is humid, and there is a sense of oppression in the chest. The tongue is coated, and there is more or less headache.

The fever may be quite active, although remittent in character. On auscultation the dry, sibilant rhonchus is heard, followed within forty-eight hours by a mucous rhonchus, which becomes more marked as secretion increases. At first the mucus is viscid and tenacious and sometimes streaked with blood, but soon changes, becoming opaque and finally mucopurulent. With free expectoration, the sufferings of the patient are relieved; he sleeps well, the cough being more severe in the early morning, owing to accumulation during the night.

When occurring in young children and in elderly people, the prostration is much greater, the cough harassing, greatly distressing the patient. The respiration is more labored, and there is more or less dyspnea. The expectoration in the old is more watery in character. The cough is persistent, occurring in paroxysms. In children the inflammation is more apt to extend to the smaller tubes, and the oppression of the chest is consequently great. The respiration is embarrassed. Auscultation gives mucous rhonchus, the smaller tubes being choked with mucus.

Diagnosis.—The diagnosis is easily made. The coryza, dry-ness of throat, the dry bronchial cough, and sibilant respiration, call our attention to the chest. Auscultation gives us the dry rhonchus the first twenty-four hours, followed by the mucous rhonchus. Percussion gives resonance, showing conclusively that the lungs are not involved.

Prognosis.—The prognosis is generally favorable, though where it occurs in delicate children there is a marked tendency in the inflammation to extend to the lung, giving rise to broncho-pneumonia.

In old and feeble patients whose vitality has become exhausted, the prognosis will be guarded.

Treatment.—The treatment for bronchitis by the use of specific remedies is very satisfactory; the disease is shortened, the distress mitigated, and the patient rendered comfortable without the use of opiates. Our first object is to control the fever, thereby arresting the inflammatory process; just in proportion as we are able to modify the symptomatic fever, do we modify the cough, and early establish secretion.

Veratrum.—In acute inflammation of the respiratory apparatus, there is usually excessive power in the heart's action as evidenced by the full, bounding pulse, and veratrum in full doses succeeds, not only in reducing the force and frequency of the pulse and lowering the temperature, but also modifies the cough. Veratrum, 20-60 drops; water, 4 ounces; aconite where the pulse is small and frequent, either in child or adult, calls for this agent. Aconite, 5 drops; water, 4 ounces. Teaspoonful every hour:

Bryonia.—This is one of our best cough remedies, and is called for where there is pain in the chest, sharp in character, a vibratile pulse being additional evidence for its use, ten drops added to the sedative mixture, or it may be given on alternate hours.

Lobelia.—Where there is dyspnea and a sense of oppression in the chest and the pulse is full and oppressed, this remedy will be especially useful. In children, where the smaller tubes are choked with mucus, there is no better agent; ten or fifteen drops being added to the aconite mixture.

Eupatorium.—This will be useful in those cases where the temperature is high, yet the skin is inclined to be moist, and the pulse is full and respiration difficult; add ten to twenty drops to the half glass of water.

Sanguinaria.—Where there is a constant tickling in the throat, this agent will be of use. Put one-fourth grain of the nitrate of sanguinaria in mortar, and rub it down with four ounces of boiling water; add enough syrup to render palatable, and give teaspoonful every hour.

Ipecac.—Where there is irritation of any mucous membrane, ipecac will be found beneficial. Where there is extension to the lung tissue and the

cough is hacking in character, add ten drops to the usual amount of water, and give every hour.

Local Applications.—The only local application needed will be the flannel cloth spread with lard or vaselin and thoroughly dusted with the compound emetic powder. Where this produces too much counter irritation, rub throat and chest with *stillingia* liniment. The antiseptics are not usually called for in this disease, although there may be an occasional call for them. Good nursing is, of course, necessary. The patient must be kept quiet in bed, and a fluid but nourishing diet administered. The patient should not be dismissed until the cough is thoroughly subdued: if this course were carried out, there would be fewer cases of chronic bronchitis.

CHRONIC BRONCHITIS.

Definition.—An inflammation of the mucous membrane of the trachea and bronchi, that has existed beyond the period of acute inflammation, and has lost the acute symptoms of *sthenia*. It may be primary, following the acute or secondary.

Etiology.—Chronic inflammation is of frequent occurrence, and may result from many causes. A badly treated acute bronchitis or one where the patient stops treatment before a thorough cure is effected, often results in the chronic form. Neglect is a very common cause; the acute symptoms giving way, the patient, in his hurry to be about, pays but little heed to his cough, and before he realizes it, it has become firmly established. Sometimes it comes on very slowly; the patient coughs in the winter and spring whenever exposed to cold, but with the arrival of pleasant weather the cough disappears, to return more severely with the first attack of cold weather; by the following spring the chronicity is so well established that fair, pleasant weather, while mitigating the paroxysms, does not entirely relieve the sufferer, and the disease is well established.

Again, a pneumonia may set up a subacute bronchitis, which persists after the primary lesion has subsided.

Organic heart disease, especially of the right heart, is sometimes responsible for this condition, as may be chronic Bright's disease.

Rheumatism, syphilis, tuberculosis, and chronic alcoholism may also be important factors in giving rise to the disease.

Old people are very prone to this affection, especially if they are sufferers from any organic disease and are not carefully sheltered in inclement weather. Children are not often troubled, unless it follows whooping-cough or measles.

Pathology.—The mucous membrane presents very different conditions. In some, the epithelial layer will have disappeared over a large surface, the mucous membrane becoming quite thin, or there may be thickening of the mucous membrane, with infiltration ; in others, there is more or less ulceration. Again, there will be atrophy of the mucous follicles, dry bronchitis; in others, hypertrophy, with increased secretion—bronchorrhea.

The mucous membrane presents a livid violet color, in the place of the light red of the acute form. Where the disease is of long standing, with severe paroxysmal coughing, there is dilalation of the tubes, bronchiectasis. The changes in other organs are not so constant, being secondary and the result of complications.

Symptoms.—In chronic bronchitis we have to consider both local and constitutional symptoms. Of the local, the cough, the expectoration, and the respiration are the most prominent. Cough is the most troublesome and characteristic feature, being persistent and annoying, usually of a deep bronchial character, or short and hacking; again, asthmatic, with difficulty in breathing, causing exhaustion. It may be dry and ringing in character where but little mucus is secreted, or moist and loose where the secretion is profuse.

There is generally but little pain, although, when the paroxysms are difficult and long continued, there is soreness in the substernal region. The expectoration varies greatly in regard to quantity, appearance, and consistency, depending upon the type of the disease, of which there are three forms: (a) Dry catarrh, the *catarrhe sec* of Laennec; (b) Bronchorrhea serosa; (c) Putrid bronchitis.

Dry Catarrh.—This form is characterized by severe and prolonged paroxysms of coughing, but attended by little or no expectoration ; the expectoration, when present, is tough and viscid and removed with

difficulty. After the paroxysms, the respiration is hurried and asthmatic, the face being flushed and the patient quite exhausted. This form is usually found in elderly people. There is often emphysema, and not infrequently heart disease is associated with this type.

Bronchorrhea.—In this form, the secretion is profuse and expectoration abundant and easily expelled; each paroxysm of coughing is attended with a free expectoration of a watery character, mucopurulent, or fetid and of a greenish color. Where the mucus is purulent and offensive, it may be the beginning of dilatation of the tubes and fetid bronchitis. From two to four pints may be expectorated in twenty-four hours. After a night's rest the paroxysms of coughing are prolonged and severe, in order to remove the accumulation of the night.

Putrid Bronchitis.—In this form the expectorated material is abundant and fetid, the odor being characteristic of the decomposition of animal matter. This may be associated with tuberculosis of the lung, empyema with lung perforation, dilatation of the tubes, abscess or gangrene of the lung, although the odor may be present independent of these. “The expectoration is usually copious, and, upon standing, separates into three layers, of which the uppermost is composed of frothy mucus, the intermediate of a serous liquid, and the lowest of a thick sediment which presents a granular appearance, and is made up chiefly of small yellow masses, the so-called Dittrich's plugs. These plugs are characteristic of fetid bronchitis, and are the causes of the fetor. On microscopic examination, the Dittrich's plugs are seen to be composed of microorganisms, chief among which is the *Leptothrix pulmonalis*; they may also contain pus corpuscles, fat granules, and crystals of margarin. (Anders.)

Physical Signs.—The physical signs depend upon the type, but are so characteristic that, taken with the symptoms above described, a diagnosis is readily made. Thus, in the dry form, auscultation reveals a dry, whistling, or sibilant rhonchus, and, upon percussion, a resonance is elicited showing that the lungs are not involved. Where the secretion is profuse, the mucous rhonchus is heard, and if the smaller tubes are involved, a slight crepitant sound may be heard. Where there is great relaxation of the mucous membrane, with the secretion increased, a flapping or gurgling sound is heard.

General Symptoms.—These depend upon several conditions. If there

is no serious complication, the general health may be but little affected and the patient may follow his vocation with but little interruption. There is usually more or less emaciation, but aside from this, and a hurried respiration after exertion, he complains but little.

Where there is organic complications, the symptoms peculiar to the affected organ are generally so prominent that our attention is at once directed to it. Thus cardiac trouble would be known by the sense of weight and oppression in the region of the heart, the dyspnea being a marked symptom. The pain of rheumatism and gout are characteristic, while Bright's disease has a train of symptoms that are not misleading.

Where the lungs become involved, especially if the disease is of years' standing, the patient rapidly loses flesh and strength, is compelled to take to his bed, hectic fever and night-sweats follow, and the patient's condition resembles that of phthisis.

Diagnosis.—The diagnosis is usually made with but little difficulty, the only disease with which it might be confused being phthisis, and if we bear in mind that in phthisis there is fever and loss of flesh and great prostration, while in bronchitis the health is comparatively good, we can distinguish the two without much difficulty. In phthisis we get localized dullness, usually in the apex, while in bronchitis there is resonance on percussion. The history will also throw much light on the case, although the physical signs are the ones upon which most dependence is to be placed.

Prognosis.—The prognosis will depend upon the length of time the patient has been affected, his previous history, and the complications existing. Bronchitis being so many times secondary to diseases that of themselves are serious, our prognosis must be guarded.

Treatment.—One who can profit by our advice we would send to Southern California or Florida for the winter months, for nothing can take the place of change of climate,—a warm, even temperature, where the patient can remain out of doors the most of his time, being especially desirable. Unfortunately the greater number of our patrons can not bear the expense, and we have to do the best we can at home. Except in inclement weather, our patient must have plenty of outdoor air; but when the weather is wet and disagreeable, we must insist on his keeping indoors.

His sleeping apartment should be large and well ventilated. In the morning the patient is to flush the neck and chest with cold water, to be followed by thorough rubbing with a dry, coarse towel, till the skin has a healthy glow and all moisture disappears.

All nauseating remedies should be avoided, as we do not wish to disturb the stomach; for in order to make a good blood—an important factor in the treatment—we must have good digestion. We must also see that the excretory organs are in good condition.

The general treatment would look to a correction, where possible, of the primary lesions. The diet should be nourishing and easily digested, while pastries and rich desserts should be avoided. The bitter tonics and restoratives may be called for; yet, unless each remedy is given for a direct purpose, our patient will fare better without them. The cough is the most distressing feature, and one that calls loudly for relief. This will yield more satisfactorily to direct medication than by giving the usual expectorant compounds.

Drosera.—Where the cough is dry and hoarse, add from fifteen to thirty drops of drosera to half a glass of water. A teaspoonful every one or two hours will give good results.

Sanguinaria.—Where there is laryngeal irritation, a tickling in the throat, and a persistent cough, sanguinaria must not be overlooked, as it is one of our best agents for this condition.

Sticta Pulmonaria.—Where the cough is hard and dry, sticta alone, or in combination with bryonia, will be the remedy.

Ammonium Carbonate.—Where the mucous membrane is relaxed and the secretion profuse, from three to six grains of the carbonate of ammonium will give good results; syrup of tulu and simple syrup may be the vehicle for its administration.

Calcium Sulphide will be the remedy in fetid bronchitis. Where the cough is irritable and persistent, preventing sleep, an opiate may be necessary. In such cases,

Codein sulphate

5 grains.

Syrup Tulu

2 ounces. M.

Sig. Teaspoonful every one, two, or three hours.

Inhalations will be of much benefit, where there is but little secretion, there being dryness of the mucous membrane. If the larynx be involved, it will be doubly indicated. Steam inhalations, in which eucalyptus, lobelia, and hops are used, will prove very helpful.

Stillingia liniment in drop doses on sugar is a good remedy for a night cough. *Esculus glabra* is an excellent remedy where there are asthmatic symptoms.

A persistent hacking cough will frequently yield to the following cough mixture when all others fail:

Specific Lobelia	1 drachm.
Comp. Spirits of Lavender	2 drachms
Water and Simple Syrup	2 ounces each. M.

Sig. Teaspoonful every one, two, or three hours.

Counter Irritation.—The older practitioners obtained splendid results from the old compound tar plaster, though few patients today would suffer the use of it. In the place of this, we may use a thapsia plaster.

BRONCHIECTASIS.

Definition.—Dilatation of the Bronchial Tubes.

Etiology.—Any condition that impairs the vitality and tonicity of the mucous tissues predisposes to bronchiectasis, for dilatation depends upon a weakened condition of the mucosa, sub-mucosa, and muscular tissues, whereby they atrophy, permitting the weakened tube to dilate.

Age also favors the disease, being most common in adult and middle life. Sex also predisposes to this condition, males suffering much more frequently than females.

The disease is usually the result of chronic bronchitis, chronic phthisis, broncho-pneumonia, emphysema, influenza, and sometimes it is due to measles and whooping-cough.

It may be due to a pressure from an aneurysm or tumors, and where the walls are greatly weakened, the presence of heavy mucus may be sufficient to cause dilatation.

In rare cases it is congenital.

Pathology.—The disease may be general or local, and the dilatation may be cylindrical, saccular, or irregular, all forms of which may be seen in the same lung.

In rare cases, the dilatation is confined to a single tube, and may affect but one side, though usually the entire circumference of the walls share in the change.

The most common form is where many of the tubes are involved, the dilatation commencing at the second or third division, and continuing throughout as a cylindrical or saccular enlargement combined.

The mucous membrane, in rare cases, may remain unchanged, though generally there is thinning or atrophy. Occasionally the mucous membrane is congested and thickened, the result of the inflammatory action. The cylindrical epithelium may be replaced by pavement epithelium.

There is usually a thinning of the muscular tissues, though, in rare cases, there may be thickening due to inflammatory changes. The contents of these cavities vary both in quantity and quality. In some the mucus appears but little changed, though more profuse than in health, while in others it shows great deterioration; in fact, is composed of blood, pus, and not infrequently pulmonary tissue, and casts of the tubes; in such cases it is very fetid. Still in others, the mucus becomes inspissated and sometimes calcified. Ulceration sometimes occurs in the most dependent portion of the cavity. There is usually a diseased condition of the near pulmonary tissue, the change depending largely upon the primary disease causing the dilatation.

Symptoms.—The general symptoms present a wide range, depending

upon the primary lesions and enfeeblement of vitality occasioned by them. The most characteristic symptom is the paroxysmal cough occurring in the morning, after a night's rest, to remove the accumulated secretion that has taken place. Change of position, when lying down, may bring on a paroxysm of coughing, by emptying the contents of a cavity into the tube above it.

The expectorated material is usually of a brownish or greenish color, mucopurulent in character, and disgustingly fetid. On standing, it separates into three layers,—an upper, which is brown and frothy; a middle, thin, sero-mucus; and a lower, consisting of granular debris. Examined microscopically, the sputum is found to contain pus cells, oil globules, fatty acid crystals, fragments of lung tissue, and various micro-organisms.

Dyspnea occurs after severe exertion, though respiration is but little disturbed when the patient is at rest. Hemorrhage seldom occurs, though at times the sputum may be streaked with blood.

Physical Signs.—The physical signs depend upon the size of the cavities, their location, superficial or deep, whether empty or filled with secretions, and also the condition of the lung tissue.

Auscultation reveals amphoric sounds where the cavity is large and empty. Mucous rales are heard over various portions of the chest.

Percussion.—After a fit of coughing the cavity is emptied, and percussion at this time gives a high-pitched tympanitic note; when the cavity is full, the percussion note is dull. Deep-seated cavities are not easily detected by percussion.

Diagnosis.—The diagnosis is not always easy, though the physical signs already mentioned should enable one to make but few mistakes. The cavities are to be differentiated from tubercular cavities; but if we keep in mind certain characteristics of each disease, there will be but little difficulty.

The cavity in bronchiectasis is nearly always located in the base of the lung, and the physical signs most prominent posteriorly; while in tuberculosis the cavities are usually found in the apex of the lung, and the physical signs are most prominent anteriorly. Sputum is foul,

abundant, and devoid of tubercle bacilli in bronchiectasis. In tuberculosis, the sputum is often blood-streaked, is not so fetid, and is rich in tubercular bacilli. In bronchiectasis there is no fever, no sweating, and the patient is in better flesh. In tuberculosis, fever, night-sweats, and emaciation are characteristic. In one the history is that of bronchitis; in the other, that of tuberculosis.

Prognosis.—Unfavorable as to cure, though the patient may live for years.

Treatment.—The general health of the patient must be maintained, and the administration of the bitter tonics, the hypophosphites, iron, arsenic, and like remedies will form a part of the general treatment. A warm, equable climate is desirable, where the patient can be out of doors the most of the time.

Calcium sulphide will be indicated to counteract the suppurative processes which are continually present. Inhalations of eucalyptus, iodine, creosote, turpentine, carbolic, etc., will correct to some extent the fetid breath, and incidentally benefit the patient.

ASTHMA.

Synonyms.—Spasmodic Asthma; Nervous Asthma; Bronchial Asthma.

Definition.—A paroxysmal dyspnea, due to alterations in the smaller bronchial tubes of a spasmodic and temporary character, and attended by more or less constitutional symptoms.

Etiology.—Heredity, sex, season of the year, and age predispose to asthma. It has been estimated that in fifty per cent of all cases there is a family history of paroxysmal dyspnea. More males suffer from asthma than females, the ratio being about two to one. If we except hay asthma, winter and early spring are the months most favorable to this disease.

About thirty per cent of all cases occur before the age of ten, twelve per cent between the ages of ten and twenty, and eighty per cent before the age of forty.

Exciting Cause.—All writers agree that there is an abnormal condition

of the respiratory center or of its paths of communication, but the exact nature of the exciting cause or causes is not known.

It may be due, in some cases, to bronchial irritation, or acute bronchitis; at least this may give rise to a paroxysm. Inhalations of certain vapors or fumes, or irritating dust, and sometimes the odor of plants or animals, is sufficient to bring on an attack.

A very large per cent of cases are due to reflex causes, the disturbance being at a distant part, as the stomach, uterus, ovaries, urethra, or rectum. Emotional excitement may be the excitant, or it may be secondary to obstructive rhinitis, or growths in the nasal passages, cardiac lesions, hepatic wrongs, and chronic nephritis.

Pathology.—There are no characteristic anatomical changes in asthma. In some there is hyperemia of the bronchial mucosa, with a characteristic exudate. In others there may be slight thickening of the mucosa, and in a great many there are no perceptible changes, showing clearly its reflex character.

Where the disease is secondary, the anatomical changes are confined to the primary organ; as in cardiac asthma, the changes will be in the heart; in renal asthma, in the kidneys, etc.

Symptoms.—The attack generally begins suddenly, though prodromal symptoms are not uncommon, and consist of a sensation of uneasiness or constriction in the larynx, oppression or tightness in the chest; chilly sensations, digestive disturbances, profuse diuresis, and marked depression of spirits.

The attack most frequently commences in the night, after the patient has gone to sleep, he being awakened by a sense of suffocation or inability to fill his lungs. The dyspnea is marked, and the patient desires his window thrown open that he may get fresh air. There is great anxiety; the face becomes pale, often cyanotic, showing imperfect aeration of the blood; the pulse is rapid but feeble; the face, and sometimes the entire body, is covered with a cold sweat; the extremities become cold, and the temperature not infrequently becomes subnormal. The patient is unable to lie down, the most comfortable position being a sitting posture, the hands grasping some object for support, thus bringing to his assistance the accessory muscles of respiration.

The breathing is characteristic, being of a wheezing character that can be heard for quite a distance. Although, owing to spasmodic contraction, the air enters the lung with difficulty, the patient experiences still greater labor in expiration or emptying the lungs, the wheezing being more pronounced on expiration than on inspiration.

The dyspnea is increased by paroxysms of coughing, which at first are quite severe and attended by expectoration of a tenacious viscid mucus. Later the cough is looser and the mucus raised with ease.

The sputum of asthma is characteristic and consists of small, jelly-like balls floating in their mucin. These balls, “perles” of Laennec, are mucous molds of the small bronchioles, and when unrolled are found to be spiral in form, known as Curschmann's spirals, he being the first to describe them. There are also found in many cases, octahedral crystals, asthma crystals, first described by Leydon. They are identical with the crystals found in semen and in the blood in leukemia.

Physical Signs.—Inspection reveals the chest large and barrel-shaped, due to inability to expel the air from the lungs.

Percussion usually gives hyper-resonance, though sometimes the note is normal.

Auscultation in the early stage reveals sibilant rales, of various grades in pitch, becoming moist as the disease progresses.

The duration of the paroxysms is variable, lasting from a few minutes to hours, or days. Often the patient experiences relief toward morning, and through the day is comparatively comfortable, although the breathing is hurried. The following night there is a repetition of the experience of the previous night, which may continue for several nights before obtaining complete relief. Sometimes months elapse before there is a recurrence, the frequency depending somewhat upon the exciting cause.

Diagnosis.—The diagnosis is easy, the paroxysms of dyspnea usually occurring in the night, the wheezing respiration and the peculiar sputum, leave no room for doubt.

Prognosis.—The prognosis is favorable-as to life, but few patients

dying from asthma, and only those where it is due to primary cardiac lesions; but it is unfavorable as to a permanent cure, unless due to reflex causes, when a correction of the exciting cause may give prompt and permanent relief.

The permanent cures from medication, however, are not frequent enough to warrant a cure by the use of remedies.

Treatment.—The treatment of asthma will be first to relieve the paroxysm, and then to ascertain, if possible, the exciting cause, and direct our treatment toward a permanent cure.

Lobelia is recognized by all schools as an efficient remedy during a paroxysm of asthma. To be effectual, however, it should be carried to the point of nausea, and when the paroxysm is due to an overloaded stomach, it should be carried to a thorough emesis. An infusion of the emetic powder is quite effective where emesis is desired.

Perhaps the most successful agent is morphia, used hypodermically, one-fourth to one-third of a grain being used at a dose. The most serious objection to this remedy is the danger of leading the patient into the morphine habit.

The inhalation of chloroform will frequently give relief, but the effects are apt to be transient. One or two perles of the nitrate of amyli, crushed in the handkerchief and inhaled, usually gives speedy relief. The patient should be in bed when this is used, for the agent often produces dizziness and sometimes fainting, and if not in bed the patient may fall to the floor. In very difficult breathing the agent may be given internally, a dram to simple syrup and water, 1 ounce each. M. Teaspoonful every three or four hours.

Inhalations from cigarettes made from lobelia, belladonna, and stramonium leaves proves of much benefit in many cases, or the coarsely ground herbs may be burned in a dish and the fumes inhaled. Nitrate of potassium may be added to the other agents, and adds much to its effectiveness.

For the radical cure the case must be carefully studied, to find the exciting cause or causes that give rise to it. In one case it may be due to endometritis or a diseased ovary; in another, rectal or urethral

disturbances are responsible for the paroxysms. In such cases, a curettement, or possibly an ovariectomy, will be the only means of relief, while the removal, of hemorrhoids, papilla, rectal pockets, fissures, etc., will work wonders in effecting a permanent cure.

Any wrongs in the general health must be corrected, and such remedies as aesculus, grindelia, and penthorum may be given three or four times a day with the hope of overcoming the tendency to a return of the disease.

The nose, larynx, and bronchi should receive a careful examination; and if any local trouble exists, it should be removed. The patient should be shielded from irritating dust, pollen, gaseous or chemical fumes, and any and all forms of irritation.

In some cases a change of climate promises the only relief, although it is difficult to determine the right locality for each patient. One does better in the mountains, while another derives more benefit in the lake regions of Wisconsin and Michigan, while the States of Florida, Texas, New Mexico, Arizona, Colorado, and California offer relief to others.

FIBRINOUS BRONCHITIS.

Synonyms.—Pseudo-membranous Bronchitis; Croupous Bronchitis; Plastic Bronchitis.

Definition.—An acute or chronic inflammation of the bronchial tubes and characterized by the formation of a false membrane or fibrinous casts.

Etiology.—Certain conditions predispose to this affection, although the specific cause is not known. It occurs far more frequently in male subjects than in the female, and between the age of twenty and forty, although it may occur at any period of life, and follows the breaking up of winter, or the early spring months.

It is associated with tuberculosis and certain skin diseases, such as pemphigus, impetigo; and herpes. Heredity may play some part in its causation. The inhalation of steam and noxious gases is sometimes followed by plastic bronchitis ; while erysipelas, scarlet fever, and other

infectious diseases have preceded it.

Pathology.—The exudate or pseudo-membrane is usually found in the large tubes, although not infrequently involving the smaller branches. The exudate is found upon the mucous membrane, and forms casts of the tubes. These casts may be hollow or solid, being filled with leukocytes, blood corpuscles, epithelial cells, and sometimes the Charcot-Leydon crystals.

The composition of the casts is not very well understood, although generally believed to be fibrinous. The casts are expectorated in the form of jelly-like mucus, and when placed in water may be unrolled, revealing- the casts of the bronchi.

Symptoms.—The acute form, which is quite rare, may result fatally in a short time, owing to the dyspnea, due to occlusion of the bronchi. It begins with a chill or rigor, followed by high febrile reaction. The pulse is sharp and frequent, the respiration hurried, with a sense of constriction in the chest. Dyspnea early comes on, attended by paroxysms of coughing. At first the cough is dry, with but little expectoration, though often of a bloody character. Soon secretion becomes more profuse, and a paroxysm of coughing is followed by expectoration of some of the casts, not infrequently a profuse hemorrhage following.

With the subsidence of the fever, the secretion becomes more free, the dyspnea disappears, and the patient is convalescent. On the other hand, the obstruction may be so great as to lead to fatal asphyxiation.

Chronic Form.—The chronic form is usually milder in character and recurs at regular intervals. The earlier symptoms are those of ordinary bronchitis; but as the disease progresses, dyspnea becomes more marked and the cough paroxysmal in character. Expectoration is more profuse than in the acute form, the jelly mass expectorated revealing complete molds of the tubes. The casts may be found mixed with pus and blood.

The general symptoms are the same as those of chronic bronchitis. The physical signs do not differ materially from those of ordinary bronchitis. At first the dry, sibilant rhonchus is heard, changing to the mucous, as secretion becomes established.

Diagnosis.—The diagnosis is made from ordinary bronchitis by the greater dyspnea, the paroxysmal character of the cough, and finding the casts when the sputum is placed in water. From diphtheria, by the laryngeal complication and grave systemic symptoms of the latter.

Prognosis.—The acute form is a grave disease, and the prognosis should be guarded. The chronic form generally results favorably, although attacks may recur for years. Where there is a history of tuberculosis the outlook is not so favorable.

Treatment.—The treatment in the acute form will be similar to that of pseudo-membranous croup, the object being to soften and dislodge the membrane. Inhalations of medicated steam, produced by adding eucalyptus, lobelia, hops, and remedies of like character, to boiling water, will be found beneficial. Inhalation of lime-water is also to be advised.

Internally, lobelia or the old antispasmodic tincture will be found useful. With the loosening of the membrane, sanguinaria will be found helpful as a stimulating expectorant. The chronic form will be treated on the same lines as chronic bronchitis. The general health must be improved, and the local treatment will correspond with that for the chronic form.

IV. DISEASES OF THE LUNG.

LOBAR PNEUMONIA.

Synonyms.—Croupous or Fibrous Pneumonia; Pneumonitis; Lung Fever; Inflammation of the Lungs, and Winter Fever.

Definition.—From time immemorial, the term pneumonia has been used to designate an inflammation of the parenchyma of the lungs as distinguished from inflammation of other parts of the respiratory apparatus.

The more modern definition would be: an acute infectious disease, characterized by an inflammation of the lung tissue, in which there is, first, congestion or engorgement; second, exudation or consolidation; and, third, resolution or suppuration.

General Remarks.—One has but to consult the census reports in order to be convinced that pneumonia is the most widespread and fatal of all acute diseases. There are few countries, indeed, where the death rate per one thousand does not run from 1.10 to 2.30 per cent, and the mortality ranges from ten to forty per cent. In the United States, strange to say, the death rate is higher in the Southern States than in the Northern.

Another unpleasant fact, according to the census reports of 1870, 1880, and 1890, is that the death rate has slightly increased, and that in the State of Massachusetts, from the year 1852 to 1894, there has been a progressive increase in the death rate. Osler, in his late addition, gives the mortality of pneumonia at from twenty to forty per cent.

To one who has practiced Eclecticism, especially specific medication, this mortality seems almost incredible, and one is ready to believe that, just in proportion as the medication is heroic, the death rate increases. The disease is usually confined to one lung, when it is called single pneumonia; when both are involved, double pneumonia.

Etiology.—Predisposing causes are age, sex, season, habits, environment, race, and previous attack.

Age.—While no age is exempt, the extremes of life are more liable to the disease. The greatest number occur before the fifth year, and perhaps the least number between the ages of ten and fifteen years, and from this age increasing with each decade.

Sex.—That sex predisposes to pneumonia is readily shown by consulting the census reports, and while this is explained in adults by greater exposure to inclement weather by males, and also to greater intemperance in the latter, it does not explain the greater frequency in male infants.

Race.—The colored race are not only more prone to pneumonitis, but the mortality is also greater.

Season.—Pneumonia prevails more largely during the months of December, January, February, and March, beginning in December and reaching its climax in February and March; but few cases occur between the months of April and November.

Climate.—Climate, perhaps, acts less as a predisposing cause than season, though reports show a slight increase in the number of cases in the Southern States over those above the thirty-ninth parallel.

Habits.—The drink habit has made giant strides during the last fifty years in all the countries of the world, and the drink bill of the United States, according to official reports of the past year, amounted to one billion dollars. This amount of alcohol was consumed in fermented and distilled liquors, to say nothing of that vast amount consumed in patent medicines, with which this country is flooded, and which the American people so blindly consume. Add to this a billion-dollar tobacco-bill and a growing cocaine and morphine habit, and some light is thrown on the increased mortality.

Alcohol, nicotine, and the narcotic drugs enter the blood and are carried to every tissue of the body, impairing the vitality of the whole. Alcohol diminishes the sensibility and activity of all nerve cells, and, by combining with the free oxygen of the blood, impairs that vital stimulant and renders it less efficacious in the tissue changes of which it is so large a factor. Taken day after day, even by the so-called moderate drinker, the blood loses its vivifying qualities, the natural metabolic changes are impaired, toxic agents are retained, and the power of vital resistance to pathogenic germs or toxins materially lessened. Not only this, but the offspring of the moderate drinker comes into the world handicapped by a more feeble resisting power than that of the abstainer. If this follows the moderate use of alcoholic drinking, what are we to expect from the habitual immoderate drinker? Drunkenness tends to poverty with all its attendant ills; poorly clothed, poorly housed, and poorly fed children make up a very large class in all our large cities, and when the germs of pneumonia invade the body, they find not only a soil suitable for propagation, but with a vitality of so little resisting power that the battle between the phagocytes and parasites is but a short one.

Environment.—The increasing migration of the youth of both sexes to the cities is another important factor in the problem. In 1850 the population of the United States numbered twenty-three million people, of which twelve per cent lived in the cities. In 1900 the population numbered seventy-eight million people, of which twenty-six per cent resided in the cities. One-fourth of the people, then, are quartered in

cities.

Exchanging the pure fresh air of the country for the smoke-begrimed and less pure air of the city workshops, stores, offices, and tenement-houses, in many of which a ray of sun never enters and where pure air is an unknown quantity, they are compelled to take less oxygen into their lungs, are deprived of outdoor exercise, observe less regular hours, suffer the mental strain of trying to solve the problem of how to keep the wolf away from the home, to say nothing of the dissipations that are engendered by a life in the city, and we have all the conditions that impair digestion and assimilation of food, increase excitability of the nervous system, impair the action of secretion, and weaken the vital resistance of the individual. A trip through the tenement district of any of our large cities, where the sanitary conditions are vile, will convince the most skeptical.

Previous Attacks.—Pneumonia leaves the person peculiarly susceptible to future attacks, and it is not infrequent to find patients having their third, fourth, or fifth attack.

Infectious Diseases.—Certain infectious diseases are very prone to have pneumonia as a complication, notably typhus, typhoid fever, measles, and dysentery.

Exciting Cause.—The old idea that cold, exposure, and the sudden arrest of the secretions was the direct cause of an attack of pneumonia still has a very large following, notwithstanding the general acceptance by the profession that it is due to the micrococcus lanceolatus of Fraenkel. That cold figures very largely as a causal factor can not be gainsaid, and the frequent attacks of pneumonia, following immediately after a sudden chilling of the body and temporary arrest of the cutaneous secretions, causes a retention of excrementitious material in the blood, and which, seeking to be eliminated through the lungs, sets up an irritation sufficient to produce an inflammatory condition. Whether these same excrementitious materials produce a toxin which creates the inflammation; or whether these conditions simply prepare the soil for microbic invasion and afterwards infection,— the experimenter of the future will have to determine.

Bacteriology.—The micrococcus lanceolatus, pneumococcus or diplococcus pneumoniae of Fraenkel and Weichselbaum was first

discovered by Sternberg in September, 1880. In December of the same year, Pasteur discovered the same organism, not being aware of a prior discovery; neither one, however, recognized any relation existing between the germ and pneumonia.

Sternberg's discovery resulted from isolating the micrococcus as a result of inoculating rabbits with his own sputum, while Pasteur found the same coccus in the saliva of a child dead of hydrophobia. It was not until April, 1884, that A. Fraenkel came to the conclusion that the organism discovered by Sternberg and Pasteur, and which had come to be known as the coccus of sputum septicemia, was the causal factor of pneumonia, since it was the organism most frequently found in that disease.

In 1886, Fraenkel and Weichselbaum were able to demonstrate the micrococcus as the causal agent in *most cases* of pneumonia. These and other experiments seem to justify the etiologist in naming this germ as the specific cause of lobar pneumonia. We are not to forget, however, that this same organism is found in the saliva of twenty per cent of healthy individuals, and in many other diseases, such as pleurisy, pericarditis, peritonitis, cerebro-spinal meningitis, and others.

This organism is a lance-shaped coccus, united in pairs; hence the term diplococcus; and is found in health in the nose, Eustachian tubes, and larynx, and in various diseases besides pneumonia.

Pathology.—The right lung- is more frequently involved than the left, and one lobe, or one entire lung, rather than both lungs at the same time. A reference to the following table compiled by Juergensen will show the relative frequency of the parts affected:

Right Lung	53.70
Right Upper Lobe	12.15
Right Middle Lobe	1.77
Right Lower Lobe	22.14
Right Whole Lung	9.35
Left Lung	38.23
Left Upper Lobe	6.96
Left Lower Lobe	22.73
Left Whole Lung	8.54
Both Lungs	8.07
Both Lungs, Upper Lobes	1.09

The anatomical changes that take place in pneumonia have for years been considered under three heads or stages.

1. The stage of congestion or engorgement.
2. Stage of consolidation or red hepatization.
3. Stage of gray hepatization.

Stage of Engorgement.—In this stage there is hyperemia of the part or parts involved, which increases till there is marked engorgement. At this time the tissues are of a deep-red color, firmer in consistency and heavier than normal lung tissue, and, on making an incision, the cut surfaces will be bathed in a bloody serum; there is still some crepitation on pressure, and the lung will still float. The capillaries are greatly distended, the white corpuscles appear in great numbers, and the alveolar epithelium becomes detached and undergoes granular degeneration. The hyperemia, with its accompanying redness, extends into the bronchi, which at first are dry, but this condition is soon replaced by mucus. In the smaller tubes similar changes to that of the air vesicles take place.

This stage may occupy but a few hours or extend over a couple of days. As a result of this engorgement, there is exuded into the air vesicles and smaller bronchioles a fibrous exudate, in which are found epithelial cells, fibrin and granular matter, thus giving rise to the second stage, or consolidation.

Red Hepatization.—This stage takes its name from the resemblance of the affected parts to the liver. The volume of the organ is increased, the color is purplish or mottled, and frequently there is indentation from the ribs. The tissue is now solid, no air in the cells, no crepitation, and the lung will sink if placed in water. The tissue is friable, and may be easily broken down.

The cut surfaces show a granular material, consisting of fibrinous plugs, alveolar epithelial cells, red corpuscles, and leucocytes which have filled the air vesicles. If a large portion of the lung be involved, the irritation extends to the pulmonary pleura, and this surface is soon covered with

a film of fibrous exudate, and the sac may contain a serous effusion. The interlobular tissue contains the same characteristic exudate.

Gray Hepatization.—This is the stage of resolution or diffuse suppuration. The color of the lung tissue, as the name indicates, loses its dark-red color and becomes pale or grayish white. The tissue is more friable and the granular elements less distinct, and, as fatty and granular degeneration takes place, the exudate breaks down, becomes moist, and, on making a section, a turbid, purulent fluid appears. The air vesicles are filled with leukocytes, the fibrin and red corpuscles having disappeared; with this disintegration of the cellular elements, resolution is fully established and the absorbents carry it off.

Where the recuperative powers are feeble, this stage of gray hepatization may remain for several weeks, and if the exudation has been quite extensive, abscesses may form, which may open into a bronchus, or it may become encapsuled, undergoing caseous degeneration.

Changes in Other Organs.—The heart is frequently pale and flabby and contains large, firm clots, especially the right chamber, which can be removed in the shape of a cast. In no other disease is the coagula so firm and tenacious.

Pericarditis occurs in about five per cent of the cases, usually when the left lung is involved or in double pneumonia. Osler found five cases in one hundred autopsies. Endocarditis is more frequent, sixteen being reported in one hundred cases examined, five of which were of a simple character, while eleven were of the ulcerative type.

Chronic interstitial inflammation and parenchymatous degeneration of the kidneys may result.

The liver and spleen may show parenchymatous degeneration and are slightly enlarged.

Croupous or diphtheritic inflammations are among the very rare complications, and when seen are usually in the form of a thin, flaky exudate.

General Symptoms.—The period of incubation is usually of short

duration, not over twenty-four or forty-eight hours, save in old people or delicate subjects, when it may last for three or four days. During this stage there may be catarrhal symptoms, with a short bronchial cough, oppression of the chest, and hurried respiration; headache and general malaise, make up the list. Usually, however, the onset is quite sudden, being ushered in with a chill of pronounced character, lasting from thirty to sixty minutes. This may occur while the patient is at his work, or may awaken him in the night. So pronounced is the chill that it is characteristic of this affection, no other acute disease comparing with it; for this reason it is one of the earliest diagnostic symptoms.

In children, a convulsion may replace the chill, while in old people a sense of chilliness may replace the rigor. Febrile reaction follows, the temperature rapidly rising to 104° or 105° within the first twenty-four or forty-eight hours. The skin is hot, dry, and constricted, the face flushed, especially the cheek of the affected side. The eyes are bright, pupils contracted, there is headache, and the patient is quite restless. The urine is scanty and highly colored, and the bowels are constipated, though occasionally diarrhea is seen from the beginning. The tongue is dry and covered with a white, pasty coating; there is loss of appetite, and the patient experiences great thirst.

His position in bed is another characteristic feature, the patient lying upon the affected side; by this means the lung and pleura are held more quiet, and thus the acute pain is lessened.

After three or four days, the patient assumes the dorsal position. A short, dry, hacking cough is one of the early symptoms, which is attended with but little expectoration. The breathing is short and rapid, expiration often being audible and accompanied by a "grunt;" there is unusual expansion of the chest, and the alæ nasi dilate forcibly on inspiration. The pulse is full and bounding, save in the aged and those of feeble vitality. Herpes of the lips occurs more frequently in this than in any other disease.

Special Symptoms.—*Temperature.*—The temperature rises rapidly, reaching 105° or 106° within fifteen or twenty hours. Having reached the maximum height, it runs a uniform course for from five to seven or eight days, there, being but from one-half to one degree difference between the evening and the morning temperature. This uniformity of temperature continues to the crisis, which takes place from the fifth to

the tenth day, when it rapidly declines, frequently reaching the normal in eight or ten hours, and not infrequently becoming subnormal. In old people, drunkards, and delicate people, the temperature does not run so high, rarely exceeding 103°.

Pain.—Pain is a prominent symptom of most cases, the exception being where but a small portion of the interior portion of the lung is affected, or where the apex is the seat of the disease. The pain is sharp, lancinating, or throbbing in character, and usually in the region of the nipple. A full inspiration increases the pain; hence we find the patient grasping the side as if to prevent the motion of the lung, and the breathing is shallow. With the consolidation of the lung, the pain becomes much less severe, often disappearing entirely.

Respiration.—While the respiration is rapid in all fevers, in pneumonia it is characteristic, dyspnea being a marked feature.

Following the chill, the respiration is short and rapid, ranging from thirty to sixty in the adult, and from fifty to a hundred in the child. As the stage of engorgement passes to that of hepatization the breathing becomes quite labored. When the cough is paroxysmal and when the expectoration is unusually viscid, the breathing is very distressing, the patient being propped up in bed, while he grasps some object to give greater freedom to the expiratory muscles. The face takes on an anxious expression, and the gravity of the case is evident to the merest tyro in medicine.

Cough.—Beginning with the invasion of the disease, a short, dry, hacking cough, attended by more or less pain, suggests a wrong of the respiratory apparatus, and by the third or fourth day it is characteristic, the patient using every effort to suppress the paroxysmal, frequent cough. In hard drinkers, or in feeble, aged patients, it may be much lighter and in some cases entirely absent.

Expectoration.—The expectoration is often delayed for two or three days, though a white, frothy mucus may be raised the first day. The mucus is foamy or filled with little bubbles, and is readily recognized as coming from the lung. Occasionally a hemorrhage is the first material to appear.

By the second or third day the sputum is characteristic; thick, viscid,

and so tenacious that it runs together in the vessel, which may be inverted without discharging it. Occasionally this tenacious, gluey mucus is streaked with blood, though this more often occurs in bronchitis. By the fourth or fifth day the mucus has become opaque, and is intimately mixed with blood, giving it a rusty or orange color, and so characteristic is this sputum as to be pathognomonic.

In low grades of the disease, and sometimes in old people, the mucus may be of a watery character, and of a prune-juice color. The quantity varies—in some it is very scanty, while in others it is very profuse. As resolution takes place, the rusty color gives way to a yellow mucosity.

Physical Signs.—*Inspection.*—As before remarked, the patient will be found lying upon the affected side if one lung be affected, or on the back if both lungs are involved. The first few hours may not reveal to the eye the changes that are taking place; but, after twenty-four hours, inspection of the chest shows a restricted motion on the side involved, and increased expansion on the well side; and later, when complete consolidation has taken place, the expansive power entirely disappears. The frequency and difficulty of respiration and the dilation of the *alæ nasi* are not to be overlooked.

Mensuration will show an increase in volume on the affected side.

Palpation.—The tactile fremitus is increased over the congested area, while the absence of expansive power is very suggestive.

Percussion.—During the stage of engorgement, but little information will be gained on percussion, and if the inflammation be in the more central part of the lung, and but little of its circumference be involved, the percussion note will be normal. As the exudate takes place, however, the dullness increases, and in the second stage is complete.

With the beginning of resolution the peculiar dead or flat note begins to disappear, resonance becoming more marked each day, till the exudate entirely disappears and the lung is restored to health.

In some cases, restoration is not complete for weeks or months; and in some, never. Percussion gives us valuable information in these cases.

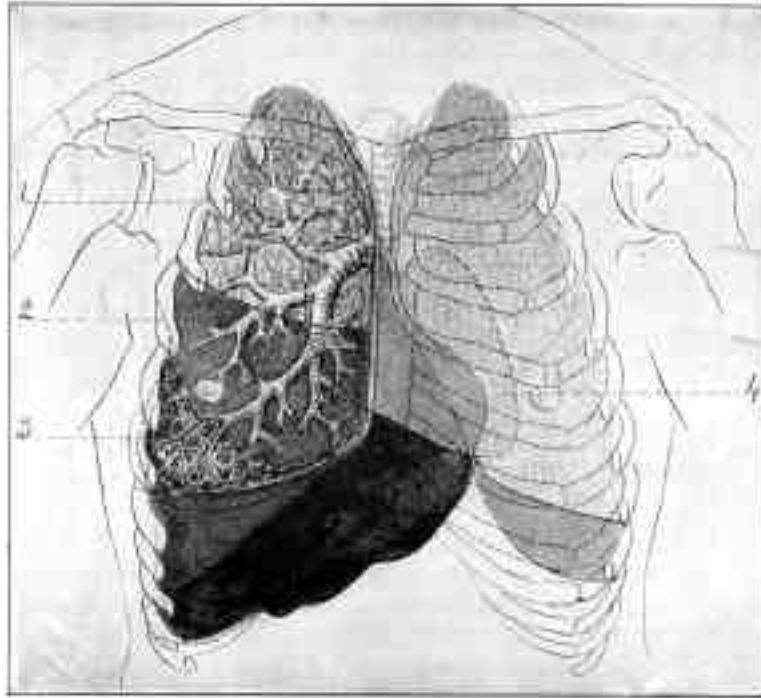


FIGURE 19. LOBAR PNEUMONIA; 1. UNAFFECTED AREA (UPPER LOBE); 2. CONSOLIDATED AREA (MIDDLE LOBE); 3. RESOLVING AREA (LOWER LOBE); 4. HEART IN NORMAL POSITION.—(Anders.)

Auscultation.—In the early stage, the rhythmical respiratory murmur is replaced by a dry or sibilant rhonchus, which soon is replaced by the coarse crepitant rhonchus, this latter sound resembling the crackling noise of salt when thrown on the fire, this crackling becoming finer each day as the air cells and finer bronchi become filled with the exudate. The sounds now are fine, resembling the sound of hair rubbed between the fingers. When consolidation is complete, crepitation ceases, to be resumed as resolution takes place, the crepitant sounds being reversed; viz., the very fine crepitant sounds being followed by the coarser or loud crackling sound, and in time by the musical rhythmical murmur of health.

During the stage of red hepatization, when the crepitant rales disappear, we have tubular breathing, as heard in health over the larger bronchi. The sound of the voice is transmitted through the consolidated lung with peculiar intensity, and is termed bronchophony; and when a peculiar nasal sound is imparted, the term egophony is used.

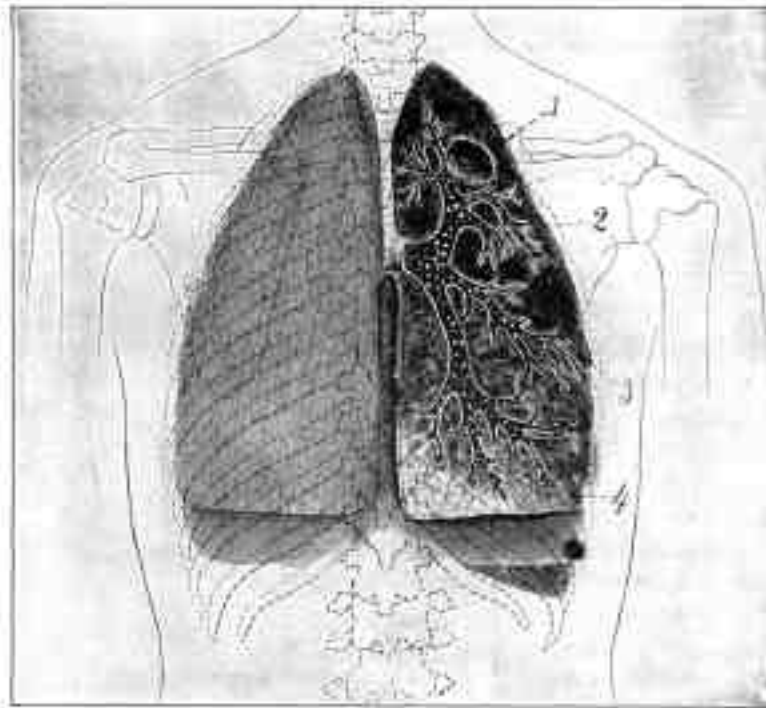


FIGURE 20. ACUTE PNEUMONIC PHTHISIS, POSTERIOR VIEW; 1, CAVITY; 2 and 3, CONSOLIDATION; 4, INFILTRATION; THE WHITE SPOTS INDICATE RALES.—[Anders.]

Complications.—*Pleurisy.*—The pleura is involved to some extent, in all cases of pneumonia where the surface of the lung is involved, and can hardly be called a complication; but where the pleura is early involved or takes precedence in the inflammatory process, it is termed pleuro-pneumonia. Occasionally we find pneumonia of one lung, and pleurisy on the opposite side. With this complication there is increased difficulty in breathing, the respiration being shallower and the pain more severe.

Bronchitis.—The inflammation often extends to the bronchi, and bronchitis is a frequent complication. Here the breathing becomes more difficult and the cough more harassing; the sibilant rales, followed by the mucous rhonchus, determine the condition.

Pericarditis.—This is not a very frequent complication, though in children it is found more frequently than in the adult. It occurs more often when the left lung and pleura are involved. The history of rheumatism is of importance in these cases. The symptoms are, increased dyspnea, diminished heart sounds, and a feeble pulse.

Endocarditis.—This occurs more frequently than pericarditis, and like

the latter is more apt to occur when the left lung and pleura are involved. If valvular troubles have previously existed, there is a greater tendency to this complication. The symptoms are obscure, even in severe cases, the conditions generally being discovered post-mortem.

Meningitis is a serious complication, though not very frequent. It occurs more frequently in children of an active nervous temperament. It will be recognized in the child by restlessness, rolling of the head, and starting in the sleep.

Gastric Complications.—These are recognized in two conditions,—one of irritation, and the other, atony. In the one, there is nausea and retching and tenderness over the epigastrium; the tongue is narrow and elongated, reddened at tip and edges. With this condition the inflammation is more active and the temperature higher.

Where there is atony, the tongue is full, broad, and heavily coated. The skin is not so dry and harsh, and the temperature does not run so high. Resolution is delayed, and there is a greater tendency to congestion of other organs.

Jaundice is not uncommon; when it occurs, all the symptoms are more intense.

Typhoid Pneumonia.—While pneumonia is a frequent complication of typhoid fever, enteritis seldom occurs as a complication of pneumonia. In the rare case where it occurs the symptoms are as follows:

“A protracted chill; febrile reaction coming up slowly; the pulse frequent, soft, and fluent; heat of the surface not greater than natural; coldness of extremities; bowels easily acted upon or tendency to diarrhea; limpid, frothy urine; dirty coating of the tongue; and especially that dullness and indifference so characteristic of typhoid or typhus diseases. The inflammation in this case is ataxic; there is difficult breathing and cough, with watery expectoration.

“Physical examination gives us rapidly increasing dullness on percussion to a certain degree, at which point it remains, sometimes, during the entire progress of the disease; there is no crepitant rhonchus, and the mucous rhonchus sounds hollow and distinct. This condition is of variable duration, sometimes the disease is slow and protracted for

weeks; at other times it is rapidly fatal.” (Scudder.)

Recurrence.—There are few acute diseases in which there is a recurrence as often as in pneumonia. Each attack may be more severe, though this is not necessarily so.

Diagnosis.—The diagnosis is usually not difficult. The sudden and marked chill or rigor lasting from thirty to sixty minutes; the high febrile reaction; the anxious expression on the face and the dusky red spot upon the cheek; the quick, shallow respiration; the short, dry, hacking cough; the sharp pain over the affected part; the sharp, crackling, crepitant rhonchus, followed by the fine crepitant rales; the dullness on percussion; the frothy sputum the first twenty-four or forty-eight hours, followed by rusty expectoration,—are symptoms that are so characteristic as to leave but little doubt, not only as to the disease, but also as to the degree and stage of the inflammation.

The doubtful case is found in old people, where the initial chill is either slight or entirely absent, and where the cough is slight or absent, and when the inflammation is deep-seated and but few physical signs are present.

Prognosis.—Although pneumonia is regarded as one of the most fatal of acute diseases, and, according to recent allopathic authorities, is progressively increasing, I am sure that a very large per cent should recover; that the mortality should not be over from three to five per cent. This may seem to be an extravagant statement to one who has practiced the treatment as advocated by the dominant school, but the record of Eclectic treatment in pneumonia will bear me out in the assertion. If seen early, the inflammatory process can be so modified that the severer types will be seldom seen, and an early convalescence assured.

Treatment.—If there is any one disease more than another that shows the superiority of Specific Medication over the old methods of treatment—and I might also add the present methods that are attended by a mortality of from twenty to forty per cent—it is pneumonia. The experience of the profession, for the last century or more, is that the more active or heroic the medication, the greater the mortality.

The expectant treatment, which is *no medication*, has yielded far better results than the old method of drugging, and while we would prefer

that to the old, we believe that there is still a much better way.

Pneumonia is a typical inflammatory disease, and if we have remedies that will overcome these conditions, we certainly have remedies that are curative.

General Management.—Where possible the patient should be placed in a large, sunny, and well-ventilated room. Plenty of fresh air must be admitted, though all draughts of air should be avoided. The temperature should be uniform, and not over 68° or 70°. The patient should have a loose woolen night-dress, and only sufficient covering to keep him comfortable. The care of the bed and secretions must be as scrupulous as in typhoid. Only one attendant should be with the patient.

Diet.—The diet should be liquid and consist of milk in some form or broths, and given at regular intervals. A good table water may be used freely.

Medication.—Wrongs of the circulation occupy the first place in many cases, but not in all. In some, wrongs of the blood itself precede all others; while in another class, wrongs of the nervous system take precedence. Such being the case, conditions have to be met and overcome before we can effect a cure, and it is this prescribing for definite conditions that brings about success.

If we keep well in mind the pathology of the different stages of this disease, we are not apt to become confused or go far wrong in the treatment. Thus, in the first stage, there is usually an active condition of the circulation; the heart beats rapidly, the pulse being *full, strong, and bounding*; the capillaries become *full* and distended, giving us the stage of engorgement. If we are to relieve tills engorged condition, we must slow the heart and circulation, and I know of no remedy that will accomplish this end with such happy results as veratrum, if used skillfully. It does not depress and weaken the heart like the coal-tar products, but acts kindly, slows the pulse, reduces the temperature, and relieves the obstructed venous capillaries. Its action is uniform and easily controlled, even in the large dose.

Aconite is the remedy where the heart's action is rapid, but the pulse is small but *hard* and *wiry*. It is generally prescribed in the *sthenia* of

children, while veratrum acts better in the adult. Should the heart be weak, as shown by a small, *feeble* pulse, aconite must not be given, save in the very small dose.

Pilocarpus or *jaborandi* acts kindly, where there is high temperature, great excitement of the nervous system, and a dry, hot skin.

With these remedies as our sedatives, we have the foundation for a successful treatment, for they not only relieve engorgement in the early stage, but materially assist in the removal of the exudates that follow, and, where carefully used, the second and third stages are so modified as to furnish but little need for alarm.

The indication for the remedies that have been so successfully used in pneumonia is as follows:

Veratrum.—One of the characteristic symptoms of the majority of pneumonia patients is a *full, free, bounding pulse*; in other words, there is an excess of heart power. Now, if we have a remedy that can reduce the force and frequency of the pulse, *without reducing* at the same time the vitality or resisting power, we have a remedy for this condition. Experience proves that we have such a remedy in veratrum. Our prescription, then, for this active, sthenic condition, as marked by the *full, bounding pulse*, will be this agent, and we will administer it as follows:

Veratrum	1 drachm.
Sulphate of Morphia	1 grain.
Aqua	4 ounces. M.

Sig. Teaspoonful every one, two, or three hours as the symptoms indicate.

The morphia used is to counteract the nauseating effects that sometimes follow the use of veratrum.

Jaborandi.—This is the remedy so highly extolled by some Eclectics, where the temperature is high, there is great excitement of the nervous system, and where the skin is hot and dry:

Specific Jaborandi	1 drachm.
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Aqua 4 ounces. M.
Sig. Teaspoonful every hour.

Aconite.—While the average pneumonia patient has a *full, strong, bounding* pulse, there are cases where just the opposite condition exists; the pulse is *small and frequent* and shows a defect in the heart's action, debility; the heart beats rapidly to make up for want of power. We find this pulse in children and patients of delicate constitution, and frequently in old people. The heart needs a stimulant or tonic; in such cases the *small* dose of aconite slows the pulse and increases the tone of the heart by overcoming irritation and quieting the nervous system. Aconite in the small dose is not a depressant. The prescription here will be:

Aconite 5 drops
Water 4 ounces
Sig. Teaspoonful every hour.

Given in this way the heart is not depressed, nor the vitality of the patient impaired. In the place of adding to the load the patient has to carry, we have relieved him of a part of his burden.

These *three* remedies form the foundation upon which we will build a successful treatment.

Bryonia.—This agent has been found of great value in diseases of the chest of an acute nature. When the pulse is hard and vibratile, and when the pain is sharp and lancinating, with flushing of the cheek, and there is a hard, harassing cough, bryonia will be the remedy to give relief. It also favors absorption of the exudate. If the pleura be involved, it is an additional reason for its use. It combines nicely either with aconite or veratrum, and can be dispensed with the sedative, or it may be used separately, alternating each hour with the sedative. It should be given in the small dose, not over five or ten drops in half a glass of water.

Asclepias.—This is another excellent remedy in diseases of the respiratory apparatus, and occupies an important place in the treatment of pneumonia. It acts upon the sudoriferous glands, overcomes the dryness of the skin, relieves the tight, hard cough, modifies the sharp pain, and hastens absorption. It also takes the *edge* off the *sharp* pulse,

adds tone to the heart, and quiets the nervous system. To get the best effects, give from five to ten drops in hot water every one, two, or three hours. It is especially useful in infantile pneumonia with high fever and dry skin.

Ipecac.—Ipecac, if given in small doses, is one of our best remedies in overcoming irritation of the mucous surfaces; and in children, where there is an irritating cough and the child is unable to obtain rest, the small dose, say five to ten drops in half a glass of water, will be found of great value.

Lobelia.—I would hardly know how to treat infantile pneumonia without the small dose of this old but valuable remedy. In those cases where the finer bronchioles become choked with the exudate, and the child's breathing is labored, and there is a mucous rattle, I know of no other agent that can take its place. In the adult, there is labored respiration, a sense of fullness and weight and oppression about the heart, while the pulse is oppressed or small and feeble. There is increased secretion of mucus in the respiratory passages, but the patient seems unable to remove it. In these cases lobelia, five to ten drops, in water four ounces, will give the best results.

If the patient is seen early, few cases will need any other than the above-named remedies, and the mortality will be very low.

Occasional Remedies.—*Macrotys.*—When the patient complains of muscular soreness, or where there is a tendency to rheumatism, macrotys will prove an excellent agent, ten to twenty drops, in water four ounces, a teaspoonful every hour.

Sanguinaria.—This is a good remedy where there is a tickling sensation in the throat, resulting in an almost constant paroxysm of coughing. I like the action of nitrate of sanguinaria here better than that of the tincture and give,

Sanguinaria	1/4 grain.
Aqua and Simple Syrup	2 ounces each. M.
Sig. Teaspoonful every hour.	

Phosphorus.—Where the pulse is small, the skin cool, and temperature

subnormal, this is a good remedy to start up the fires and give the patient a chance for his life. Very rusty sputum is also an indication for this agent.

Sticta Pulmonaria.—Where the patient has a hard, racking cough, with pain in the occiput and between the shoulders, we should not forget this remedy; ten to thirty drops, to water four ounces, a teaspoonful every hour.

Complications.—*Gastro-Intestinal*.—In some cases there is great irritation of the stomach and bowels; so much so that neither food nor medicine is retained. The tongue is red at the tip and edges, and it is narrow and elongated; there is nausea and vomiting and retching, tenderness on pressure over the epigastrium, and frequently diarrhea. Respiration is shallow and painful; skin dry, and constricted. Fortunately the remedies to give relief to this irritable condition are also useful for the primary lesion—aconite and ipecac, with a sinapism over the epigastrium. If the nausea persists, bismuth in mint-water will be useful. Small bits of ice may be held in the mouth, thus allaying the thirst and quieting the nausea.

In place of this condition there may be atony; in either case, absorption of food and remedies is prevented. Here the tongue is broad and pallid, with paleness of the mucous membranes, or there may be a heavy, pasty coating upon the tongue. The temperature is not so high as in the former case, nor the cough so continuous or harassing.

Nux Vomica.—If the tongue be broad and pale, with pallidity of the mucous surfaces, five to ten drops of nux, in water four ounces, a teaspoonful every hour, will be good medication.

Podophyllin.—If the tongue be broad and full, with a dirty, yellow coating, and a sense of fullness of the abdomen, and if there is a dirty, yellow, doughy skin, the bowels sluggish, the respiration oppressed, the superficial veins full and prominent, Podophyllin will do good service. It may be given in one-half-grain doses every two, three, or four hours, till the bowels open and the tongue cleans, or we may use the second trituration, three to five grains, in the same way.

Antiseptics.—During some epidemics, there seems to be a tendency to sepsis, and the symptoms are of the typhoid type. The principal remedies

in these cases are the antiseptics.

Sulphite of Sodium.—Where the tongue is moist, with a nasty, dirty coating, a saturated solution of sulphite of sodium in table-spoonful doses every three hours, is a most excellent remedy.

Chlorate of Potassium.—Where the tongue has a moist, yellow, pasty coating, with a fetid breath, a saturated solution of potassium chlorate and phosphate of hydrastin, will be the best remedy.

Acids.—If the tongue be dry and grown, with redness of the mucous membranes, then hydrochloric acid, C. P. 10 to 20 drops, to water and syrup, two ounces each, will replace the alkalies.

Echinacea.—When the tongue is full and of a dusky hue, and the tissues of the same dusky color, echinacea from one to two drams, to water four ounces, a teaspoonful every hour, gives good results.

Baptisia.—The tissues appear as though frozen, are full and dusky; the tongue is full and purplish in character, while the expectoration is dark, thin, and of a prune-juice order; there is diarrhea of an offensive character,—with these conditions, baptisia becomes a prominent agent: ten to thirty drops of the tincture, to water four ounces, a teaspoonful every hour.

Wrongs of the Nervous System.—Irritation of the nervous system, with a tendency to meningitis, will give us the flushed face, bright eyes, and contracted pupils; the patient is restless, uneasy, and wakeful; the temperature is high. To the appropriate sedative we add ten to thirty drops of gelsemium, and give a teaspoonful every hour.

Rhus Tox.—Where there is irritation of the cerebro-spinal centers—as will be shown by the sharp stroke of the pulse, the restless, irritable condition, the sudden starting in the sleep, the contracted and pinched features—*rhus tox.* will be our most valuable remedy; five to ten drops, in water four ounces, to which has been added aconite five drops; a teaspoonful every hour.

Belladonna.—There is not infrequently marked capillary congestion. The pulse is obstructed and feeble, the face is flushed and dusky, the extremities are cool, the eyes dull, and the pupils dilated, where the

patient is inclined to doze or sleep most of the time. With these evidences of general congestion, we give belladonna 10 drops, to water four ounces, a teaspoonful every hour.

Quinia.—If periodicity is a marked feature and the tongue is moist, quinia and hydrastin will prove beneficial.

Strychnia.—Where there is a feeble pulse, with tendency to heart-failure, strychnia, one-thirtieth grain every four or five hours, is demanded.

Local Applications.—It will be difficult to convince some of the older practitioners that a pneumonia patient will do as well, if not better, with a light flannel bandage over the chest, than the mush-jacket or the old hop-poultice. I am sure that many patients have been harmed by the improper application of the poultice. Where they are allowed to grow cold, there is great danger of chilling the patient. If they must be used, always have two poultices made, and while one is on the patient, the other may be in a steamer on the stove, and as soon as one begins to get cold, have the hot one at the bedside so that it may immediately be placed upon the chest as the other is removed.

A better plan, however, is to spread a flannel or cotton cloth with lard, and dust emetic powder over the surface, and, after heating this, envelop the chest; or if but one lung be involved, cover the affected side. Where the skin is very tender, this powder sets up too great an irritation, and we resort to other measures.

Libradol spread upon a cloth, and applied hot, will give good results. It should be renewed night and morning. These latter applications are light, do not oppress the patient, are easily applied, and there is no danger of taking cold while changing them.

BRONCHO-PNEUMONIA.

Synonyms.—Capillary Bronchitis ; Lobular Pneumonia; Catarrhal Pneumonia.

Definition.—An inflammation of the terminal bronchi, air-vesicles, and interstitial tissue of a few or many of the lobules.

Etiology.—This is peculiarly a disease of early childhood and old people, though enfeebled vitality and prolonged sickness of any kind predisposes to broncho-pneumonia. In children it is especially apt to follow the infectious diseases that affect the bronchi and are attended by a cough, such as measles, whooping-cough, influenza, diphtheria, and scarlet fever.

Tubercular patients, especially where the lungs are involved, are frequent subjects of this form of pneumonia. Typhoid fever, small-pox, and diseases of like character, are not infrequently complicated with this disease.

The inhalation of particles of food or broken-down material from the throat, as from diphtheria or tonsillitis, may give rise to inflammation, and is known as inhalation or deglutition pneumonia.

The disease is seen most frequently in the winter and early spring-months, when the weather is marked by sudden changes.

Pathology.—The pathological changes are essentially those of bronchitis and of pneumonia in about eighty per cent of the cases, both lungs being involved.

The pleural cavities usually contain their normal amount of fluid, though their surfaces, pulmonary and parietal, may exhibit inflammatory patches—fibrinous pleurisy.

In most cases, the lung crepitates on handling, and will float when placed in water, though the small, mahogany-colored nodules found distributed throughout the lung, when excised, sink in water. The nodules are found in greater numbers in the posterior part of the lower lobes. These nodules vary in size from a pinhead to a pea, and, when pressed, a small amount of blood exudes. These nodules may be so numerous as to resemble a hepatized lung; where these indurated patches are few in number, the intervening lung tissue may be normal, though usually it is congested or edematous.

Surrounding the nodules, emphysematous lung-tissue is not infrequently seen, with occasional collapsed areas—atelectasis.

The bronchi, small and medium-sized, are the seat of catarrhal inflammation, the walls of which are swollen and infiltrated with round cells. The exudate within the bronchi consists of leukocytes and microorganisms.

Northrup speaks of a mechanical dilatation of the smaller bronchi, which occurs most frequently in the lower lobes.

Symptoms.—*Primary Form.*—Though a much rarer form than the secondary, broncho-pneumonia sometimes begins as an acute primary affection, the symptoms being those of acute bronchitis. The usual prodromal symptoms, malaise, with loss of appetite, precede the initial chill, which is followed by febrile reaction. The temperature is usually between 100° and 103°. though in exceptional cases it may reach 104° or 105°.

A hard, dry cough, with a sense of constriction in the chest, accompanied by a sharp pain, is a characteristic feature. The respiration is rapid, and in children may reach 60, 70, or even 80 per minute. Dyspnea is quite marked. The pulse varies from 120 to 140 per minute. Expectoration attends the cough after the first twenty-four hours, at first a glairy mucus, frequently tinged with blood, which later becomes mucopurulent in character.

Secondary Form.—This is the form usually seen, and comes on more gradually, the earlier symptoms being those of the preceding bronchitis. Not infrequently, the pneumonia complication is not suspected during life.

The first symptom to call attention to the true nature of the disease is the sudden increase in the respiration, quickened pulse, and cyanotic appearance. The expectoration is muco-purulent in character. The cough is hard and harassing, and is accompanied by pain and constriction of the chest.

Physical Signs.—In the primary form, the sibilant and mucous rales are the most prominent signs, the subcrepitant appearing as the disease progresses and the areas of the vesicular changes increase. In the secondary form, the subcrepitant fine, moist rales are usually present.

Palpation usually reveals local areas of vocal fremitus.

Percussion reveals areas of dullness, where much consolidation exists, but where deep-seated and confined to small spots, is negative.

Complications.—Cerebral complication is not a very rare occurrence, the child becoming restless, the face is flushed, and the head is rolled from side to side; delirium may ensue, while a convulsion is not unusual.

Pleurisy may occur, and tuberculosis is not uncommon. Gangrene and abscess of the lung is a more rare sequela.

Diagnosis.—The diagnosis is readily made as a general rule. The persistent bronchitis with sudden rise of temperature, the dyspnea, hurried respiration, and the rapid pulse, together with the physical signs, are sufficient to determine the character of the disease.

Prognosis.—The prognosis is favorable except in feeble, delicate babies, and in very old people.

Treatment.—The treatment is similar to that of bronchitis or lobar pneumonia. The specific remedies being given for specific conditions.

Aconite.—Where there is fever, with small, frequent pulse, there is no better remedy than aconite. This may be combined with any one of a half-dozen remedies that are frequently called for.

Rhus Tox.—Where there is restlessness and the child is unable to sleep, the pulse quick and sharp, rhus goes nicely with the sedative aconite. Where the smaller tubes are choked up, and oppression is a marked feature, lobelia is the remedy par excellence.

Ipecac.—We sometimes meet a case where there is marked irritation. The cough is hacking and persistent; the tongue is red and pointed; the pulse is quick and hard; the child is cross and peevish. Here ipecac alone, or combined with the sedative, is sure to give good results.

Tartar Emetic.—Where the cough is loose, and the bronchioles are choked with mucus, there are few, if any, remedies that can take the place of tartar emetic. It was a most effective remedy with my father, who used it for over forty years with the best results. Take about one-tenth of a grain of the crude drug to a half a glass of water; teaspoonful

every hour. If nausea or vomiting follow, add more water.

CHRONIC INTERSTITIAL PNEUMONIA.

Synonyms.—Cirrhosis of the Lungs; Fibroid Pneumonia; Fibroid Induration.

Definition.—A chronic inflammation of the lungs, in which the normal air-cells are replaced by fibrous or connective tissue, followed by induration and atrophy of the lung.

Etiology.—It is not definitely known why fibroid changes take place in normal tissue following inflammatory conditions. The disease is nearly always secondary, the plastic exudate accompanying the primary lesion becoming organized into fibrous tissue in place of being removed by the absorbents. It may follow several pulmonary affections; thus, in lobar pneumonia, where resolution is long delayed, the exudate fills the air-cells, becomes organized, and the parenchyma of the lung is changed into fibrous or connective tissue.

Broncho-pneumonia often precedes the disease, while atelectasis and chronic bronchitis are not infrequently followed by cirrhosis of the lung.

Pleurisy.—Chronic pleurisy may be the forerunner of the lesion, the process of tissue formation extending into the lung from the thickened pleural membrane.

As a primary cause may be mentioned long-continued inhalation of different kinds of dust; thus we have cirrhosis or phthisis from the inhalation of dust in the stoneyard, or from workers in iron, brass, or coal, flour-mills, etc.

Pathology.—The disease is nearly always confined to one lung, though, in very rare cases, both lungs may be involved, while localized areas are the rule.

The affected lung becomes atrophied, and, in extreme cases, may be no larger than the closed hand, Anders recording a case where the measurements were only three by four inches. As a result of the shrinkage of lung-tissue, the heart, especially the right side, undergoes

hypertrophy. The indurated lung presents a rough or nodular surface, is heavy, dense, tough, and resisting on section.

A cut surface shows the tissue dry and glistening and of varied appearance, according to the character of the irritant. The blood vessels are atrophied, and, in some cases, show but a trace of their character. The alveolar structure in extreme cases is replaced by fibrous tissue. When tuberculosis exists, cavities of varying size and number are found.

The fellow lung generally undergoes compensatory emphysema. The pleura is generally very much thickened, and adhesions more or less extensive between its free surfaces are found, and not infrequently between the pleura and pericardium.

Symptoms.—When the disease begins as an acute pneumonia, there is nothing in the earlier stages to suggest its fibroid character. The usual time for convalescence, from seven to ten days, having passed, and the dyspnea becoming a chief symptom, and the cough persistent or paroxysmal, the true nature of the disease should be suspected.

As it ordinarily begins, cough and dyspnea are among the first prominent symptoms. On slight exertion, as climbing stairs or rapid walking, the breathing becomes labored and hurried and the cough distressing. The patient gradually loses flesh and strength, and the common verdict is consumption. When the bronchi become dilated, the characteristic symptoms of bronchiectasis are present.

There is no fever; in fact, a subnormal temperature is quite common.

Physical Signs.—Inspection shows a retraction of the affected side, an obliteration of the intercostal spaces due to the ribs closing the opening, and an immobility of the affected side made prominent by mensuration. The heart will be inclined to the affected side. The chest wall is prominent on the sound side, due to compensatory emphysema.

Percussion.—Percussion shows a marked difference in the two sides,—dullness or flatness on the affected side, with a tympanitic note where a cavity exists, or due to a dilated bronchus; on the opposite side there is hyper-resonance.

Auscultation.—Various sounds are revealed by auscultation. Where cavities exist, the cavernous or amphoric sound will be heard, otherwise the respiratory sound will be feeble and distant. Bronchial breathing is the rule.

Diagnosis.—The diagnosis is not readily made early in the disease, but as retraction of the affected side becomes prominent and the physical signs already noted are present, the diagnosis becomes easy.

Prognosis.—The disease is not curable, though life may be prolonged for years. Recurring bronchitis is apt to accompany the disease, and acute pneumonia of the opposite lung may terminate the life. Rarely, death results from failure of the right heart.

Treatment.—The treatment consists in securing a better nutrition and building up the general health; good, nutritious food, an outdoor life in a suitable climate, one where there is a maximum amount of sunshine, moderate altitude, and where the climate is dry.

The medicinal treatment will be symptomatic, selecting remedies for relief of cough and such other conditions as may arise.

PULMONARY HEMORRHAGE.

Synonyms.—Hemoptysis ; Broncho-pulmonary Hemorrhage: Bronchorrhagia; Pneumorrhagia.

Definition.—An expectoration of blood, due to hemorrhage from the mucous membrane of the bronchi, trachea, or larynx, and more rarely from erosion or rupture of capillaries in lung cavities or parenchymatous tissue.

Bronchorrhagia.—When the hemorrhage is from the bronchial tubes, the term bronchorrhagia should be used, while an escape of blood into the air-cells and interstitial tissue is known as pneu-morrhagia.

Etiology.—Although hemoptysis is not necessarily a serious condition, occasionally occurring in young persons of seemingly good health, it is usually one of the early symptoms of pulmonary tuberculosis, and should suggest to the physician a thorough examination of his patient.

The hemorrhage may result from congestion of the lungs, due either to pulmonary lesions or from cardiac derangements, especially mitral affections. In capillary bronchitis, not infrequently the distended capillaries give way, and hemorrhage results. Broncho-pneumonia, especially when it is the forerunner of tuberculosis, may also be a cause; severe congestion of the bronchi or ulceration of the larynx, trachea, and bronchi may also give rise to it by erosion of some of the arterial twigs. It may accompany malignant affections, infectious fevers, scurvy, purpura hemorrhagica, hemophilia, and other lesions. Cancer of the lung, gangrene, and abscess must be regarded as causal factors.

Pulmonary apoplexy, or an escape of blood into the air-cells and interstitial tissue, with or without laceration of the parenchyma, may be diffuse or circumscribed. It may be due to penetrating wounds or ruptures of a thoracic aneurism.

Vicarious hemoptysis is most likely an early symptom of tuberculosis rather than a substitute for the menstrual flow.

Pathology.—There is, in most cases, rupture of the capillaries of the bronchial mucous membranes, which at first are swollen and red, but soon become very pale. If tubercular cavities are formed, a ruptured aneurism is sometimes seen, or large bloodvessels eroded by ulceration. If pulmonary apoplexy has existed, the parenchyma may be lacerated; otherwise, the air-cells and interstitial tissue are infiltrated with blood, which gives them a reddish-brown cast.

Symptoms.—Usually the hemorrhage comes on suddenly, generally after some severe exertion, or undue excitement from coughing, or great vocal effort; while at other times it comes on when least expected, as during sleep. One of my cases invariably had his hemorrhage after going to sleep, though during the day his labor was quite severe.

The first evidence of the hemorrhage is a welling up in the mouth of a warm, salty fluid. The quantity varies greatly, though always appearing to the patient much larger than it really is. It may be that a mouthful may be coughed up every few minutes for an-hour or more, then cease for several days or weeks. Again, an occasional mouthful will be expectorated for several days in succession. Where there is a rupture of an aneurysm there may be an alarming gush of blood that proves

rapidly fatal. One such case occurred in my practice about ten years ago, when a child, suffering from pulmonary tuberculosis, suddenly startled the mother by a frightful gush of blood, and died within five minutes.

Where the hemorrhage is profuse and prolonged, there is usually more or less dyspnea, the patient assuming a distressed appearance and soon becoming anemic. The blood is usually bright red and frothy, containing air-bubbles, though where the blood wells up in the mouth without coughing, the patient is apt to swallow more or less of it, and when this is spit up or vomited it will be dark and clotted.

Diagnosis.—This consists in determining the source of the hemorrhage. That from the lungs and smaller tubes is bright red and frothy. From the posterior nares and pharynx, the expectoration is streaked with blood and is airless. From the stomach, the blood is dark and clotted.

Prognosis.—Although hemoptysis usually signifies tuberculosis, it is not necessarily of this character, and the patient may live for years, finally dying of other lesions. I have in mind a lady who, thirty-five years ago, had several hemorrhages, and of whom it was said she would die early of consumption, who is still living, and has two grown daughters.

While alarm is usually felt by the patient, immediately fatal results very seldom occur. I have known of only one such case in twenty-five years of practice. The prognosis, then, as to life, is generally favorable, save from the rupture of an aneurysm or erosion of large branches of the pulmonary artery.

Treatment.—The patient should be placed in the recumbent position, and his fears allayed as to the results of his attack. All excitement is to be avoided and the patient encouraged as to the outcome. Small bits of ice may be swallowed, and cold drinks encouraged. Gallic acid in five to ten grain doses may be given every thirty or sixty minutes, or a mixture of oil of cinnamon and equal parts of oil of erigeron may be given, five to ten drops. on sugar, every twenty, thirty, or sixty minutes.

Should the hemorrhage be active, with a full, strong, bounding pulse, add tincture of veratrum 1/2 drachm to water four ounces, and give a teaspoonful every half hour until an impression is made upon the lieart,

when the remedy should be given every one or two hours.

If the hemorrhage is passive in character, carbo. veg. will be a good remedy. Dr. Scudder placed great reliance upon this agent, and, from its use in other passive hemorrhages, I would advise its use. Of the first trituration, give two or three grains every hour. *Mangifera indica* is used where the hemorrhage is passive in character. Dose, three to five drops in water, every one, two, or three hours.

Lycopus Virginicus is a favorite remedy with Eclectics, and may be given as an infusion or the spec. tincture. Where the hemorrhage is due to cardiac lesions, cactus, digitalis, and like remedies, will be given. One must not forget ipecac in these cases. It may be given to arrest hemorrhage, but is especially useful during the interim of attacks. The powder in grain doses or the spec. tincture may be given.

Of the domestic remedies, salt and alum should not be overlooked. Following an attack of hemorrhage, the patient should be kept quiet and in the recumbent position for a few days, especially when the hemorrhage has been severe, and remedies given to counteract the loss of tone due to the hemorrhage.

The administration of iron, the bitter tonics, and a nutritious and easily digested food will be good treatment. The patient, as he gains strength, should take light exercise and be much in the open air. To allay fear of a future hemorrhage, it is well to provide the patient with a few ten-grain gallic-acid powders, with instruction to take one at the first symptom of an attack.

PULMONARY ATELECTASIS.

Synonyms.—Apneumatosi; Collapse of the Lung.

Definition.—A collapse of the air-vesicles of the whole or part of a lung, and which may be either congenital or acquired.

Etiology.—*Congenital.*—This form is usually due to causes that prevent a prompt and complete establishment of the function of respiration at birth, rather than disease of the pulmonary organs. Thus a protracted labor, a compression of the cord, or a placental separation,

a premature birth, or a plugging of the bronchioles by mucous or liquor amnii, where the child draws into the larynx these secretions during an inspiratory effort before the mouth has cleared the maternal outlet, may give rise to atelectasis.

When acquired, it is always a secondary affection, and is usually due to *obstruction* or compression.

Cases due to obstruction are those preceded by measles, whooping-cough, diphtheria, influenza, bronchitis, or broncho-pneumonia; the bronchioles becoming filled with a viscid mucus or muco-pus, the air fails to enter the vesicles, and as soon as the air already present escapes, or is absorbed, collapse takes place.

When due to compression, it is from pleural or pericardial effusions, anasarca, cardiac hypertrophy, or abnormal growths. Conditions weakening the respiratory functions also favor atelectasis; thus paralysis of the pneumogastric nerve, enfeebled vitality, as in rickets, poor chest development, feeble inspiratory muscles, and when the environment tends to lower vital force.

Pathology.—The collapse may involve quite a large area, diffuse atelectasis, or it may be confined to small patches, lobular atelectasis, the former being more marked when congenital. The affected portions are airless, do not crepitate, and sink when placed in water. They are slightly depressed from the general surface of the lung, are dense, and of a dark bluish or purplish color; when cut, a dark liquid may be pressed from their surface.

If the disease is recent, the collapsed portions, after death, may be inflated through the bronchus; but if of long standing, the vessel is totally destroyed. The pleura usually remains normal.

Symptoms.—The symptoms are chiefly those of imperfect breathing and defective aeration of the blood, the severity of which depends upon the rapidity of development and amount of lung tissue involved. In congenital cases, the child comes into the world more or less asphyxiated, the respiration is labored, and the child is more or less cyanotic. It appears feeble, sleeps most of the time, nurses with difficulty, or not at all, and has a feeble cry, or moans in its sleep. The surface is cool; the temperature normal, or subnormal. Muscular

twitching may be the forerunner of convulsions and death.

In acquired cases, the primary lesion may so overshadow the atelectatic condition as to be entirely overlooked, especially when but few vesicles are involved. If preceded by bronchitis or broncho-pneumonia, which is generally the case, and if the lesion be extensive, there will be a sudden aggravation of all the symptoms. The breathing becomes very rapid, is shallow and arrhythmic. The patient is restless, the nose, ears, and finger-tips become blue, the extremities are cold, and the temperature is often subnormal.

The physical signs depend upon the extent of the collapsed tissue; thus, if the patches are small and involve both lungs, the signs are negative, while if large patches are involved, the physical signs are those of a consolidated lung.

Diagnosis.—In the congenital form, where marked enough to give rise to characteristic symptoms, the diagnosis is comparatively easy. The acquired form, however, is often quite difficult, associated as it is with capillary bronchitis, catarrhal pneumonia, and lobar pneumonia.

The sudden appearance of grave symptoms in bronchitis—such as quick, shallow breathing, rapid pulse, cyanotic discoloration, with fall of temperature—is the most important diagnostic feature. The absence of fever would be important in distinguishing it from pneumonia.

Prognosis.—If congenital, and the child be feeble or premature, or the fetal circulatory openings remain unclosed, the prognosis is unfavorable; if, however, the lesion is slight and restorative measures are early used, the prospects are more hopeful.

In acquired atelectasis, the prognosis is usually grave, though not necessarily fatal. When the result of whooping-cough or severe broncho-pneumonia, there is usually a fatal termination.

Treatment.—In infants, the air-passages should be cleared, and, where possible, artificial respiration should be practiced, and the child prevented from remaining too quiet. Its sleep should be disturbed at frequent intervals, and crying and coughing provoked, thus securing forced inspiration. In premature births, the incubator has been suggested as a possible means in prolonging life until nature can carry

on the vital processes unaided by artificial heat.

In the acquired form, in addition to the measure used for the primary lesion, capillary bronchitis, lobar pneumonia, whooping-cough, etc., the patient should be instructed to change his position frequently, to avoid lying on the back for more than a few minutes at a time, and to practice full inspiration at frequent intervals. In extreme cases, inhalation of oxygen is to be advised.

PULMONARY EMPHYSEMA.

Definition.—A dilatation of the air-vesicles or a rupture of the vesicles, allowing the air to escape into the connective tissue. The forms of emphysema are: Hypertrophic or large-lunged emphysema, atrophic or small-lunged emphysema, and compensating emphysema.

Etiology.—While it is true that, in rare cases, emphysema has occurred where there has been no apparent cause other than a feeble condition of the lung tissue, the strain of normal respiration being too great for the vesicles, the common and almost invariable cause is the result of severe straining due to disease of the respiratory apparatus, or to the physical exertion necessarily used in certain lines of work. Thus the blowing of wind instruments, or the strain upon the lung as used by glass-blowers.

The most frequent cause is the violent strain attending the paroxysm of coughing in bronchitis, whooping-cough, or asthma. Although found in all ages, it occurs more frequently after middle life, and more frequently in males than females, the greater exposure among the former readily accounting for the difference in sex.

Pathology.—The characteristic change in the lungs is the loss of its elasticity from over-distention of the air-vesicles, and consequent weakening of the elastic tissue of the alveolar septa, As a result, the lungs are of undue size, being greatly distended, and do not collapse when the chest is opened. The apices project above the clavicles, while the diaphragm is displaced downwards. The voluminous lungs crowd the thorax, giving it the characteristic barrel-shaped thorax.

In color, the lungs are gray, being almost bloodless, though they may be

streaked with pigment. To the touch they are soft, downy, and may pit on pressure. They do not crepitate, and when placed in water float higher than the normal lungs. The walls of the alveoli, from pressure, become very much distended and lose their elasticity. Often the septa are destroyed, causing the coalescence of several cells.

The bronchial mucous membrane shows chronic inflammation, and is frequently bathed in muco-pus. The right heart is generally hypertrophied, due to obstruction of the pulmonary circulation.

Where there are pathological changes in a portion of, or in an entire lung, such as tuberculosis, adhesion pleurisy, and in lobar pneumonia, the other lung may become emphysematous from the increased work thrown upon it, and is known as compensating emphysema.

In elderly people, atrophy of the lung sometimes occurs, the alveolar walls and septa completely atrophying; there is a coalition of air-cells, which gives rise to large air-sacs, though the lung itself is much smaller than in health. This is known as senile emphysema.

Symptoms.—There are no characteristic symptoms in the early stages, the disease coming on slowly and insidiously, the only symptoms being those of the primary disease, bronchitis, asthma, or whooping-cough.

The first notable symptom is dyspnea, which occurs often after slight exertion, such as going upstairs or performing the daily duties more hurriedly than usual. A hearty meal may be attended by shortness of breath.

As the disease progresses, the dyspnea increases; at first the most marked obstruction is in expiration; but later, as in asthma, both inspiration and expiration seem equally labored, and are attended by more or less wheezing.

Cyanosis.—As the disease progresses and the right ventricle becomes involved, the patient takes on a cyanotic appearance. At first the lips and fingers become blue, but as compensation gives way, or when the dyspnea is severe, the face becomes puffy and very blue.

Cough.—This is due to the bronchitis, that usually precedes and accompanies the emphysema, being worse in the fall and winter

months. Expectoration varies in quantity and consistency, and corresponds to the type of bronchial inflammation. The general health naturally suffers, the patient losing flesh and strength. The temperature is normal or subnormal, while the pulse is feeble, though not much more frequent, save after exertion.

The patient is slightly stooped, and becomes cachectic, owing to cardiac disturbances with congestion of the viscera; there is edema of the feet, though generally dropsy is rare.

Physical Signs.—Inspection reveals the characteristic “barrel-shaped chest,” the thorax being rounder than when normal, the antero-posterior diameter being equal and sometimes greater than the transverse. The sternum, scapulae, and clavicles are prominent. The shoulders are drawn forward, and the patient appears stooped. The interspaces of the ribs are widened on inspiration and expiration, and the chest is raised and lowered as though a solid cage, rather than expanded. The respiratory muscles are prominent.

The apex beat disappears, and epigastric pulsation is noticed. In the advanced state the veins of the neck are distended and pulsate.

Palpation reveals a diminished tactile fremitus, a feeble apex beat, which finally disappears, a distinct systolic shock over the ensiform cartilage, due to changes of the right heart, and a marked epigastric pulsation.

Percussion gives a hyper-resonant or tympanitic sound, the usual cardiac dullness disappearing, owing to distention of the lungs; the normal dullness over liver and spleen being much lower, owing to downward displacement.

Auscultation.—The vesicular respiratory murmur is lost, inspiration is short, while respiration is prolonged. When bronchitis is present, the rales peculiar to that affection are noticed. There is a pronounced accentuation of the pulmonary second sound.

Diagnosis.—The diagnosis is comparatively easy, and scarcely can be taken for any other disease. The characteristic “barrel-shaped chest,” the absence of the apex beat, the epigastric pulsation, the hyper-resonance of the chest, the dyspnea and cyanotic appearance, are conclusive

evidence of emphysema.

Prognosis.—While the patient may live for years, if too great physical exertion is not used, the prognosis is unfavorable, the disease being progressive, finally terminating fatally.

Treatment.—Where possible, the patient should be removed to a dry, equable climate. Any obstruction of the nasal cavities or pharynx by polypi, adenoids, etc., should be removed. The diet should be carefully selected, sugar and starchy foods restricted, and alcoholic beverages prohibited. Such remedies as bryonia, ipecac, lobelia, sticta pul., tartar emetic, and sanguinaria will be useful in relieving the bronchitis.

Cactus, strophanthus, crataegus, digitalis, and other cardiac remedies will be used in the latter stages. Laxatives and diuretics should be used as may be indicated.

PULMONARY ABSCESS.

Synonyms.—Abscess of the Lungs; Suppurative Pneumonitis.

Definition.—A collection of pus in the lung, accompanied by degeneration of tissue.

Etiology.—Abscess of the lung is due to septic infection, following inflammation. It may follow lobar or lobular pneumonia. It is prone to follow aspiration or deglutition pneumonia, where septic conditions of nose and throat exist. Chronic tuberculosis is also accompanied frequently by abscess of the lung.

Embolic or metastatic abscesses are usually multiple, and are due to septic material carried to the lung through the circulation, as from malignant endocarditis, pyemia, pyonephrosis, and like conditions.

They may be due to perforations from without, and the lodgement of foreign bodies, such as bullets, this being common during the war. It may also be caused by abscesses of other parts, as of the liver, spleen, or to carcinoma.

Pathology.—The abscess may involve one or more lobules or engage

almost an entire lobe. The favorite location is the lower lobes, and the right more frequently than the left. They are generally situated at the anterior portion of the lung, and when in contact with the pleura give rise to purulent pleurisy by direct infection. When the abscesses are small, they may be scattered throughout the entire lung.

Symptoms.—The symptoms are not characteristic. The fever is of a septic type, with chill and night-sweats. Cavity signs are usually noted. There is cough, with expectoration of fetid pus, in which shreds of broken-down lung-tissue may be seen. The symptoms of the primary disease should also be taken into consideration.

Prognosis.—The prognosis should be guarded. Where the previous health has been good and the environments are first-class, the outlook is hopeful, especially when following acute diseases. The chronic form is less favorable.

Treatment.—The treatment will be antiseptic and reconstructive. Calcium sulphide should be given four times a day. Echinacea may be employed to correct septic processes. Iron, quinia, and strychnia as a reconstructive, may be of much benefit.

The patient should reside in a climate where he may be much in the open air and sunshine, good, nutritious, and easily digested food furnished, and the secreting organs kept in good condition.

GANGRENE OF THE LUNG.

Definition.—A Putrefactive Necrosis of the Lung, either circumscribed or diffuse.

Etiology.—Gangrene of the lung can only occur where the organ has previously been weakened, hence is always a secondary affection. Putrefactive bacteria thrive in the necrotic soil, but whether the cause or the result of the necrosis is a mooted question. It may follow lobar pneumonia, aspiration-pneumonia, broncho-pneumonia, fetid bronchitis, thrombosis of the pulmonary artery, rupture of a bronchus, from an ulcerated or cancerous esophagus, from pressure due to tumors or thoracic aneurism, and from sepsis due to protracted adynamic fevers.

Pathology.—In the diffuse, when due to lobar pneumonia or the plugging of a large branch of the pulmonary artery, a large part of the lung becomes a dark, greenish brown, or a black, fetid, pultaceous mass, from the center of which softening rapidly proceeds, forming an irregular cavity, containing a foul-smelling, disgusting, greenish fluid.

In the circumscribed form, the disease may involve one or both lungs, usually selecting the dependent portions, and the right more often than the left. The part affected assumes a dark-brown or greenish hue, becomes soft, and early assumes a fetid purplish mass; necrosis beginning in the center, a cavity soon forms. If located near the pleura, putrefaction may occur, giving rise to pyopneumothorax. A bronchitis is always an accompanying lesion, the bronchi containing an offensive and often putrid mucus.

Not infrequently there is found in connection with this lesion, abscess of the brain, liver, and spleen.

Symptoms.—In addition to the symptoms of the primary disease, the cough becomes more pronounced, and is attended by profuse expectoration of a peculiarly offensive character. When allowed to stand, the expectorated material separates into three layers; the upper, a yellowish, turbid brown froth; the middle layer, a clear watery fluid; and the bottom layer, the heavier material, blood, pus, and shreds of lung tissue. The microscope reveals putrefactive bacteria, pus, elastic tissue, fat, crystals, and granular material.

The respiration is slightly increased in frequency, and the breath is offensive. Where erosion of the blood-vessels occurs, hemorrhages take place, sometimes of an alarming character.

There is some fever present in all cases; the patient loses flesh and strength, becomes anemic, chills and night-sweats follow, and the evidence of sepsis is pronounced. There is dullness on percussion in the earlier stages, followed by the sign of cavity formation in later stages.

Diagnosis.—The intense fetor of sputum and breath, the character of the expectoration, the septic fever, and great emaciation, are symptoms that can hardly mislead one in naming the disease.

Prognosis.—Though not necessarily fatal, the disease is always grave.

Where the former health of the patient has been good and there is no tubercular taint, and the patient is young or in middle life, recovery will occasionally take place.

Treatment.—The treatment is largely antiseptic, and the Eclectic materia medica is rich in antiseptics. First in importance stands echinacea. This should be given every one or two hours, two drams, to water four ounces, a teaspoonful at each dose. Baptisia, sodium sulphite, hydrochloric acid, and potassium chlorate, with hydrastis, will each have their special indications for use. Eucalyptus used with an atomizer will be found useful as a local remedy. The appetite should be encouraged by nux vomica, hydrastin, chionanthus, etc. The diet should be nourishing, easily digested, and given at frequent intervals. Drainage by surgical means will have to be considered in some cases.

PULMONARY EDEMA.

Synonym.—Edema of the Lungs.

Definition.—A transudation of serum into the air-vessels, and often into the bronchi and interstitial tissue of the lungs.

Etiology.—The edema may be general or local, according to the causes giving rise to this condition.

General edema depends upon active or passive hyperemia, more frequently the latter condition. It may also be caused by feeble heart-action due to dilatation, degeneration, or to pericarditis. Hydremia resulting from hepatic cirrhosis, chronic nephritis, cachexia, or profound anemia, may also be responsible for pulmonary edema.

Pathology.—The lung is heavy, though when placed in water it floats. It pits on pressure, and, when incised, exudes a blood-tinged serum. The edema is most marked at the base and dependent portions of the lung.

Symptoms.—In addition to the symptoms of the disease giving rise to the edema, there will be rapid respiration, marked dyspnea, cough attended by expectoration of frothy, bloodstained, serous material. Cyanosis is often very pronounced.

Percussion reveals marked dullness, especially over the dependent portion of the lungs.

Auscultation gives rales of varying character. General dropsy may follow.

Prognosis.—This is always a grave disease, though, when the causes can be removed, a cure occasionally results.

Treatment.—The treatment is largely directed to the primary disease. Such remedies as apocynum, strophanthus, convallaria, and kindred remedies will afford some relief.

The bowels should be kept open, the secretion of the kidneys maintained, though not overstimulated, and such remedies employed as the case may call for from day to day.

V. DISEASES OF THE PLEURA.

PLEURISY.

Synonym.—Pleuritis.

Definition.—An inflammation, either local or general, of the pleural membrane.

Varieties.—Pleurisy has been classified according to its etiological, pathological, and clinical phases, thus: Etiologically, into primary and secondary, tubercular, carcinomatous, septic, traumatic, etc.; pathologically, into circumscribed and diffuse, dry, plastic, or fibrinous, serofibrinous, purulent, and hemorrhagic; clinically, into acute and chronic.

ACUTE PLASTIC PLEURISY.

Synonyms.—Dry Pleurisy; Fibrinous Pleurisy.

Etiology.—This form may be either primary or secondary, The former is where the inflammation occurs as an independent affection in a

person previously healthy. It does not occur as frequently as was formerly diagnosed, many cases, no doubt, being due to a rheumatic or tuberculous constitution.

Although various micro-organisms are found in all forms of pleurisy, notably the bacillus of tuberculosis, the streptococcus pyogenes, the staphylococcus, and the micrococcus lanceolatus, no specific germ has been found as a causal agent. Associated with the above bacilli, have rarely been found the colon bacillus, the proteus vulgaris, Friedlander's bacillus, anthrax bacillus, influenza bacillus, and others.

The most common etiological factor is contracting cold, either by sudden atmospheric changes, or exposure in damp cold weather, or sudden cooling after severe exercise. Mechanical injuries occupy a prominent place as causal agents. The winter and spring months serve as an important factor in producing the disease, owing, no doubt, to sudden atmospheric changes. The disease occurs more frequently among men than women, owing to greater exposure of the former. The tubercular and rheumatic taint must also figure as having some bearing in these cases.

The second form is due to an extension, either acute or chronic, of inflammatory conditions of the lung or neighboring parts. Thus it frequently accompanies croupous pneumonia, and is often present in broncho-pneumonia, and is not a rare complication in hemorrhagic infarct, abscess, and gangrene of the lung, and cancerous conditions. It is nearly always present at some period in pulmonary tuberculosis, and in not a few cases is the first symptom of that dread disease.

It may also result from hepatitis, or cardiac inflammations. .

Pathology.—Within twenty-four hours the inflamed membrane becomes reddened, congested, and deeply injected, showing many minute ecchymotic spots. The membrane, at first dry, loses its glossy appearance and becomes dull and lusterless, and soon is covered with a fibrinous exudate of a yellowish or reddish-gray color. When the exudate is profuse, it presents a shaggy appearance, due to the friction of the pleural surfaces. This exudate is composed of fibrin, leukocytes, blood corpuscles, and serum in small quantity.

While the inflammation is active and the exudate is profuse, adhesions

of the pleura take place, owing to the presence in the exudate of embryonic round cells which develop blood-vessels and connective tissue. If the inflammation is of a mild character, the exudate undergoes fatty degeneration, and is absorbed.

Symptoms.—The symptoms of fibrinous pleurisy exhibit a wide range of symptoms. In one case a stitch in the side is the only reminder of the disease, while in another the pain is of an excruciating character and the prostration so great as to speedily terminate in death, and between these extremes are found every grade of symptoms.

When the disease is of the primary form, it is usually ushered in with a chill or chilly sensations followed by febrile reaction, though generally not of a very severe type, the temperature ranging from 101° to 103°, and in rare cases going to 104° or 105°.

The pulse is small and frequent, from 100 to 120. The secretions are all more or less arrested, the tongue being more or less coated, the skin dry, the urine scanty and high-colored, and the bowels constipated.

Of the local symptoms, the patient complains of a sharp, lancinating pain in the affected side, usually in the region, of the nipple. The pain is increased if the patient attempts to take a full inspiration, or if the affected side is moved. As a result, we find the breathing shallow or jerking, and principally abdominal. For the same reason the patient lies on the affected side, that the membrane may be held quiet.

A short, dry, hacking cough adds to the patient's suffering. With the appearance of the exudate the pain subsides, with an amelioration of all symptoms.

In some cases, the patient is seized with a hard chill, and, with febrile reaction, the temperature rapidly reaches 104° or 105°. The pulse is full and bounding; the face, at first flushed, soon becomes pinched and anxious. The pain is intense; the patient refraining from taking a full inspiration, has the appearance of great anxiety. The pulse soon changes, becoming feeble though rapid, prostration is extreme, and death may follow in forty-eight or seventy-two hours.

When the disease is secondary, the symptoms of the primary disease may so overshadow the affection of the pleura as to escape notice,

though the stitch in the side, or an “uneasy” feeling, will call attention to the pleura, and a physical examination will reveal the true condition.

Physical Signs.—Inspection reveals the movement of the chest will, on the affected side, very much restricted, especially during the first forty-eight hours. Palpation confirms what inspection reveals, while percussion gives a normal sound in the early stage of the disease, to be followed by some dullness when exudation occurs. Auscultation reveals the characteristic and chief diagnostic symptoms of pleurisy.

In the early stage the friction sound is heard, due to the rubbing of the dry, inflamed pleural surfaces, and is more pronounced at the end of inspiration. With the presence of exudation, the friction sound is increased and is heard during expiration and inspiration. If deep breathing is enjoined, the sound is more pronounced.

Diagnosis.—If care is used, pleurisy can scarcely be mistaken for any other affection. The only diseases that might be mistaken for pleurisy are pleurodynia and intercostal rheumatism. If we remember, however, that the friction sound is always present in pleurisy, and never in the other two affections, we can readily distinguish the one from the other.

Prognosis.—The prognosis is usually favorable, though in rare cases it may speedily terminate fatally.

Treatment.—The earlier Eclectics obtained prompt results in the treatment of pleurisy, and those who can not get into the way of small doses and specific tinctures will find the old way a successful one. ‘Tis true it is rather unpleasant, though, if the patient is suffering intensely, he is ready to submit to any medication that promises relief.

Where the tongue was *full, pallid, and dirty*, the old compound powder of lobelia or the acetous emetic tincture was given, at first in small doses to produce profound nausea, and then carried to free emesis. This produced relaxation, lowered the temperature, and eased the sharp, lancinating pain. If the pain was intense, sudorific tincture, compound tincture of Virginia snake-root, was given in teaspoonful doses, in hot water, every one, two, or three hours. This not only relieved the pain but brought on gentle perspiration, and the patient was soon convalescent.

In the place of this rather unpleasant medication, we give the small dose, and equally efficient remedies in the form of specific tinctures.

Aconite.—For the *small, frequent* pulse, aconite is the sedative to be selected, five gtts. of the tincture, to water four ounces.

Asclepias.—Associated, or rather combined, with the aconite; we will find asclepias an excellent remedy. Where the pain is severe and moves about, is not constant at one point, and the skin hot, either dry or moist, no better remedy can be given. From ten drops to one dram should be added to water four ounces; a tea-spoonful every hour.

Bryonia.—This is the remedy of remedies in respiratory lesion with *chest* pain. In pleurisy, the sharp, lancinating, stablike pains will call for bryonia. Ten drops to half a glass of water, and a teaspoonful every hour.

Rhus Tox.—Where the patient is restless, and unable to sleep, or starts suddenly in his sleep with a *sharp stroke* to the pulse, telling us of irritation of the cerebro-spinal centers; where the tongue is reddened at tip and edges and there is elevation of the papilla, the small dose of rhus will give good results. Ten drops, to water four ounces.

Veratrum.—In an extreme case there will be high temperature, the pulse will be *full, strong, and bounding*. The face will be flushed, there will be throbbing of the carotids, and the pain is intense, agonizing in character. In such a case veratrum, 1 drachm; morph. 1/2 grain, to water four ounces; a teaspoonful every hour until the pulse feels the force of the remedy, when it should be given every two or three hours.

Local Measures.—In most cases, libradol will afford relief, and is more satisfactory than a blister. In fact, the day for the application, of blisters in pleurisy has gone by, and when an active counter-irritant is demanded, the application of chloroform to the spot implicated will give relief.

A hypodermic of morphia may be called for, where the pain is intense in character and we can not wait for the slow effects of internal medication. Pain sometimes kills or at least hastens a fatal termination, and the strength of the patient may be greatly prolonged by the timely use of a hypodermic injection. It is only to be used, however, in cases like

the one just named. Should the pain return in four, five, or six hours, a diaphoretic powder, administered before the pain becomes intense, will be of much benefit.

SERO-FIBRINOUS PLEURISY.

Synonyms.—Subacute Pleurisy; Pleurisy with Effusion.

Etiology.—The causes of sero-fibrinous pleurisy do not differ from those of plastic pleurisy, the difference in the character of the exudate being, no doubt, due to different degrees of intensity in the inflammatory process or to the influence of the various lesions with which it is so frequently associated, such as croupous and broncho pneumonia, pericarditis, hepatitis, peritonitis, nephritis, typhoid fever, carcinomatous conditions, and especially tuberculosis. The frequency with which tuberculosis is preceded by pleurisy or pleuritic symptoms being proof that the blood is of a poor quality, hence the changed character of the exudate. This is especially so where the exudate is purulent or hemorrhagic.

Pathology.—Sero-fibrinous pleurisy may be the further development of the plastic variety, the serous exudate following later, or the exudation may be serous from the beginning. The pleural surfaces are covered with a fibrinous exudate, varying greatly in character. In one, it is in the form of a thin, smooth coating, while in another it will be thicker, and assume a rough or shaggy appearance owing to the friction of its surfaces.

If there be no adhesions, the effusion collects in the most dependent portion of the pleura, and, if small in quantity, physical signs will be absent. The amount varies from a few ounces to a gallon or more. The fluid is usually clear, of a pale yellow or brown-green color, though sometimes turbid, of alkaline reaction, and contains red and white corpuscles, leukocytes, endothelial cells, threads of fibrin, albumen, and sometimes crystals of cholesterin.

As the fluid increases in quantity, certain mechanical changes take place. At first the lung is but slightly retracted; but as the fluid accumulates, the lung is crowded backwards, and from continued pressure becomes almost bloodless and airless—atelectatic. The

mediastinum is drawn toward the opposite side by traction of the sound lung. The heart also is slightly displaced. Where the effusion is in the right side, the diaphragm is pressed, crowding the liver downward, while the stomach, colon, and spleen suffer in the same way, if the exudate be in the left pleura.

Symptoms.—Acute sero-fibrinous pleurisy begins insidiously. There may be slight chilly sensations for one or more days, followed by more or less fever, the temperature ranging from 101° in the morning to 103° at night. The pulse is generally small, but frequent, from 100 to 120 per minute. The urine is scanty, partly due to the fever, and partly to diminished arterial pressure.

In rare cases, the invasion is characterized by a severe chill, followed by high temperature, marked arrest of the secretions, sharp pain of a tearing or lancinating character, and marked dyspnea and an irritating cough. The pain is located beneath the nipple, and is often referred to as a stitch in the side, though, in some cases, it is diffused and affects the entire side of the chest. In rare cases, diaphragmatic pleurisy, the pain may be in the epigastric, hypochondriac, or lumbar region.

If the effusion has been very slow in forming, there may be but little dyspnea, although the accumulation be large; generally, however, dyspnea is a characteristic symptom, the breathing being short and catching, and, where the effusion is rapidly formed, the dyspnea is so great that the patient is often unable to lie down.

Cough is an attendant symptom, beginning in the early stage, gradually declining as the exudate increases, again to return with absorption of the fluid. The cough is hacking in character, and attended with an expectoration of scanty mucus, which is not unfrequently streaked with blood. If bronchitis develops, the expectoration becomes quite profuse, and if pneumonia attends, the sputum is rusty colored.

In rare cases, where the primary disease is of a malignant character, or some severe chronic disease, as nephritis, the pleural symptoms may be absent, or so overshadowed as to remain unnoticed until discovered by a physical examination.

Physical Signs.—Since the general symptoms of sero-fibrinous pleurisy are often obscured by the primary disease, it is therefore

important to carefully note the more definite and positive physical signs, which quite accurately determine the stage and extent of the lesion.

Inspection.—Inspection reveals the same conditions that we find in dry or plastic pleurisy; namely, increased frequency of respiratory movement; but as the exudate accumulates, restriction of the respiratory movement can be noted, due to the gradual compression of the lung, and when a very large quantity of fluid is present, the respiratory movement may be entirely absent. There will also be a bulging of the middle and lower part of the chest, the intercostal spaces being effaced and the anteroposterior diameter of the chest being increased. The diaphragm is depressed and the shoulder elevated, the affected side being perceptibly larger than its opposite fellow.

If the left chest be involved, the apex beat will be seen to the right of the median line, in the third and fourth interspace; and if the right chest be involved, the impulse will be seen to the left of the nipple, or even to the axillary line in the fourth and fifth interspace. This is quite noticeable if the patient be lean, with thin chest-walls.

Where there is resorption, we notice a gradual return to the normal condition, provided the exudate does not become organized, and adhesion takes place. In such cases there is atrophy of the affected side, which may result in marked deformity, there being retraction with a narrowing of the intercostal spaces, and a dropping of the shoulder, producing, more or less, a curvature, the concavity being on the affected side.

Palpation confirms the physical signs revealed by inspection. Thus the expansion movement is found to be much restricted, the interspaces widened and effaced, apical beat displaced to the right or left, ascending to the side affected. Fluctuation and edema are rarely found. Vocal fremitus diminishes as the fluid accumulates, and finally may disappear entirely. As resorption takes place, palpation reveals the progressive steps towards recovery, and where deformity of the chest occurs, palpation outlines the extent of the tissue changes.

Mensuration.—In measuring the affected side, we are to remember that, in right-handed adults, the right chest is the larger; hence the measurement must be as to the expansion of the two sides, the affected side showing one or two inches in excess at the end of expiration. Where

there is great effusion, the affected side, of course, also shows an excess in measurement. There will be but slight difference between the sides during inspiration owing to expansion of the sound lung, while the affected lung remains airless.

Percussion.—Early in the disease, percussion gives negative results; but as soon as the fluid amounts to one pint, dullness is elicited, at first posteriorly, and in rare cases, in the infra-axillary region, the amount of effusion can be determined from time to time by the increased dullness. The dullness beginning immediately below the line of fluid, the sound soon becomes flat, like that produced from percussing wood; hence the term wooden.

Beginning at the base posteriorly, the fluid, as it fills the cavity, assumes the form of the letter S, being higher posteriorly. Except in extreme cases, a point of resonance, tympanitic in character, is found just beneath the clavicle, and is known as “Skoda's” resonance. Where there is large accumulation of fluid, the dullness extends quite a distance below the diaphragm, owing to the depression of the viscera—the liver on the right, and the spleen on the left—and should not be confused in the mind of the operator. Unless a very large amount of fluid be present, change of position will vary the dullness and help determine the extent of the exudate. In percussion we are also to bear in mind the slight change in the heart position.

Auscultation.—In the early stage, the breathing is shallow and jerking, owing to pain, and the natural respiratory murmur is diminished; very soon, however, crepitation is heard, either in the inframammary, the infra-axillary or the infrascapular region, and while it may be heard both during inspiration and expiration, it is more pronounced at the end of inspiration. It may be dry and creaking as of new leather, or it may simulate pneumonia. As the fluid accumulates, the crepitant and respiratory sounds become fainter, finally disappearing, to be replaced by bronchial breathing.

While vocal resonance is greatly diminished or absent over the effused material, it often partakes of a nasal character near the border of the fluid, and resembles, somewhat, the bleating of a goat; hence is termed egophony.

With resorption, we have these adventitious sounds reversed as the

fluid disappears, though a return to the normal respiratory murmur is often delayed for many weeks.

SPECIAL CLINICAL FORMS OF ACUTE: SERO-FIBRINOUS PLEURISY.—*Tuberculous Pleurisy.*—This form does not differ materially from that just considered, save the additional presence of the specific tubercle and the more certain termination in death. This form is nearly always secondary to pulmonary tuberculosis, and is preceded by such a history. In rare cases, the primary lesion may be located in the pleura and consist of but few areas of tubercles, or there may be innumerable deposits of small tubercles miliary.

The disease may run its course as an acute-fibrinous pleurisy, or the more insidious form of the subacute variety, or become prolonged as chronic pleurisy. Either form may be complicated by pericardial or peritoneal tuberculosis. The exudate is sero-fibrinous in character, and not infrequently is stained with blood.

Diaphragmatic Pleurisy.—In this variety the diaphragmatic portion of the pleura is involved, the pain being located at the insertion of the diaphragm to the tenth rib and extending to the epigastric region. The pain is intense, the patient assuming the sitting posture, slightly bent forward. The respiration is short, catching, and chiefly thoracic. Nausea and vomiting often occur, which greatly adds to the patient's suffering, as does the cough which attends it. The effusion is generally small in quantity, and may be either plastic, sero-fibrinous, or purulent. If purulent, there may be bulging of the intercostal spaces. The temperature range is high in this form, the pain more exquisite, and the patient presents a more anxious expression than in any other form.

Encysted Pleurisy.—As the result of adhesion, the effusion may occupy two or more circumscribed pockets, which may or may not communicate with each other, and may occupy various positions. The symptoms are not pronounced and therefore may be quite difficult of detection. Where percussion reveals circumscribed dullness, with resonance at its border, the character of the lesion would be suggested, which would justify an exploratory puncture with a trocar.

Interlobar Pleurisy.—This form is usually preceded by, or associated with, sero-fibrinous pleurisy, and results from adhesions cutting off the interlobar spaces from the general pleural sac. The encapsulated exudate

varies in size from a small egg to a cocoanut, and is found more frequently in the right side than in the left, and between the upper and lower lobus, near the root of the lung.

The symptoms are not characteristic, and after a long period of ill health the abscess may discharge into a bronchus, the expectorated pus being the first indication of a chest lesion. When the abscess is large, the symptoms will be more like that of abscess of the lung.

Hemorrhagic Pleurisy.—This variety is where blood is found in the effused fluid, and in sufficient quantity to be recognized by the unaided eye, and is nearly, if not always, associated with tuberculosis or carcinomatous conditions of the lungs or pleura, or to Bright's disease, cirrhosis of the liver, or low forms of acute, infectious diseases. It is sometimes accidental and the result of puncture by the trocar.

Diagnosis.—If care be taken in noting the physical signs, there will be few mistakes made in the diagnosis, though several lesions might be mistaken for it, if examined superficially. We are to differentiate sero-fibrinous pleurisy from pneumonia. In pneumonia, in addition to the sudden onset, there will be a higher range of temperature, deep flush of the cheeks, the pain will be more diffuse, the cough attended by expectoration of rusty sputum, and there will be a dull sound rather than a flat one on percussion. There will be but little or no distention of the thorax.

Palpation will reveal marked fremitus, save where there is obstruction of a bronchus. Auscultation gives crepitant and sub-crepitant rales, and later bronchial breathing and no friction sound; and, lastly, there will be no displacement of neighboring organs.

Hydrothorax is usually associated with renal or cardiac disease, has little or no fever, absence of sharp, stitchlike pain, no friction sound, is often bilateral, and the specific gravity of the fluid is below 1.015, while that of pleurisy is above 1.017.

Pericardiac effusion may be mistaken for sero-fibrinous pleurisy of the left side, but the history of the former, which tells of rheumatism, the marked dyspnea, the feeble heart-sounds, the normal position of the heart, and the resonance heard on the posterior chest-wall and at the base of the lung in the postero-lateral region, will distinguish the one

from the other.

Tumors and cysts reveal a different history. They are rarely attended by fever, are not accompanied by *uniform* distention, the dullness is more often confined to the upper and middle portion of the lung, and the respiratory murmurs are absent owing to compression of the lung.

Echinococcus cyst of the liver or abscess might be mistaken by crowding upward the lung, but the boundary-line of dullness will show convexity, and the history of the case will be of such a nature as to assist materially in fixing the disease, and the aspirating needle will remove all doubt.

Prognosis.—The prognosis is usually favorable, though much depends upon the etiologic factor. Where the disease is primary, the affection runs a much shorter and more favorable course. If secondary to tuberculosis, or carcinoma, the outlook would be correspondingly bad, and the course of the disease would be of a longer duration. The fever, inflammatory stage, lasts from one to three weeks, during which the effusion takes place, and this is followed by the non-febrile stage, which may last for weeks or months.

Treatment.—The treatment in the early stage will be sedative in character, for just in proportion to our ability to control the inflammatory process, will we control the exudation of serum.

Veratrum.—Occasionally we find a *full, strong, bounding pulse* showing excessive heart power, great excitement, and high grade of inflammation. With these symptoms the patient will be restless and suffer excruciating pain. If not overcome, these conditions lead to grave results. In such cases veratrum is one of the best remedies in the materia medica, and we give it in tangible doses, carefully watching its effects, however, and as the pulse comes under control, the temperature falls, the skin relaxes, and the pain subsides, we lessen the size and frequency of the dose. Our prescription with the above indication would read:

Veratrum	1/2 drachms.
Aqua	4 ounces. M.
Sig. Teaspoonful every one, two, or three hours.	

Aconite.—Many cases will have the small, frequent pulse, and aconite will replace the veratrum, but this remedy will always be used in the small dose. Thus:

Aconite	5 drops.
Aqua	4 ounces. M.

Sig. Teaspoonful every hour.

Asclepias.—This is a splendid remedy in pleurisy. Where the pain is erratic, the skin dry, and the tissues tense, asclepias, one or two drams to half a cup of hot water, a teaspoonful every thirty or sixty minutes, for several doses, will produce relaxation, diaphoresis, lessen pain, and control inflammatory processes.

Bryonia.—This is one of the best remedies for inflammatory conditions of the chest that we possess, for its usefulness is not confined to the acute stage, but is equally efficient where effusion exists. Where the pulse is quick and hard, where there is sharp, stablike pain, and flushed, bright cheek, bryonia, 10 drops; aqua 4 ounces; teaspoonful every hour, will prove very beneficial. Many times it will prevent extensive effusion of serum, and, when present, it assists materially in hastening the process of resorption.

Rhus Tox.—Where there is irritation of the cerebro-spinal centers, as shown in the small, sharp, hard pulse, elevated papilla on tongue, restless condition of the patient, insomnia with burning sensation in chest, rhus tox., 10 drops; aqua 4 ounces; teaspoonful every hour, will give results.

Macrotys.—Where the pain is located in the muscular structure or is rheumatic in character, we add from a half to a teaspoonful of the tincture to the sedative solution. Where these remedies are faithfully given, the effusion will be limited in quantity, and generally will be reabsorbed. In the way of local measures, libradol is perhaps the most efficient agent. It should be renewed as often as it becomes dry, which will be about twenty-four or thirty-six hours.

Where the effusion is large in quantity and of long standing the old compound tar-plaster will serve a better purpose; it should remain on until it produces suppuration, when the surface will be dressed with a simple cerate. If the fluid produces dyspnea and medication fails to

bring about absorption, paracentesis should be performed.

The patient should be sitting up, leaning slightly forward, and the arm of the affected side thrown across the chest, with the hand on the opposite shoulder. A large aspirating needle, properly sterilized, is introduced, if on the left side, in the seventh interspace in the mid-axillary line. The needle, with boring motion, is made to enter the chest just above the upper border of the rib, the needle slightly upward. If the right side be affected, the puncture is made in the sixth interspace in the same way.

If there is a large quantity of fluid and it is of long standing, it is not best to attempt to open the cavity. The amount drawn will depend somewhat upon the effect it has upon the patient. From ten to twenty ounces may be removed at one operation; but if dyspnea, cough, and pain attends the operation, the needle must be at once withdrawn. If the accumulation be recent or an active fever be present, a much larger quantity may be withdrawn. On the removal of the needle, the puncture is to be covered with an adhesive strip. If the fluid repeatedly accumulates, the patient is probably tubercular, and recovery is not apt to follow.

PURULENT PLEURITIS.

Synonym.—Empyemia.

Definition.—A suppurative inflammation of the pleura.

Etiology.—A sero-fibrinous pleurisy may be converted through the chest-walls or generated from within. Not unfrequently it results from a penetrating wound, from a fractured rib, or from the aspiratory needle, where due cleanliness has not been observed. It may be due to malignant disease of the lung or esophagus, and not infrequently from abscess of the liver or from caries of rib or spine.

It is frequently due to tuberculosis, and it may follow infectious diseases, especially croupous pneumonia, diphtheria, and scarlet fever, more rarely typhoid fever, measles, and whooping-cough. It has followed a peritonitis and the puerperal state.

Children are peculiarly subject to this form, it being estimated that one-third of all pleural effusions in children are purulent. The organisms most frequently found in the purulent fluid are the staphylococcus, the streptococcus, the tubercle bacillus, and the micrococcus lanceolatus.

Pathology.—The effusion is usually general, though, as a result of adhesion, it may be encysted. Where the effusion is of long standing, the lung is generally pushed upward and backward, and is flat and almost entirely airless.

The pleura is but little thickened if the effusion is recent, but where it is of long standing, the membranes become thickened and leathery in character. Occasionally necrosis of its walls occur, and the purulent material makes its escape, the direction it takes depending upon the amount of resistance. When the perforation occurs in the pleura costalis, it finds its way outwards, sometimes resulting in necrosis of a rib. Should it perforate the pleura pulmonalis, it finds its way into the lung and is expectorated through the bronchus, or it may perforate the diaphragm, and result in a fatal peritonitis. In rare cases it has penetrated the pericardium.

The character of the pus varies. Sometimes it is of a creamy consistency; again of a sero-purulent form, or of a fibrinous-purulent material. After standing, it separates into an upper greenish or yellowish-green, transparent fluid, and a lower layer of thick greenish pus. When not of long standing, the odor is rather sweetish in character; but if of long standing, and especially if associated with gangrene of the lungs or septicemic condition, the odor will be peculiarly fetid.

Symptoms.—The symptoms vary greatly, depending somewhat upon their cause. Thus, if it occurs as a primary affection, the symptoms are those of acute pleurisy, namely, chills, high febrile action, pain in the side, dyspnea, and cough attended by slight expectoration of a mucopurulent material.

Should the pleurisy be associated with septicemic or pyemic conditions, the symptoms are typhoid in character, the tongue becomes dry and brown, the mind wanders, or coma appears. Such cases generally terminate fatally after running a short course.

Quite often, the disease develops insidiously, with no marked local

symptoms to direct attention to the true condition. The patient's fever is irregular, night-sweats attend, and the patient loses flesh and strength. To render the true character of the disease more obscure, the purulent material, having perforated the pleura, sometimes burrows along the spine to the iliac fossa, resembling psoas or lumbar abscess. When the pus breaks in a bronchus, it is expectorated, and may be mistaken for tuberculosis.

Physical Signs.—The physical signs are practically the same as those of sero-fibrinous pleurisy, and need not be repeated. A few additional signs would be greater bulging of the intercostal spaces, especially where perforation occurs, the appearance of a red spot and fluctuation on palpation; enlargement of the superficial veins and edema of the integument, especially in young subjects, would suggest purulent form.

Diagnosis.—A positive diagnosis of this form of pleurisy can only be made by withdrawing some of the fluid with an aspirating or exploring needle.

Prognosis.—Empyema is always grave, though much depends upon the age of the patient and the causes giving rise to it. More children recover than adults. When the previous health has been good and the family history shows no trace of tuberculosis, the outlook is more favorable.

Should rupture of the sac take place externally, the outlook is somewhat favorable, as it may be where it empties into a bronchus. With the evacuation of pus, there is a tendency to adhesion of its walls, effacement of the cavity, and retraction of the affected side.

Treatment.—Where there is an accumulation of pus in the pleural cavity, we can not expect much help from internal medication until after the cavity has been thoroughly drained. Irrigation should not be used, except in those cases where the fluid is fetid, and even here much care should be observed as there is danger from collapse.

A free incision should be made, or a good sized trocar used, in the mid-axillary line, in the fifth or sixth interspace, proper aseptic measures being used. The patient should be in the sitting posture when able. After thorough draining, the patient should take well-regulated respiratory gymnastics, to increase the expansive power of the compressed lung.

An efficient method is that used at the Johns Hopkins Hospital, and consists in transferring- the water from one bottle to another by means of expiration. Large bottles holding- at least a gallon, are used, and in these, tubes are placed. By expiring through the tubes the water is made to pass from one bottle to the other. This exercise, to be of benefit, should be carried out systematically and persistently as the strength of the patient will permit. The cavity is thus obliterated by the expansion of the lung on the one hand, and the retraction of the chest wall on the other.

Following the operation for the removal of the pent-up fluids, we will put the patient upon the antiseptic remedy indicated. The chlorates, sulphates, mineral acids, the vegetable antiseptic, echinacea, baptisia, and remedies of like character will be used.

CHRONIC PLEURISY.

Synonym.—Adhesive Pleurisy.

Definition.—A chronic inflammation of the pleural membrane, with or without effusion.

Etiology.—Chronic pleurisy with effusion may follow an attack of acute sero-fibrinous pleurisy, or it may come on insidiously, or follow empyemia; in either case, the causes, conditions, and symptoms are largely the same as those already considered, and need no repetition.

Chronic pleurisy may follow pleurisy with effusion, where the fluid has either been absorbed or withdrawn, in which case there is retraction of the affected side. Not infrequently it comes on insidiously, being chronic from the onset, or it may follow acute plastic pleurisy; pneumonia is not infrequently followed by this form of pleurisy.

Pathology.—Where the pleurisy has followed a sero-fibrinous effusion or pyemia, the pleural surfaces are frequently left covered with a fibrinous exudate, which undergoes organization, the surfaces becoming adherent. In some cases there are prolongations from this new connective tissue, which extend into the interlobular septa of the lung. These extensive tissue changes prevent a free expansion of the lung,

which ultimately may result in fibroid phthisis. Cysts containing a serous fluid or inspissated pus, in which lime salts have been deposited, are sometimes found in the adherent pleural walls.

Where the pleurisy is primary, the membranes become adherent from the fibrinous exudate; but the connective tissue is more apt to be confined to the pleural surfaces, the lung being left free.

When secondary to tuberculosis, small tubercle masses may be found in the walls of the pleura. In some cases there is thickening of the adherent pleura, restricting the free expansion of the lung, and where effusion has proceeded, the dry form restriction and deformity exists.

Symptoms.—Chronic pleurisy manifests itself by occasional sharp, lancinating pains through the affected part, especially after exertion, much talking, coughing, etc. We call the pain sharp and lancinating, but it may be more properly described as an intense, sharp soreness, which catches the part during inspiration, and stops the movement at once; the patient calls it a “stitch in the side.” In addition there is frequently soreness on pressure, or when the arm of that side is moved. Respiration is more frequent than usual and somewhat difficult; there is more or less of a hacking cough, sometimes dry, but very frequently attended with expectoration, sometimes copious.

The general health is markedly affected; there is a loss of flesh and strength, the appetite is poor, the bowels are irregular, the skin is harsh and dry, the pulse 96 to 100, and there is much irritability of the nervous system. Usually there is hectic fever in the evening and night-sweats, sometimes as marked as in phthisis.

Physical Signs.—Inspection shows more or less deformity on the affected side. The chest is flat, retracted, with slight curvature and dropping of the shoulder. Compensatory expansion is noted of the opposite chest. The apex beat is feeble, or may be entirely absent, where overlapped by an emphysematous lung or when displaced behind the sternum.

Percussion reveals more or less dullness, depending upon the amount of thickening and compression of the lung.

Auscultation reveals a feeble respiratory murmur, and a cracking

friction sound.

Diagnosis.—The history, together with the dyspnea, cough, pain in side, and by noting the physical signs already mentioned, the diagnosis is readily made.

Prognosis.—The prognosis will depend upon the previous history of the patient, length of time affected, the cause, and the general condition of health.

Treatment.—As much, if not more, depends upon improving the general health, as in treating the patient for the local lesion. If we can succeed in giving the patient a good appetite, in aiding digestion, in establishing secretion from the skin, kidneys, and bowels, and in controlling the circulation and innervation, we will have but little difficulty in checking the cough, relieving the pain, promoting absorption, and establishing a cure.

To accomplish the first, the patient must be much in the open sunshine, and, where possible, advise a change of climate, to one where there is a maximum of sunshine, equable temperature, and medium altitude; this, with a good bitter tonic, like nux and hydrastine phosphate, will do much in accomplishing the first part of the cure.

As the appetite is sharpened and digestion improved, there will be better assimilation and blood-making. Proper baths and the saline diuretics, the acetate, citrate or nitrate of potassium, largely diluted, improve the condition of the skin, kidney, and bowels, and promote absorption if effusion be present.

In the way of local treatment, nothing will give better results than the old compound tar-plaster, used until it promotes suppuration. If much effusion be present, the pleural cavity should be drained.

For the cough and pain, bryonia and asclepias are favorite remedies, though lobelia, sanguinaria, ipecac, sticta, and like remedies, will often be indicated. The antiseptics will sometimes be found useful, and echinacea, the mineral acids, the chlorates,, and sulphites will give good results.

PNEUMOTHORAX.

Synonyms.—Sero-Pneumothorax; Pyo-Pneumothorax.

Definition.—A collection of air in the pleural cavity, and, since this is nearly always accompanied by serum or pus, the terms sero-pneumothorax and pyo-pneumothorax are used interchangeably.

Etiology.—This is a condition of adult life, being rarely found in children, and occurs in males more frequently than in females, the ratio being about two to one. The left chest is more frequently the seat of election.

From seventy to ninety per cent of all cases of pneumothorax are due to pulmonary tuberculosis. Thus a tubercular cavity may rupture into the pleural cavity, or a caseous mass, suppurating, may open into the same and allow the entrance of air. The same conditions may result from gangrene of the lungs, from abscesses, from broncho-pneumonia, or a bronchial fistula may be established through emphysema; hydatids or malignant condition of the lung or esophagus may also be responsible for this lesion. Rupture of air-cells, from a severe paroxysm of coughing, as in whooping-cough, is a possible cause.

The condition may arise from perforation of the diaphragm due to perforating ulcer of the stomach, or from cancer of the stomach or colon, and, in very rare cases, from abscesses of the liver.

Penetrating wounds, or the opening of subpleural abscesses in the pleural cavity, is the most direct means of letting air into the pleura.

Pathology.—In some cases, owing to the valvelike action of the tissues at the seat of perforation, the pleural cavity becomes so distended as to displace the heart and spleen, and, if in the right side, the liver, and crowd the atelectatic lung back against the spine. When the pleura is punctured in this condition, the air escapes with a slight whistling sound. Usually there is but little difficulty in finding the rupture, quite often being located in the postero-lateral region of the lung between the third and sixth ribs.

The pleural surfaces are usually inflamed and covered with a fibrinous exudate of varying consistency. In nearly all cases there is present:

more or less sero-fibrinous or purulent fluid. Where tuberculosis exists, the walls are softened, and one or more perforations may be found. There may be a communication with a bronchus. The air is peculiarly effusive.

Symptoms.—There is a wide range of symptoms in pneumothorax. They may be so slight as to escape notice, and the condition only determined during an autopsy, or they may be so severe as to almost terminate the life of the patient, and between these extremes every grade is found.

The onset is generally sudden, the patient not infrequently being alarmed by the sensation of something having given away, and at the same time experiences, with the first rush of air, an intense pain in the side, great difficulty in breathing, being attended by a quick, small, thready pulse, coldness of extremities, and a pallid, anxious, or cyanotic appearance.

The dyspnea varies according to the amount of air and fluid present, and, where the opening is valvelike in character and egress of air is difficult, the pleura may become greatly distended, compressing the lung of the affected side and causing rapid, shallow breathing, which causes extreme distress and a sense of suffocation. Where the fluid is purulent, there is usually some fever of a hectic character.

Physical Signs.—The character of the physical signs vary according to the amount of air present, and whether only air be present. Where both air and fluid are found, the physical signs are distinct from those where fluid is absent.

Inspection.—Inspection reveals the interspaces filled or bulging and the affected side immobile, while the mobility of the healthy side may be exaggerated. Where the communication with the pleura is free, permitting air to enter and escape, there will be little or no distention. The heartseat is seen to be displaced.

Palpation.—The impulse of the heart is feeble and displaced, while tactile fremitus is diminished above, and may be entirely absent below where effusion is present.

Percussion.—The tympanitic quality of the resonance on percussion will

depend upon the quantity of air and the degree of tension with which it is confined. Thus, where there is a communication with a bronchus, the pitch is higher when the mouth is closed, and lower when it is open. This is known as the “Wintrich Sign,” while the “cracked-pot” sound occurs where the air in the pleural cavity connects with the outside air. Where there is fluid in the pleura, a dull, flat sound is heard as far as the fluid extends. Where there is great distention, the percussion note is high pitched, and when there is great displacement of the heart, resonance may be heard in the cardiac region.

Auscultation.—The natural rhythmic respiratory murmur is very feeble or entirely absent. What breath sounds are heard are feeble and amphoric in character. The respiratory murmur on the well side is exaggerated. If the ear be placed near the spine, bronchial breathing may be heard. A peculiar metallic or tinkling sound is sometimes heard, and is supposed to be due to dropping of fluid from the upper surface into the effused fluid.

The coin test is said to be characteristic and pathognomonic, and is performed by placing a coin flat upon the chest and striking it with another coin while the ear of the auscultator is placed at the back of the chest. The sound thus elicited is a peculiar metallic ringing or bell-like sound, not heard in any other condition.

Hippocratic succussion is also characteristic, and consists of shaking the patient while the ear is applied to the chest, when a splashing sound is heard.

Diagnosis.—The diagnosis is usually not difficult owing to the characteristic physical signs. The bulging of the intercostal spaces; the more or less displacement of the apex beat; the tympanitic percussion noted in the upper part of the chest, with dull or flat sound over the base where the fluid is present; the absent or feeble respiratory murmur; the amphoric breathing; the metallic tinkling sound as the dripping of water; the coin test of Trousseau, and the Hippocratic succussion splash,—make the diagnosis comparatively easy.

Prognosis.—The prognosis depends largely upon the cause. Where it occurs in individuals with good family history, and where the previous health has been good, favorable prognosis can usually be made; but where it occurs in the advanced stages of phthisis, a fatal termination

may be looked for in a few weeks.

Treatment.—The treatment is largely palliative or surgical. Thus, where the pain is severe, we have to resort to a hypodermic of morphia, though codein by mouth is preferable where the pain is less acute. Where the tension is extreme, the chest may be punctured by an aspirating needle, and where pus is present it may be withdrawn as in empyemia. In pyemic conditions, anti-suppurative remedies would be indicated, and where dyspnea is marked, some relief may be obtained from cardiac stimulants and tonics.

HYDROTHORAX.

Synonyms.—Thoracic Dropsy; Dropsy of the Chest; Dropsy of the Pleura.

Definition.—A collection of serous fluid within the pleural cavity without inflammation.

Etiology.—A secondary affection, being usually preceded by nephritis and cardiac lesions, causes of other forms of dropsy. It may also follow profound anemia due to chronic malaria, chronic enteritis, chronic dysentery, syphilis carcinoma, and occasionally it may be due to local causes.

Pathology.—Hydrothorax, unless due to cardiac affections, is usually bilateral. The quantity varies, and is generally greater on one side than the other. The retraction of the lung depends upon the quantity of fluid present, unless previous pleural adhesions have taken place. The fluid is free, not circumscribed. The pleural membrane is somewhat pale, and generally smooth. The fluid is of low specific gravity, 1.910 to 1.912, alkaline in character, clear, and of an amber color.

Symptoms.—The symptoms of the primary lesion may so obscure the condition of the pleura that it may be present for a long time without being suspected. As the fluid increases, however, dyspnea becomes a prominent symptom, and where the fluid has accumulated in large quantities may result in orthopnea, cyanosis, asthmatic seizures, cough, and profuse clammy sweating are also common, especially when due to heart lesions.

The physical signs are similar to those of pleurisy with effusion, though the friction sounds are absent.

Diagnosis.—The evidence of fluid in the pleural cavities without pain or fever, and an absence of friction sounds, coupled with a history of lesions of the kidneys, heart, or prolonged anemia, would suggest hydrothorax.

Prognosis.—This depends largely upon the primary lesion.

Treatment.—Since hydrothorax is but a part of general dropsy, our treatment will be directed along the lines for anasarca. We will think of apocynum, strophanthus, convallaria, cratsegius, cactus, and such remedies as increase absorption, the action of the kidneys, and add tone to the heart.

Where dyspnea becomes the chief difficulty, the physician will have to resort to aspiration.