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BY

DAN'L E. HUGHES, M.D.,

DEMONSTRATOR OF CLINICAL MEDICINE, JEFFERSON MEDICAL COLLEGE.

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A

COMPEND

OF THE

PRACTICE OF MEDICINE.

ESPECIALLY ADAPTED FOR THE USE OF
MEDICAL STUDENTS.

BY

DAN'L E. HUGHES, M.D.,

DEMONSTRATOR OF CLINICAL MEDICINE, IN THE JEFFERSON MEDICAL COLLEGE OF PHILADELPHIA; FELLOW OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA, ETC.

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PROFESSOR OF THE PRACTICE OF MEDICINE

IN THE

JEFFERSON MEDICAL COLLEGE,

THIS WORK

IS RESPECTFULLY DEDICATED

BY THE AUTHOR.

CONTENTS.

PART II.

COMPEND

OF THE

PRACTICE OF MEDICINE.

PART II.

DISEASES OF THE RESPIRATORY SYSTEM.

PHYSICAL DIAGNOSIS.

Physical Diagnosis is the art of discriminating disease by means of the eye, the ear and the touch. The *signs* thus ascertained are connected with changes or alterations in the form or density of the structures within, and are termed *physical signs.* "*Physical signs are, then, the exponents of physical conditions, and of nothing more.*"

The methods employed in the physical exploration of the chest, are:— I, **Inspection**; II, **Palpation**; III, **Mensuration**; IV, **Percussion**; V, **Auscultation**; VI, **Succussion.**

Percussion and *auscultation*, dealing with sounds, are of the most importance.

For the purposes of physical exploration, the chest is mapped off into regions or divisions, as follows:—

ANTERIORLY.

First:—*Supraclavicular*, Lying above the upper edge of the clavicle, usually about an inch in extent.

Second:—*Clavicular*, Corresponding to the inner two-thirds of the clavicle.

Third:—*Infraclavicular*, From the clavicle to the lower border of the third rib.

Fourth:—*Mammary*, Between the third and sixth ribs.

Fifth:—*Inframammary*, Downward from the sixth rib.

LATERALLY.

First:—*Axillary*, That portion above the sixth rib.
Second:—*Infraäxillary*, That portion below the sixth rib.

POSTERIORLY.

First:—*Suprascapular*, That portion above the scapula.
Second:—*Scapular*, That portion covered by the scapula.
Third:—*Interscapular*, That portion between the scapulæ.
Fourth:—*Infrascapular*. That portion below the angle of the scapulæ.

INSPECTION.

Inspection signifies "the act of looking;" all that need be said concerning the mode of conducting it is, that views of the chest should be taken from the sides and behind as well as from the front; that a good light should be obtained, and the patient placed in as easy and comfortable a position as possible.

Inspection reveals the *form*, *size*, *color*, and the *movements* of the chest, as well as the condition of the superficial parts.

In *health* the sides of the chest are for the most part *symmetrical* in form, size, color and movement; both sides rising equally during the act of inspiration, and falling equally during the act of expiration. During the act of inspiration the intercostal spaces in the lower two-thirds of the chest become more hollow, as also do the supraclavicular fossæ.

Inspiration is almost entirely the result of muscular action; *expiration*, on the other hand, is chiefly due to the elasticity of the lungs and chest walls, aided somewhat in forced respiration by muscular action. The movement of inspiration is of longer duration than that of expiration, and the pause between the acts is momentary.

The *respiratory movement* is visible over the entire chest, although in the male and in children it is most distinct at the lower portion (*inferior costal breathing*), while in the female it is most distinct at the upper portion of the chest (*superior costal breathing*).

PALPATION.

By **palpation** is meant the application of the palmar surfaces of the hands and fingers to the chest, by which means we appreciate impressions which are capable of being conveyed by the sense of touch.

The objects of palpation are:—

First:—To give more accurate information with regard to what is revealed by inspection.

Second:—To locate spots of soreness, the density and condition of tumors, if any are present, the state of the chest walls, the frequency of the breathing, and the action of the heart.

Third:—To determine the existence and character of various kinds of *fremitus* (vibrations).

By **fremitus** is understood certain tactile impressions conveyed to the surface of the chest, which are classed and produced as follows:—

First:—*Vocal fremitus*, produced by the act of speaking or crying.

Second:—*Tussive fremitus*, produced by the act of coughing; of value especially when the voice is very weak.

Third:—*Bronchial fremitus*, produced by the passage of air through mucus, blood, or pus. in the bronchial tubes, during the act of respiration.

Fourth:—*Friction fremitus*, produced by the rubbing together of the roughened surfaces of the pleura.

When the normal chest vibrates lightly, it is termed the *normal vocal fremitus.*

The *vocal fremitus* is more distinct upon the right side toward the apex.

If the lung be consolidated (denser), the vibration is greater and more easily distinguished,—*the vocal fremitus is increased.*

In feeble persons, or when any cause interferes with the transmission of the vibrations, the *vocal fremitus is diminished* or absent.

MENSURATION.

Mensuration, or measurement of the chest, is of little practical importance, and hence seldom performed. The only measurement likely to be required is the *circular* or *circumferential*, in different parts of the chest, which is performed with either an ordinary graduated tape measure or a double tape measure, made by uniting two tapes in such a manner that they start in opposite directions from the same point at the *mid-spinal line.* The tapes drawn around each side until they meet at the *mid-sternal line*, the patient being first directed to effect a complete expiration, the number of inches being noted, and then to take a deep inspiration, the increase in inches noted, the difference between the two giving a rough estimate of the capacity of the lungs.

In right-handed persons the right side is usually one-half to three-fourths of an inch larger than the left; if larger than this it is usually the result of some abnormal condition.

PERCUSSION.

Percussion, or "The act of striking," to ascertain the composition of structures, affords signs and information of great value in diagnosis.

There are two methods employed, *immediate* and *mediate.*

Immediate, or direct percussion, is performed by striking the thorax directly with the points of the fingers or the palmar surface of the hand. This method of percussion has been generally abandoned, as it does not enable us to distinguish with sufficient correctness between the various shades of difference in the pitch or quality of percussion sounds.

Mediate, or indirect percussion, may be practiced in three different ways, to wit:—

First:—With the finger of one hand interposed between the body and the percussing finger.

Second:—With the finger acting as a pleximeter and the percussion hammer.

Third:—With the percussion hammer and the pleximeter.

The first of these modes affords the most correct and ready information regarding the *resistance* of the parts percussed. The skillful use of the fingers is more difficult to acquire than that of the pleximeter and hammer, and if the examiner has acquired sufficient skill in its performance, an absolutely accurate result may be obtained. "He who is skilled in digital percussion will be able to percuss equally well with the hammer, the inverse of which does not always hold good." In addition to being proficient in the technical parts of the proceeding, it is necessary to possess a sensitive ear, educated to distinguish between the various shades of sound.

When the fingers are employed it is a matter of choice whether one or more fingers are used as the pleximeter. Usually the last phalanx of the first or second fingers of the left hand are used, the other fingers being *raised from the chest, so as not to interfere with the sound-vibrations;* they should be applied *firmly and evenly* to the surface, thus preventing the slipping of the soft parts, and to determine the resistance of the chest walls when the blow is given. The *rounded ends* of the first and second fingers of the right hand are used as a hammer, striking the pleximeter fingers in such a manner that the nails shall not touch the skin of the underlying fingers. The force employed varies in different regions, but usually, for the chest, should be only of moderate degree. Forcible percussion is of use only when the sound of deep-seated organs is desired.

The *stroke* should be made perpendicularly to the surface, and not slantingly, as is too often done. The whole movement should proceed

only from the *wrist-joint*, and not too rapid or unequal, the fingers being rapidly withdrawn, so as not to interfere with the vibrations.

The objects of percussion are to elicit certain *sounds*, and the amount of *resistance* or *elasticity* of the organs percussed.

The main sounds elicited by percussion are the *dull*, the *clear* and the *tympanitic*. These are studied as to *intensity*, *character* and *pitch*.

Percussing the healthy chest, the sound obtained is termed the *normal pulmonary resonance*. It is of variable *intensity*, depending upon the force of the stroke employed and the amount of adipose and muscular tissue covering the thorax and the *tension* of the chest walls.

There is no exact standard of the normal vesicular resonance, but if the two sides of the chest are compared, the normal standard of each person is obtained.

The *character* is termed *pulmonary* or *clear*, as characteristic of the healthy chest wall. The *pitch* is always relatively *low*.

The sounds elicited by percussing a healthy chest are not, however, alike in all its parts.

Anteriorly, the portion of lung above the clavicle yields a sound which becomes somewhat tympanitic as the trachea is approached.

Over the *clavicle* the sound is clear and pulmonary at the centre of the bone, but at the scapular extremity it is duller, and towards the sternum it becomes somewhat tympanitic.

At the *infraclavicular region* the resonance is clear and distinct, but little resistance being offered to the percussing finger, and the sound elicited may be taken as the type of the pulmonary resonance. In this region, however, a slight disparity exists between the two sides; on the right side the sound is less clear, shorter and of a higher pitch than on the left side.

In the *mammary region* of the right side the resonance of the lung is not so clear, the sound being modified by the size of the mamma and the upper border of the liver. On the left side the heart deadens the sound from the fourth to the sixth rib, and in a transverse direction, from the sternum to the left nipple. This dull sound in the left mammary region is lessened in extent during full inspiration, and in case of emphysema, when the lung more completely covers the heart.

In the *inframammary region* on the right side the percussion note is dull, except during the act of complete inspiration, when the liver is displaced downward by the inflated lung. In the left *inframammary region* the sound consists of a mixture of the dull sound of the heart and spleen and of the clear sound of the lung, together with the tympanitic sound of the stomach.

or the auscultator objects on the score of the uncleanliness of the person examined, the stethoscope is to be preferred. Moreover, there are certain parts of the chest which can only be explored satisfactorily by the aid of a stethoscope, and this instrument has the additional advantage of *intensifying* the sound.

In auscultation, the following rules, formulated by Prof. Da Costa, should be observed:—

"1. Place yourself and your patient in a position which is the least constrained and permits of the most accurate application of the ear or stethoscope to the surface. Above all, avoid stooping, or having the head too low."

"2. Let the chest be bare, or what is better, covered only with a towel or a thin shirt."

"3. If a stethoscope be employed, apply closely to the surface, but abstain from pressing with it. This may be obviated by steadying the instrument, immediately above its expanded extremity, between the thumb and the index finger."

"4. Examine repeatedly the different portions of the chest, and compare them with one another while the patient is breathing quietly. Making him cough, or draw a full breath is, at times, of service; especially the former, when he does not know how to breathe."

SOUNDS IN HEALTH.

If the ear be applied over the *larynx or trachea* of a healthy person, a sound is heard with both the acts of inspiration and expiration. Its *intensity* is *variable*, its *pitch high*, and its *quality tubular* (viz: a current of air passing through a tube—the larynx or trachea). The duration of the sound during inspiration being somewhat longer than during expiration. A *short pause* follows the act of expiration.

This sound is termed the *normal laryngeal respiration*, and is identical in character, duration and pitch with an important morbid sound, termed *bronchial respiration*.

The sound heard by placing the ear over the lung tissue is different.

The *inspiratory sound* is of *variable intensity*, its *pitch low*, its *quality soft and breezy*, designated *vesicular;* its *duration* is during the entire act of inspiration.

The *expiratory sound* is not always perceptible; it is of *feeble intensity*, *very low pitch*, its *character soft and blowing*, and its *duration* much less than the act of expiration.

These sounds, produced in the finest bronchial tubes and air cells

by their expansion and contraction, constitute the *normal vesicular murmur*.

It is to be remembered, however, that the vesicular murmur will be found to vary in the different regions on the same side, and in corresponding regions on the two sides of the chest. These variations within the range of health are especially important, and should be memorized by the student.

Infraclavicular Region.—The vesicular murmur in this region on either side is much more distinct than over any other part of the chest.

On the left side the *inspiratory sound* is of greater intensity, of *lower pitch*, and more distinctly vesicular in quality than that heard upon the right side. On the right side the *expiratory sound* is nearly or quite the same in length as the inspiratory sound, and is *higher in pitch* and more tubular in quality than the expiratory sound upon the left side.

Suprascapular Region.—Owing to the small number of air vesicles and the large number of bronchial tubes, and their nearness to the surface, the respiratory murmur has an intense, high-pitched, tubular and expiratory quality.

Scapular Region.—Compared with the infraclavicular region, the respiratory murmur heard over the scapula on either side is more feeble, and the vesicular quality less marked.

Interscapular Region.—The murmur in this region differs from the normal laryngeal breathing only in intensity and duration.

Infrascapular Region.—The murmur in this region very closely resembles that heard in the left infraclavicular region.

Mammary and Inframammary Regions.—The murmur in these regions differs from that heard in the infraclavicular region only in intensity.

Axillary and Infraäxillary Regions.—The respiratory sound in the axillary regions is as intense as in any portion of the chest. In the infra-axillary regions the intensity is less and the pitch lower.

VOICE IN HEALTH.

If the ear be applied over the larynx or trachea of a healthy person, and he be directed to count "twenty-one, twenty-two, twenty-three," in a uniform tone and with moderate force, there is perceived a strong resonance, with a sensation of concussion or shock, and a sense of vibration, thrill or fremitus, the voice seeming to be concentrated and near the ear. Often the articulated words are distinctly transmitted (laryngophony).

The sounds thus heard are termed the *normal laryngeal resonance*.

If the ear or stethoscope be applied over the third rib anteriorly, on

either side of the chest of a healthy person, and he be directed to count "twenty-one, twenty-two, twenty-three," in a uniform tone, with moderate force, a confused, distant hum is perceived, of variable intensity, accompanied with more or less vibration, thrill or fremitus, most distinct in adults, but notably weaker in women than in men.

This sound is termed the *normal vocal resonance.*

If the ear or stethoscope be applied over the third rib anteriorly, of a healthy person, and he be directed to *whisper,* in a uniform manner, the words "twenty-one, twenty-two, twenty-three," there is heard a sound corresponding closely in character to the sound of expiration over the same region during the act of forced respiration; or, in other words, a feeble, low-pitched, blowing sound.

This sound is termed the *normal bronchial whisper,* and is produced by the air in the bronchial tubes during the act of expiration.

SOUNDS IN DISEASE.

The vesicular murmur may undergo, in disease, changes in its *intensity,* its *rhythm,* and in its *character.*

The **intensity** of the respiratory murmur may be—

1. *Exaggerated* or *increased.*
2. *Diminished* or *feeble.*
3. *Absent* or *suppressed.*

Exaggerated respiration differs from the normal vesicular respiration only in an increase in the intensity of the respiratory sounds. When general over one lung, it will usually indicate deficient action of other parts. In this manner effusions compressing one lung, one-sided deposits, obstruction of the bronchial tubes by secretion, or inflammation of the lung structure, necessitate a *supplementary* respiration in the healthy portion of the same lung or the lungs upon the opposite side. From its resemblance to the loud, strong, quick respiration of young children, it has been termed *puerile* respiration.

Exaggerated respiration is, therefore, to be regarded as indirect evidence of disease in some part of the pulmonary tissue.

Diminished respiration, called also senile respiration, as being characteristic of old age, is characterized by diminished intensity and duration of the sound. In the large majority of instances the inspiration suffers the greatest, the expiratory sound not diminishing in the same proportion. In asthma, emphysema, diseases of the larynx and bronchial tubes, pleuritic pain, rheumatism or paralysis of the chest walls, or in thickening of the

pleural membrane, we observe superficial or diminished respiration. When one side of the chest is *partially* filled with fluid, we may hear a deep-seated, feeble breath sound.

Absent or suppressed respiration occurs whenever the action of the lung is suspended; this may be from external pressure, as when the lung is forced against the spinal column, by the presence of fluid or air in the pleural cavity, or when complete obstruction of the bronchial tubes prevents the air from either entering or leaving the lungs.

The **rhythm** of the respiratory murmur may be—

1. *Interrupted or jerky.*
2. *The interval between inspiration and expiration prolonged.*
3. *Expiration prolonged.*

In health the inspiratory and expiratory sounds are even and continuous, with a short interval between each act; this may be altered in disease, and both sounds, especially the inspiratory, have an interrupted or jerky character, termed "cog-wheel respiration."

This **jerky breathing** is noted in some spasmodic affections of the air tubes, in hysteria, the earliest stages of pleurisy, pleurodynia, and the early stages of pulmonary phthisis. It is most frequently associated with phthisis, due probably to the adhering to the walls of the finer bronchial tubes of tough mucus, which obstructs the free entrance and exit of the air; it is usually most notable under the clavicles.

The **interval between inspiration and expiration may be prolonged**, instead of these two sounds closely succeeeding one another. When this occurs the inspiratory sound may be shortened, or the expiratory sound may be delayed in its commencement. If the inspiratory sound is shortened, it is the result of consolidation of the lungs; if the expiratory sound is delayed, it is the result of lessened elasticity of the lung structure, and is most commonly associated with emphysema.

Prolonged expiration denotes that the air is obstructed in its exit from the lungs. It may be the result of diminished elasticity, the result of emphysema, or from the deposits of tubercle, which impair the contractile power of the lungs. If the former, it is associated with clearness on percussion; if the latter, however, with impaired resonance on percussion. When prolonged expiration is detected at the apex of the lung, and is associated with impairment of the normal pulmonary resonance, it is for the most part the result of a tubercular deposit.

The **quality** of the respiratory murmur may be

1. *Harsh*, termed *vesiculo-bronchial respiration.*
2. *Bronchial.*
3. *Cavernous.*
4. *Amphoric.*

Harsh respiration, or, as it is termed by Prof. Da Costa, *vesiculo-bronchial* respiration, is that variety in which both the inspiratory and expiratory sounds have lost their natural softness. It generally indicates more or less consolidation of lung tissue. In normal vesicular respiration the sounds produced by the air expanding the air cells and finer bronchial tubes obscure the sound produced by the passage of air through the larger bronchial tubes, the healthy lung being an imperfect conductor of sound, so that as soon as any portion of the lung becomes consolidated the vesicular element of the respiratory sound is diminished, the bronchial element becoming prominent. *Harsh respiration* is, then, a union of the vesicular and bronchial sounds, being a vesicular sound mixed with some of the qualities of a bronchial sound, the expiration being prolonged and tubular in character. It is present when the bronchial mucous membrane is swollen, as in the earlier stages of bronchitis, also in the earlier stages of phthisis and pneumonia.

Bronchial respiration is characterized by an entire absence of all the vesicular quality. *Inspiration* is of *high pitch* and *tubular* in character; *expiration* still *higher in pitch*, of greater intensity, *prolonged* and *tubular* in quality; the two sounds being separated by a brief interval.

The bronchial respiration encountered in disease closely resembles that heard in health over the larynx or trachea. Whenever bronchial respiration is present where, in health, the normal vesicular murmur should be heard, it indicates consolidation of the lung structure.

Cavernous respiration is a variety of the bronchial respiration, at least so far as the quality of the sound is concerned. It is essentially a blowing sound, yet not always heard during both the acts of inspiration and expiration, being often only perceptible in the one, and in the other mixed with gurgling sounds. Its *pitch* is lower than that of ordinary bronchial respiration, and its *character* is hollow.

For its production there must be a cavity of considerable size in the lung substance, not filled with fluid, near the surface of the chest walls, communicating with a bronchial tube. It is met with most commonly in the last stages of pulmonary consumption, although hollow spaces of any kind, from abscess or dilatation of the bronchial tubes, give rise to it.

Amphoric respiration is a blowing respiration, having a musical or metallic quality. It is a variety of bronchial respiration produced in a large cavity with firm walls, permitting the reflection of the sound. An imitation of this sound, though only an imperfect one, is produced by blowing over the mouth of an empty bottle. The amphoric character is present with both the act of inspiration and expiration.

Amphoric or metallic respiration is indicative of a large cavity, not common in phthisis, but much oftener heard at the upper part of a lung compressed by fluid and air, as in hydropneumothorax.

RALES.

Râles, or as they are termed, *adventitious sounds,* because they have no analogue in the healthy state, cannot be considered as modifications of the normal respiration.

Grouped according to the anatomical situation in which they are produced we have—

1. *Laryngeal and tracheal râles.*
2. *Bronchial râles.*
3. *Vesicular râles.*
4. *Cavernous râles.*
5. *Pleural râles.*

Râles may be divided into two groups, according to their character, viz: *dry* and *moist,* and may be audible either during the act of inspiration or expiration, or during both.

Dry râles, for the most part, are produced by the *vibration* of thick fluids which the air cannot break up, and which, therefore, temporarily narrow the calibre of the bronchial tubes. When this narrowing exists in the smaller bronchial tubes the resulting sound is *high-pitched,* or the râle is said to be *sibilant* or whistling; when the narrowing exists in the larger bronchial tubes, the râle is *low-pitched,* more musical in character, or *sonorous.*

Dry râles are particularly prone to be dislodged by coughing, and when they are uninfluenced by the acts of breathing or coughing, they do not depend upon the presence of secretions, but upon the narrowing of the air tubes from the pressure of tumors, or from a thickened fold of mucous membrane, or from a spasmodic contraction of the air tubes.

Moist râles are those produced by air passing through thin fluids, such as mucus, blood, serum, or pus, during the respiratory movements. When the fluid exists in the smaller bronchial tubes, the râles are termed small

bubbling or mucous, or *subcrepitant*. When the fluid exists in the large bronchial tubes, the râles are said to be *large bubbling* or mucous.

Moist râles are not persistent, but vary in intensity, and shift their positions as the air drives the liquid which gives rise to them before it, or during violent attacks of coughing, or after copious expectoration.

Laryngeal and tracheal râles are those produced within the larynx and trachea, and may be either moist or dry. The moist or bubbling sounds, produced when mucus or other liquids accumulate in this part of the air tubes, frequently occur in the moribund state, and are then known as the "death rattles." When not due to this condition, they denote either insensibility to the presence of liquid, as in stupor or coma, or inability to remove liquid by the acts of expectoration, as in croup or inflammation of these parts in the very feeble.

The dry râles produced within the larynx or trachea are generally caused by spasm of the glottis, viz; laryngismus stridulus, whooping cough and croup, or from the presence of a foreign body in the part.

Bronchial râles, resulting from the passage of air through the thin liquid, occasion bubbling sounds. When the liquid is present in the larger-sized bronchial tubes, the râles are said to be *large bubbling*, or large mucous râles, and are heard in acute or chronic bronchitis.

When the liquid is in the smaller bronchial tubes, the resulting râle is called *small bubbling*, small mucous, or *subcrepitant*, also occurring in acute or chronic bronchitis.

Bonchial râles due to the narrowing of the tube by its spasmodic contraction, or to the presence of tough, tenacious mucus, which is set in vibration by the passage of air through the bronchial tubes, are termed dry bronchial râles. Frequently they are suggestive of certain familiar sounds, such as snoring, cooing, humming, wheezing, etc., or they are often musical notes. When produced in the smaller bronchial tubes, they are termed *sibilant*, or high-pitched râles; when produced in the larger bronchial tubes, they are termed *sonorous* or low-pitched râles. They principally occur in the dry stage of bronchitis, or during an asthmatic paroxysm.

The vesicular râle, or, as it is more commonly termed, the *crepitant* râle, is produced within the air vesicles or at the terminal portion of the smaller bronchial tubes.

It is to be distinguished from very fine bubbling sounds, or the subcrepitant râle. "*It is a very fine sound, or rather series of very fine uniform sounds, occurring in puffs and limited to inspiration.*" It resembles the noise occasioned by throwing salt on the fire, or alternately pressing and

separating the thumb and finger, moistened with a solution of gum arabic, and held near the ear, or rubbing together a lock of dry hair near the ear.

The *crepitant râle* is produced by the movement of fluid in the air cells or in the finest extremities of the bronchial tubes, or by the forcing open, during the act of inspiration, of the air cells agglutinated by exuded lymph. These sounds may be defined as being very fine, dry, crackling sounds, heard at the end of inspiration. They are usually present in the first stage of pneumonia, and when limited to the apices, are significant of the incipient stage of phthisis.

Cavernous râles, or, as they are commonly termed, gurgling râles, are produced in a pulmonary cavity of considerable size, containing a large quantity of liquid communicating freely with a bronchial tube. The sound is occasioned by the agitation of the liquid within the cavity, and may be compared to the sound produced by the boiling of liquid in a flask or large test tube. The sound is sometimes high-pitched or musical, whence it has been termed "amphoric gurgling," but it is generally low in pitch. The râle is heard almost exclusively during the act of inspiration, and its diagnostic importance relates to the advanced stage of phthisis.

Pleural râles may be either dry or moist.

Dry pleural râles, or as they are more commonly termed, *friction sounds*, are occasioned when the surfaces of the pleuræ are covered with a glutinous substance preventing the unobstructed movement of the pleural surfaces upon each other during the respiratory acts, for in health these movements occasion no sound whatever. The sounds are generally interrupted or irregular, occurring during the act of inspiration or expiration, or during both acts. The character of the sound is variable, being termed rubbing, grazing, rasping, grating or creaking, according to the intensity of the respiratory acts and the amount of exudation.

They are distinguished by the apparent nearness of the sound to the ear, and are usually intensified by firm pressure of the stethoscope upon the chest. When the chest is fixed, especially at the lower two-thirds, and the ear applied over the seat of the sound, it will be found to have disappeared. This sound is diagnostic of the first stage of pleurisy.

Moist friction sounds are produced in the same manner as those just mentioned, the exudation being softened in character. This sound is frequently confounded with moist bronchial râles, and its discrimination is often only positive by a careful study of the symptoms and concomitant signs present.

Metallic tinkling is a sign of hydropneumothorax with perforation of the lung, and when found is usually diagnostic of this affection, although it occurs rarely in cases of phthisis with a large cavity, the physical conditions for its production being similar to those in hydropneumothorax, viz.—a space of considerable size containing air and liquid, the space communicating with the bronchial tubes.

It consists of a series of *tinkling sounds*, of a high-pitch, silvery or metallic tone, and is very well imitated by dropping a small marble into a metallic vase. It occurs irregularly, not being present with every act of breathing, and may be produced by forced, when not heard during tranquil breathing.

Were it not for the location and the absence of concomitant signs, it might be confounded with tinkling sounds sometimes produced within the stomach.

THE VOICE IN DISEASE.

The normal vocal resonance, as heard over the third rib of the chest anteriorly on either side, may have its *intensity*—

1. *Diminished or absent.*
2. *Increased or exaggerated.*

Or its resonance may be of the character of—

3. *Bronchophony.*
4. *Pectoriloquy.*
5. *Ægophony.*
6. *Amphoric voice.*

The vocal resonance may be diminished or feeble in bronchitis with free secretion, pleurisy with effusion, or in complete consolidation of the lung structure and the bronchial tubes.

The vocal resonance is absent in pneumothorax and in pleurisy with effusion.

Exaggerated vocal resonance differs from the normal vocal resonance in a slight increase of its intensity. It denotes a slight degree of solidification of lung tissue, and is chiefly of value in the diagnosis of tubercle.

Bronchophony, or the voice concentrated near the ear, raised in pitch and in intensity, denotes complete consolidation of the pulmonary tissue in those parts in which the sound is abnormally present.

Pectoriloquy is a complete transmission of the voice to the ear, the articulated words being distinctly recognized. It has a close resemblance to the resonance heard over the larynx in health. Its presence indicates

either a pulmonary cavity or more complete consolidation—in other words, an exaggerated bronchophony.

Ægophony is a modification of bronchophony, consisting in tremulousness of the voice, its character nasal or bleating, somewhat suggestive of the cry of a goat. When heard, it may be considered a sign of pleurisy with slight effusion, or pleuro-pneumonia.

Amphoric voice, or "the echo," as it is sometimes called, is a musical sound, of a somewhat hollow, metallic character, like that produced by blowing into an empty bottle. It is sometimes produced in large cavities within the lung, but is especially incident to pneumothorax.

Increased bronchial whisper is a sound in which the whispered words are abnormally intense, and higher in pitch than the normal bronchial whisper. It has the same significance as exaggerated vocal resonance.

SUCCUSSION.

The succussion or splashing sound is pathognomonic of one affection, namely, hydropneumothorax.

It is obtained by jerking the body of the patient with a quick, somewhat forcible movement, the ear being very near or in contact with the chest.

The sound is like that produced when a small keg, partially filled with liquid, is shaken. The only liability to error is in confounding this splashing sound with that sometimes produced within the stomach; but attention to concomitant signs and the symptoms will always protect against this error.

ACUTE NASAL CATARRH.

Synonymes. Acute rhinitis; acute coryza; "cold in the head."

Definition. An acute catarrhal inflammation of the mucous membrane lining the nose and the cavities communicating with it; characterized by feverishness, feeling of fullness in the head, and diminished followed by an increased secretion.

Pathological Anatomy. *Hyperæmia* of the mucous membrane, attended with redness, swelling and deficient secretion. This tumefaction is partly increased by an *œdematous infiltration*, when a quantity of colorless, salty and very thin liquid flows from the nose. The secretion soon becomes thicker and opaque, due to the desquamation of the epithelium of the nasal mucous membrane, with a copious generation of young cells, the hyperæmia and the swelling of the membrane diminishing.

Rarely, and then in newborn infants and those affected with eruptive fevers, the exudation in the nasal passages is of a fibrinous nature, somewhat similar to that observed in diphtheria.

Causes. Atmospherical changes are the most frequent and influential. Exposure of the neck to a draft of cold air, or of the feet and ankles to cold and dampness, or changing from a warm to a cold atmosphere suddenly, are among the most usual causes.

Irritating gases and vapors, certain powders, as ipecac, tobacco, etc., excite an irritation of the nasal mucous membrane.

Acute coryza is usually present in the initial stage of measles and influenza.

Epidemic influence occasionally prevails on an extensive scale. The poison of syphilis or the long continued use of the iodide of potassium not unfrequently acts as exciting causes.

Symptoms. "A cold in the head" is usually preceded by a feeling of *lassitude* or weariness and more or less *headache;* then occur irregular *chilly sensations*, followed by more or less *feverishness* and an uncomfortable feeling of *dryness* in the nares, with a strong inclination to *sneeze.* This is soon followed by an abundant *watery and saline discharge*, which is continually dripping from the nostrils, or occasions an attack of sneezing followed by blowing the nose, which relieves the congested and swollen membrane for a few moments. The relief is temporary, however, the fullness of the head and difficult obstructed nasal respiration rapidly returning. The anterior nares are red and inflamed. The discharge soon assumes a purulent character. The *voice* has a peculiar tone, rather nasal and muffled in character, from the swelling of the nasal mucous membrane. Within a few days the swelling subsides, the secretion lessens, and health is restored in about ten days from the beginning of the attack.

When the attack has almost terminated hard crusts may form within the nostrils, either on the septum or turbinated bones, which are with difficulty expelled by blowing the nose.

Duration. In mild cases about ten days; severe cases continue, more or less marked, for two weeks.

Prognosis. Favorable if early and proper treatment be instituted; if neglected, shows a strong tendency to become chronic. In very young infants, in whom, if the catarrh is not rapidly relieved, the infant loses flesh and strength, from inability to take the breast.

Treatment. Attacks due to atmospherical causes may often be aborted by the early administration of *quininæ sulph.*, gr. x–xv, with *morphinæ sulph.*, gr. ¼.

If the attack has already developed, relief is soon afforded by *tinct. belladonnæ*, gtt. ij every hour until six doses are taken, after which one drop every two or three hours until the physiological actions of the drug are produced; if much fever be present, *tinct. aconiti*, gtt. i–ij, may be added. Relief is often quickly afforded by—

℞. Pulv. cubebæ..... ℥j
Bismuth. subnit..... ℥ij
Morphinæ muriat..... gr. ij. M.

Sig.—Used by *insufflation* every two or three hours.

Attacks of nasal catarrh due to the poison of syphilis should be at once placed upon the proper constitutional treatment.

Attacks of nasal catarrh associated with the eruptive or mild fevers require no special treatment.

It is well to remember that attacks of nasal catarrh occurring in very young children are generally the result of hereditary syphilis, and should be treated accordingly.

CHRONIC NASAL CATARRH.

Synonymes. Chronic rhinitis; chronic coryza.

Definition. A chronic inflammation of the mucous membrane lining the nasal passages, with more or less alteration of structure; characterized by a sensation of fullness in the nares, increase of the secretion and perversion of the special sense of smell and hearing.

Causes. The result of repeated attacks of the acute variety; inhalation of irritating vapors and dust; syphilis and scrofula.

Pathological Anatomy. The mucous membrane of the nares is *thickened*, of a *dark-red*, sometimes *grayish color*, the superficial veins dilated and varicose, often forming polypoid enlargements. In many cases there is *ulceration* of the structure, with more or less loss of substance; the secretion is thick, tough, of a greenish character, and often very fetid; large collections of dried mucus are often formed upon the turbinated bones and septum.

Symptoms. A feeling of *fullness* in the *nares*, *increase* of the *secretion*, the character being thick and greenish, which, dropping posteriorly into the pharynx, causes paroxysms of "hawking."

The special *sense of smell* is more or less impaired, and, in many cases, entirely abolished; the *special sense* of hearing is more or less diminished, from an extension of the inflammation to the Eustachian tubes; the *voice* has a peculiar *nasal intonation*.

Sudden changes of temperature cause acute exacerbation of these symptoms, when there is superadded difficult nasal respiration.

If *ulceration* of the nares occurs, the discharge has a *fetid odor*. This condition is termed *ozæna*.

From extension of the inflammation to the nasal duct or its obstruction, the tears flow over the malar eminence (*epiphora*), leading to more or less congestion of the eyes.

Prognosis. Permanent cure is seldom obtained, the disease being so decidedly chronic and obstinate, the treatment is of necessity protracted, and the majority of patients tire of it before complete restoration is effected.

Treatment. If it depends upon diathetic conditions, the cause must be ascertained and treatment directed accordingly.

Where no diathetic cause can be determined, attention should be paid to the general health, the secretions constantly attended to, and the diet nutritious and digestible.

Cleanliness of the nasal passages is of the utmost importance, and is best effected by the *post-nasal syringe*, with either simple or medicated tepid waters, after which decided benefit follows the use of one of the following:—

℞. Sodii borat..... ℥ij
Bismuth. subnit..... ℥ij
Morphinæ muriat..... gr. j. M.

Or—

℞. Iodoformi..... ℈j
Acid. tannici..... gr. v
Bismuth. subnit..... ℥j. M.

Sig.—To be used by *insufflation* or as a *snuff*, every three or four hours;

Or—

℞. Ammonii muriat..... ℥j
Glycerini..... ℥ij
Vini pices, liq..... ℥ij. M.

Sig.—Five to ten drops, dropped into each nostril two or three times a day.

ACUTE TONSILLITIS.

Synonymes. Amygdalitis; quinsy.

Definition. An acute parenchymatous inflammation of one or both tonsils, with a strong tendency toward suppuration; characterized by moderate fever, pain in the throat, a constant desire to relieve the throat, difficult deglutition and respiration, and more or less muffling of the voice.

Causes. Generally attributed to exposure to cold, but in the majority of cases the exposure is so slight that there must be a predisposition to the affection; for persons once affected are particularly prone to repeated attacks upon the slightest exposure.

Pathological Anatomy. One or both tonsils will be seen, on inspection, to project from its bed, as a rounded deep-red body, which may even extend beyond the median line, when they may entirely occlude the isthmus of the fauces; the half arches and posterior border of the soft palate are reddened and somewhat swollen. The surface of the tonsils is often covered with small, yellowish points, which closely resemble patches of false membrane, but careful inspection will show that they are beneath the mucous membrane, being only the distended follicles of the gland.

Symptoms. Onset more or less sudden, with *rigors, rise in temperature*, 102° to 104° F., *full, frequent pulse*, 100 to 120, *headache, thirst, pain and swelling at the angle of the jaw*, with a constant desire to clear the throat, *difficult and painful deglutition*, from the enlarged tonsils almost closing the fauces, when the *respiration* is more or less *impeded;* the *voice* is more or less *muffled*, and attempts at phonation increase the pain.

Darting pains along the Eustachian tubes are of frequent occurrence, the patient complaining of *earache* and more or less *deafness*.

If *suppuration* is imminent the throat becomes more *painful*, the character of the pain *throbbing*, the febrile phenomena increased, with more or less *depression*, the symptoms seeming to be of great danger, when suddenly, after an effort at vomiting, or spontaneously, the tonsillar abscess bursts, a quantity of pus escapes from the mouth and prompt relief follows.

Duration. The disease lasts from three to seven days, terminating either by suppuration or the gradual resolution of the enlarged glands.

Prognosis. In the majority of cases the result is favorable, it very rarely proving fatal, except in children, and only then by obstructing the respiration, and at the same time so seriously interfering with nutrition that the child's strength fails.

Diagnosis. Tonsillitis can hardly be mistaken for any other affection if the fauces are inspected.

Treatment. If seen early *scarification* should be performed, thereby relieving the engorged vessels of the gland. The *external* use of *ice* over the site of the glands, and small pellets allowed to dissolve in the mouth, afford great relief. If the application of cold is objectionable, heat may be substituted, in the form of warm compresses or poultices.

Internally the administration of *tinct. aconiti*, in small doses frequently repeated, rapidly reduces the temperature and the frequency of the pulse, and, by its local action, lessens the pain and swelling. If from any cause the internal use of aconite is contra-indicated, the *tinct. aconiti* may be diluted with *glycerine* and painted over the affected parts. The author has seen excellent results follow the use of *sodii salicylat.*, gr. x–xv, in solution, every hour, until four doses are taken, when the remedy is omitted for three hours, and again administered, as at first.

The following *gargle* is highly spoken of by those using it:—

℞. Tinct. guaiaci ammon.
Tinct. cinchonæ comp.....āā..... f℥ij
Mel. despumati..... ℥vj.

M. and shake together until the sides of the containing vessel are well greased.

Adde

℞. Potassii chlorat..... ℈iv
Aquæ destil..... ..... ℥iv.

M. and add gradually, continuing shaking.

This should be used by the patient at intervals of every half an hour to an hour.

If *suppuration* is impending *quinina* should be used, gr. iij–v, every three or four hours.

Locally the application of poultices over the affected gland hastens the process of suppuration when once begun.

The *diet* must be in the shape of gruels, as it is impossible for the patient to swallow any solid substance, and in cases where even gruels cause painful deglutition, thin oatmeal gruel can be used with advantage.

ACUTE LARYNGITIS.

Synonymes. Catarrhal laryngitis; "sore throat."

Definition. An acute catarrhal inflammation of the mucous membrane of the larynx; characterized by feverishness, diminished or suppressed voice, painful deglutition, and more or less impeded respiration.

Causes. Atmospherical changes; the inhalation of irritating vapors, such as gas, smoke, ammonia, etc., and in children, violent attacks of crying.

Pathological Anatomy. In mild cases there is a transient *congestion* (hyperæmia) of the mucous membrane over the entire, but most commonly irregular parts of the larynx, with more or less swelling of the parts, and

diminished secretion; the mucous membrane soon returns to its normal condition, the secretion being slightly increased.

Symptoms. The onset is rather sudden, with irregular *rigors*, a feeling of *heat*, *rawness* and *tickling*, referred to the larynx and pharynx, with a sensation of the presence of a foreign body in the throat. Swallowing causes pain by the upward movement of the larynx and by the pressure of the food on the larynx as it passes down the gullet.

Coughing, from the onset, of a *noisy*, *harsh*, *hoarse*, or *toneless* character; in children the cough has a ringing, sonorous, so-called "croupy" character, the act of coughing causing a sensation of scratching in the larynx. The first day or two there is no expectoration, but in a short time secretion is poured out and the cough has a loose character. In the early stages the sputa may be slightly streaked with blood. The *voice* is at first decidedly *hoarse*, soon followed by complete *aphonia*.

Duration. Usually about one week; if very severe two or three weeks may elapse before the larynx returns to its normal condition.

Prognosis. Simple catarrhal laryngitis never terminates fatally.

Treatment. Confinement to an apartment of uniform temperature, the air kept moist by the vapor of water disengaged in it.

Locally a *hot or cold pack* should be kept constantly wrapped about the throat, and if its application is preceded by the temporary use of a weak mustard plaster, the relief afforded is more rapidly obtained. At the very beginning of an attack the feet should be placed in a hot mustard foot bath, and a *saline cathartic* administered.

Internally, *tinct. aconiti*, gtt. j–ij every hour or two, combined with *tinct. opii deodorat.*, gtt. j–v, relieve the inflamed mucous membrane, or instead the use of *antimonii et potassii tart.*, gr. $\frac{1}{20}$–$\frac{1}{30}$ every hour. If a tendency to spasm of the glottis obtains, full doses of the *bromides* should be administered at once.

ŒDEMATOUS LARYNGITIS.

Synonym. Œdema of the glottis.

Definition. An inflammation of the mucous membrane of the larynx and about the glottis, with a serous effusion into the sub-mucous connective tissue, and characterized by obstruction to the respiration and difficult phonation.

Causes. The result of acute laryngitis; abscess in or about the throat or tonsils; erysipelas of the face; scarlatina; smallpox; Bright's disease.

Pathological Anatomy. Infiltration into the loose connective tissue of the ary-epiglottic folds, the glosso-epiglottic ligament, the base of the epiglottis, and the inter-arytenoid space. If the true vocal cords are inflamed, their color changes, and instead of appearing white, glistening and brilliant, they are dull, grayish-red or violet-red in patches. If the swelling is the result of purulent infiltration, the parts affected present a deeply congested color, with here and there spots of a yellowish hue.

Serous infiltration, sufficient to cause fatal œdema, disappears with death, leaving but slight traces to account for the formidable symptoms.

Symptoms. At the onset the same as those of catarrhal laryngitis, soon followed by a sensation of *distress* and *pain* in the *throat*, with *difficulty of breathing* and *paroxysms of impending suffocation.* The *cough* at first is dry and harsh, but as the infiltration increases it becomes stridulous and suppressed. The *voice*, at first muffled, is soon suppressed. The *difficulty of respiration* in some cases becomes so great that the face becomes blue, the eyes protruded, the patient gasping for breath, these symptoms continuing for a few moments, when relief is temporarily afforded, the paroxysms soon recurring, however, in one of which, unless decided relief is promptly afforded, the patient perishes.

Prognosis. As a rule unfavorable; if early and vigorous treatment is instituted, recovery is possible, but without it death is the inevitable result, the patient dying asphyxiated. The duration of infiltration of the larynx varies from a few hours to several days.

Diagnosis. The points of difference between œdema of the glottis and capillary bronchitis, asthma and croup will be pointed out when discussing those affections.

But the history of the case, the sudden occurrence of suffocative attacks, an examination of the throat by passing the index finger carefully over the base of the tongue, will generally prevent the disease being mistaken for any other affection.

Treatment. At the onset, if the fever is high, the use of *tinct. aconiti*, gtt. ij–iv, repeated, with the administration of an active *purgative*, may prevent the serous effusion.

If the *infiltration* has already occurred and is slight in amount, *scarification*, guiding the instrument by the index finger of the opposite hand, may afford relief, or the hypodermatic injection of *pilocarpinæ nitrat.*, gr. ⅛, repeated. If these means fail, *tracheotomy* is indicated; in those cases of sudden and rapid infiltration of the glottis or larynx occurring in

Bright's disease, erysipelas or scarlatina, and especially the former, *tracheotomy should be performed at once.*

In all cases of infiltration of the larynx stimulants should be boldly administered per rectum, if stomachic administration is impossible.

If the infiltration be composed of *pus*, *quinina*, gr. v doses every four hours, with *stimulants*, is indicated.

SPASMODIC CROUP.

Synonymes. Spasmodic laryngitis; false croup; catarrhal croup.

Definition. A catarrhal inflammation of the mucous membrane of the larynx, associated with *spasmodic contraction* of the glottis; characterized by paroxysmal coughing, difficulty of breathing and attacks of threatened suffocation.

Causes. Delayed or difficult dentition; excesses of eating and drinking; excitement; violent emotion and atmospherical changes, are all given as causes for simple croup. It is often hereditary.

Pathological Anatomy. *Congestion* of the mucous membrane of the larynx, with slight swelling and deficient secretion, are the only changes that have been thus far noted in this affection.

Symptoms. The *onset* occurs chiefly during the *night*, the child on retiring having either its usual health or, perhaps, is a little feverish. After several hours of sleep the child is *suddenly awakened* by a *paroxysm of suffocation*, and a *dry, harsh, ringing cough*. After an hour or two the breathing becomes easier, the cough less "croupy," the skin is covered with more or less perspiration, and the child falls asleep. The next day there is present cough of a loose character, the respiration being about normal. If no treatment is instituted, the same phenomena occur on the second night, the child being apparently well during the second day, the cough being less in amount; phenomena of a similar character, but of much less severity, are present the third night, after which the disease usually disappears.

If the symptoms of the first paroxysm continue pronounced for two or three days, there is a strong probability that the inflammation may become fibrinous in character, or that true croup may develop.

Prognosis. Spasmodic or simple croup always terminates favorably.

Diagnosis. The symptoms are so characteristic that it seems impossible for the affection to be mistaken for any other disease.

Treatment. During the paroxysm, the child should at once be placed in a *hot bath* and *hot or cold compresses* wrapped about the *throat*. These means may be preceded or followed by a mild *emetic*. The *air* of the room should be kept *moistened* by the vapor of steam constantly disengaged in it.

For the prevention of an attack of spasmodic croup, a mild cathartic, followed by *potassii bromidum*, gr. x–xv, combined with minute doses of *antimonii et potassii tart.*, or *ipecac*, are serviceable, the child, of course, being kept in the house for several days, on an easily assimilated diet.

MEMBRANOUS CROUP.

Synonymes. Croupous laryngitis; true croup.

Definition. An acute inflammation of the mucous membrane of the larynx, attended with the exudation of a tough secretion, the *false membrane*, and the occurrence of *spasm of the glottis;* characterized by febrile reaction, frequent ringing cough, dyspnœa, with loud inspiratory sound, and altered or extinct voice, showing a strong tendency toward death by asphyxia.

Causes. A disease of childhood, most common in strong, vigorous, well-nourished males. Certain families present a strong hereditary tendency. Most common during a humid winter.

Pathological Anatomy. Intense *hyperæmia* of the mucous membrane of the larynx, associated with *swelling*, *œdema* and marked *redness*. There soon appears on the surface of the mucous membrane a grayish pellicle, rapidly coalescing and becoming thicker, the *opaque false membrane*, which differs in extent, thickness and adhesiveness in different portions of the larynx. In all cases the false membrane is found on the vocal cords and inner surface of the epiglottis. The first *exudation* (membrane) softens by the serum which is exuded, and is then mechanically dislodged by acts of coughing or vomiting, which is followed by successive deposits upon the mucous membrane.

When the false membrane is detached the mucous membrane of the larynx is found unaffected, so far as the loss of structure is concerned. Several successive crops of membrane may occur after the detachment, or it may entirely cease to form after the removal of the first exudation.

On *microscopic examination* the false membrane is found to be composed of a fine network of fibrillæ, holding in their interstices leucocytes of an albuminous or fibrinous nature.

The false membrane may extend into the pharynx, but especially is it liable to extend into the trachea and bronchial tubes, and, as the inflammation extends downward, the character of the exudation changes from a fibrinous to a muco-purulent character.

Symptoms. The onset of "true croup" is either suddenly, by an attack of the spasmodic form, or gradually, as an acute catarrh of the larynx, rapidly increasing in severity, with a feeling of *heat* in the throat, *huskiness* of the voice, *harsh cough*, *fever* and *thirst*, the hoarseness soon becoming marked and the *cough* having a *metallic*, "*croupy*" character, rapidly *changing* to a *stridulous*, *husky* sound; every few moments the child takes a sudden, deep *stridulous inspiration*, the voice becomes more and more husky. *Difficulty of breathing* now follows, the child being unable to lie down, or if, exhausted by the efforts at inspiration, it is quiet for a moment, it soon starts up in a fright, breathing more heavily, with a *shrill, whistling inspiration*. Soon, from the narrowing of the glottis, from the presence of the membrane, the expiration becomes difficult and noisy, and *suffocation* seems imminent, from the *paroxysmal* attacks of *spasm of the glottis*, when the child tosses wildly about, tears at its throat, as if to remove some obstacle, the face becoming *cyanosed*, the alæ of the nose working rapidly, the mouth wide open, the inspiratory efforts gasping, the body covered with a profuse sweat, and death seeming imminent, when the spasm is relaxed, air enters the chest, the breathing becomes somewhat easier, and the child, exhausted and partially stupefied, drops into a fitful sleep of a few moments' duration.

The *suffocative attacks* return at shorter intervals or there occur decided remissions between them, considerable portions of the false membrane being expelled, when the child falls into a refreshing sleep.

In those cases which tend to a favorable termination, the appearance of improvement noted between the suffocative attacks is maintained, the paroxysms of suffocation becoming less frequent, the expectoration of membrane more marked, the difficulty of breathing lessens, cough looser, the voice gradually returning, the fever, which has been more or less high during the attack, disappearing.

If, instead of an improvement, the case tends toward fatal termination, the suffocative attacks become more frequent, expectoration is absent, the voice and cough inaudible, although the efforts at speaking and coughing are visible, the difficulty of breathing continues, the respirations becoming more frequent and shallow, but without whistling and stridor, cyanosis deepens, the countenance has an indifferent, drowsy and stupid look, the eyes dull and nearly closed, the symptoms of depression apparent, the pulse

rapid and weak, the surface covered with a cold, clammy sweat, the extremities cold, stupor and insensibility more marked, the child dying of carbonic acid poisoning or *asphyxia*.

Duration. The duration of true croup is about one week, rarely continuing ten days.

Prognosis. A very fatal disease. The danger is great, in proportion to the age and feebleness of the child.

The *unfavorable symptoms* are: Loud, stridulous inspiratory and expiratory sounds, laborious and prolonged expiration, depression of the base of the thorax during inspiration, whispering voice or complete aphonia, congestion of the face and neck, stupor, weak, rapid and irregular pulse, cold extremities, and a cold, clammy perspiration.

The *favorable symptoms* are: Expectoration of false membranes, decrease of the stridulous respiration, voice changing from whispering to hoarseness, loosening of the cough, moderation of the fever, and an improvement of the general condition.

Diagnosis. *Œdema of the glottis* may be mistaken for croup until the period of the formation of the characteristic membrane. The chief points of distinction from the onset are, however, absence of fever, paroxysmal attacks of difficult respiration, followed by a complete return to the normal condition.

Laryngeal diphtheria differs from true croup in its history, its epidemic character, the marked depression even before obstruction of the larynx produces imperfectly aerated blood, the presence of albumen in the urine, and the sequellæ.

Treatment. The *indications* for treatment are to *detach* and *remove the false membrane*, to *prevent its formation*, to *prevent the attacks of spasm of the glottis*, and *to maintain the strength*.

To detach and remove the membrane *emetics* are of the highest utility, the favorite of this class being the one first used in this disease by Dr. Fordyce Barker, consisting of *hydrargyri subsulphas flavus* (turpeth mineral), gr. ij for a child of two years of age, repeating the dose as often as rendered necessary by the obstructed breathing.

To prevent the formation of membrane, *hydrargyrum* in some form is one of the most reliable agents we possess, either in the form of *hydrargyri chloridum mite*, gr. $\frac{1}{8}$–$\frac{1}{4}$ every two hours, in combination with *sodii bicarbonat*, gr. ij, or *hydrargyri chloridum corrosivum*, gr. $\frac{1}{48}$–$\frac{1}{30}$ every two or three hours. *Quinina*, gr. ij–iv every four hours, in many cases

acts in the same manner. *Antimonii et potassii tart.*, gr. $\frac{1}{30}$ every three hours, is often used for the same purpose.

To prevent the attacks of spasm, small doses of *opium* in the form of *pulvis ipecacuanhæ compos.* (Dover's powder), or full doses of the *bromides*, preference being given to *ammonii bromidum*, as suggested by Dr. Bartholow, on account of its being "eliminated by the bronchial and faucial mucous membrane, thus acting locally."

To maintain the strength of the patient *alcoholic stimulants* in full doses, nutritious but easily digested *aliment*, *quinina* in tonic doses, and *ammonii carb.*, are particularly indicated.

Locally, the use of all caustic or irritating applications to the fauces or larynx is emphatically contraindicated.

The *inhalation* of the vapor of slaked, freshly burned lime is one of the most ready and efficient means for assisting in the detachment of the false membrane. The application of *cold or hot compresses*, according to the feelings of the patient, around the throat, have a strong tendency to prevent the recurrence of the spasms. Cases in which the membrane presents a tendency to slowly loosen itself, if the patient's strength does not contraindicate it, are greatly benefited by the application of *mustard plasters*, or even small *flying-blisters*, to the larynx.

ACUTE BRONCHITIS.

Synonymes. Bronchial catarrh; acute catarrhal bronchitis; "cold on the chest."

Definition. An acute catarrhal inflammation of the bronchial tubes of the larger, middle and third size; characterized by fever, substernal pain, oppression in breathing, and scanty expectoration, becoming more free.

Causes. Most common in childhood and old age. More common in climates characterized by considerable moisture of the atmosphere, combined with a low temperature, and especially where there are sudden and marked variations.

Pathological Anatomy. *Hyperæmia* of the mucous membrane of the bronchial tubes, manifested by a diffused *redness*, *swelling*, *œdema* and *diminished secretion;* this is followed by an *increased secretion* and overgrowth and desquamation of the epithelial cells, together with a copious generation of young cells, the expectoration then being of a yellowish color. As a result of the hyperæmia, rupture of the capillaries of the mucous membrane frequently occur, in which case the slight expectoration of the first stage is streaked with blood.

In cases of bronchitis following the exanthemata in scrofulous patients, the bronchial glands participate in the inflammation, become hyperæmic, swollen and filled with secretion, and not unfrequently the glandular elements undergo a hyperplasia, and finally the "cheesy" metamorphosis.

Symptoms. The *invasion* is usually characterized by the occurrence of nasal or laryngeal catarrh or both, the patient being *chilly*, followed by *flushes of heat*, the *limbs*, *joints*, and even the *body*, are affected with *pain*, of an aching, contused character, and a sense of fatigue and want of energy; there may be a furred tongue, anorexia and constipation.

In nervous, irritable persons and in children there may be slight delirium, and often in very young children, especially during the period of dentition, convulsions may usher in the attack.

After a day or two of these initiatory symptoms, those characteristic of bronchial catarrh develop.

Pain is experienced *behind the sternum*, especially toward its upper part, of a *raw*, *burning* or *tearing* character, *aggravated* by a deep *inspiration* or by *coughing;* the pain also radiates toward the sides, following the course of the primary bronchial tubes. *Tenderness* over the sternum is often present, the surface being tender on percussion.

Cough from the onset, at first in paroxysms of a hard, dry character, changing as the disease progresses, and becoming looser, followed by *free expectoration*. The *expectoration* at first is small in quantity, almost transparent, frothy, and having a saltish taste, often streaked with blood. As the disease progresses it becomes more free, of a yellowish or greenish-yellow color, and having a tenacious character.

There are present *slight fever*, hot and dry skin, and frequent *pulse*, with loss of *appetite*, moderate *thirst*, and *constipation*.

A feeling of languor and weariness and often considerable depression, quite out of proportion to the febrile state, are not infrequent.

Percussion. *Normal* except in those rare cases in which the bronchial glands are involved, when irregular spots of dullness can be developed.

Auscultation. *First stage:* the bronchial membrane being swollen and dry, the respiratory murmur is *harsh* or *vesiculo-bronchial* in character, associated with diffused *sonorous* and *sibilant* râles.

Second stage: the secretion of the bronchial mucous membrane being increased, the respiratory murmur is *less harsh* in character, but is associated with *large and small moist* or *bubbling* râles.

Prognosis. Acute bronchitis of the larger tubes usually terminates in complete resolution within two weeks. In children and the aged the

course is more protracted and the symptoms more severe, but recovery is the rule.

Diagnosis. The points of resemblance and differences occurring in acute bronchitis and other diseases of the chest will be pointed out when those diseases are described.

Treatment. During the *invasion, quinina*, gr. x, combined with *morphinæ sulph.*, gr. ⅙, will usually prevent or abort an attack of acute bronchitis. In the *first stage*, when the mucous membrane is swollen and dry, either of the following prescriptions will give prompt relief:—

℞. Antimonii et potassii tart..... gr. $\frac{1}{15}$
Morphinæ sulph..... gr. $\frac{1}{15}$
Aquæ laurocerasi..... ℥j. M.

Every two or three hours; or—

℞. Antimonii et potassii tart..... gr. $\frac{1}{20}$
Ammonii muriat..... gr. x
Syr. prun. virg..... f℥ij. M.

Every three hours.

Locally, hot mustard foot baths and mustard plasters over the chest, the patient being confined to an apartment in which the air is moistened by the vapor of hot water.

Second stage, the secretion of the mucous membrane being copious, decided relief follows the use of—

℞. Ammonii muriat..... gr. x
Mist. glycyrrh. comp..... ℥ss. M.

Every four hours, and quinina, gr. iij, every five hours.

Attention should be paid to the secretions and diet of the patient.

CAPILLARY BRONCHITIS.

Synonymes. Broncho-pneumonia; "suffocative catarrh."

Definition. An acute catarrhal inflammation of the *terminal* bronchial tubes, or bronchioles; characterized by fever, impeded and increased respiration, impeded circulation, slight cough and scanty expectoration.

Causes. Most common in childhood, following exposure to cold or sudden changes of temperature; associated with measles and whooping cough.

Pathological Anatomy. *Hyperæmia*, redness and swelling of the lining membrane of the bronchioles, with the exudation of a tough, tenacious secretion.

The air vesicles may remain unaffected, but in the majority of cases they

are involved, producing the complication known as "*catarrhal pneumonia.*"

In those cases in which the air cells are not involved in the inflammatory changes, the air passes, during the act of inspiration, through the secretion, blocking the smaller tubes, but is prevented from escaping during the act of expiration, the secretion in the smaller tubes acting as a valve, the result being distention of numerous vesicles, producing a circumscribed or diffused *functional emphysema.* If the secretion produces complete closure of any of the smaller tubes, the air previously drawn into the vesicles will be absorbed, causing *collapse* (atelectasis).

If the inflammation extends to the alveoli of the lungs, it produces the condition known as *broncho-pneumonia*, a frequent complication in children and feeble elderly people; it is most commonly lobular in character, whence the term "*lobular pneumonia.*"

Symptoms. Usually preceded by more or less ordinary bronchitis, followed by *rise of temperature*, 102–103° F., *difficult* and *increased respiration*, with *paroxysms* in which the dyspnœa is markedly aggravated and rapid *cyanosis* occurs.

The circulation through the lungs being impeded by the dyspnœa, the *pulse* becomes feeble and flickering, and there results general congestion of the venous system, the *countenance livid*, the *lips and nails blue*, the *surface cold*, and often covered by a *clammy perspiration*, the *mind dull*, and in children stupor and convulsions rapidly supervene, the result of *non-aeration of the blood.* The *cough* is slight, but of a *suppressed* character, the *expectoration scanty.* When cyanosis occurs the cough may almost entirely cease; expectoration also ceases, death soon following from *apnœa* and *depression.*

Percussion. Normal, except over those portions of the lungs which are in a condition to *collapse*, when dullness rapidly develops and may as rapidly disappear, changing to other portions of the lung.

Auscultation. First stage, harsh or *vesiculo-bronchial*, soon followed by *diminished respiratory murmur*, associated with *sub-crepitant rãles.*

Prognosis. In children, on account of their inability to expectorate, which leads to rapid collapse of the lungs, and in the aged, the prognosis is most grave. In the strong and vigorous recovery follows prompt and energetic treatment.

Diagnosis. Capillary bronchitis is often mistaken for true catarrhal pneumonia, the points of distinction between which will be pointed out when discussing that affection.

Treatment. *Emetics* should be given from the onset, especially to vigorous children, and be followed by—

℞. Ammonii iodidi..... gr. iij
Ammonii carb..... gr. iv
Ext. glycyrrh. pulv..... gr iij
Syr. tolu..... ʒj. M.

Every two or three hours, for a child five years of age.

Quinina, gr. ij every four hours, and the early and bold use of *spts. vini gallici*, to prevent or modify the depression that sooner or later follows. Nutritious, easily digested food, milk being the most efficient, should be administered at frequent but regular intervals.

Should symptoms of *cyanosis* or pulmonary collapse occur, the indications are for *more vigorous emesis* and *stimulation*.

Locally, warm applications, taking care that they are not heavy, in which case they add to the difficult respiration, are useful adjuncts to the above means.

CROUPOUS BRONCHITIS.

Synonyms. Membranous bronchitis; plastic bronchitis; diphtheritic bronchitis.

Definition. An acute inflammation of the mucous membrane of the larger and middle-sized bronchial tubes, attended with an exudation, forming a membraniform layer, which is closely adherent to the mucous surface; characterized by febrile reaction, cough, difficult breathing, scanty expectoration followed by the expulsion of the false membrane, in the form of patches or casts.

Causes. Associated with membranous laryngitis from extension downward; asthma; emphysema; phthisis; but most commonly the result of cold, damp and exposure, in those of strong and vigorous constitutions.

Pathological Anatomy. *Hyperæmia* of the mucous membrane of the bronchial tubes, associated with *swelling* and *œdema*, during which the surface is covered with a whitish or grayish-white, firmly adherent, *membranous deposit*, cemented together by a coagulable exudation, and prolonged by rootlets from its under surface into the bronchial follicles, which sooner or later is loosened and detached by suppurative process and is expectorated after a violent fit of coughing or vomiting. When expectorated, the *false membrane*, as it has been termed, has either the form of patches or is thrown off entire from the bronchial tube, and may be found to consist

of casts representing more or less of the bronchial subdivisions, and presenting an appearance not unlike "boiled maccaroni."

On *microscopical examination*, the detached membrane presents fibrillæ which characterize fibrine or lymph in other situations, and if placed in a solution of acetic acid, it becomes greatly swollen, while ordinary mucus contracts and becomes more dense if added to a solution of acetic acid.

Symptoms. There are no symptoms or signs by means of which this variety of bronchitis can be distinguished from ordinary catarrhal bronchitis, *prior to the expectoration of false membrane.*

Expectoration is preceded and accompanied by *violent paroxysms of coughing*, and after more or less of the membrane has been raised a mucopurulent expectoration streaked with blood may be present for several days.

Duration. The inflammation may be either *acute*, *sub-acute* or *chronic*, expectoration of patches or strips of the membrane being repeated at intervals of days, weeks, months, or even years.

Prognosis. In adults, favorable, if not associated with other grave affections, viz: phthisis, pneumonia, emphysema, etc. In young children it may cause obstruction of the respiration, and not unfrequently proves fatal.

Treatment. As the character of the inflammation can seldom be determined until the membrane or portions of it have been expectorated, the treatment is at first the same as in cases of ordinary acute bronchitis.

As soon, however, as the character of the inflammation can be determined, active *emesis* is the most effective means for removing the obstruction caused by the false membrane, the best agents of this class being either *hydrargyri subsulphas flavus*, or *zinci sulph.*, to be repeated as indicated.

Inhalations of the vapor of water, and especially of *lime water*, are highly serviceable.

To prevent the formation of membrane Dr. Bartholow strongly urges the use of *ammonii iodidum* and *carbonas* combined, and in small doses every hour or two. In a case treated by the author after this method, excellent results followed.

In cases showing a tendency to become chronic, good results will follow the application of flying *blisters* to the chest and the internal administration of *arsenicum* and some preparation of *pix liquida.*

CHRONIC BRONCHITIS.

Synonyms. Chronic bronchial catarrh; winter cough; secondary bronchitis.

Definition. A chronic inflammation of the mucous membrane of the larger and middle-sized bronchial tubes; characterized by cough and more or less profuse expectoration, plus, in many cases, the symptoms of *emphysema* of the lungs, which complicates the majority of cases.

Causes. The result of sub-acute or repeated and persistent attacks of acute bronchitis; cardiac diseases; Bright's disease; gout; rheumatism.

Varieties. I. *Mucous catarrh*, associated with moderate expectoration. II. *Broncorrhœa*, profuse expectoration. III. *Dry catarrh*, scanty expectoration.

Pathological Anatomy. The mucous membrane of the bronchial tubes is discolored, being of a more or less dull red, often of a deeply venous hue, mingled with a grayish or brownish color. These changes may be either in patches or extensively diffused. The vessels of the membrane are dilated. The mucous membrane is thickened, resulting in the reduction in the calibre of the tube and a roughening of its internal surface. The submucous tissue becomes infiltrated, contracted and indurated.

The elastic and muscular coats of the tubes become hypertrophied, lose their elasticity, and the cartilages become the seat of calcareous deposits.

As the result of the loss of elasticity and muscular tone of the tubes they become irregularly dilated, "*bronchial dilatation.*" The dilatations may be uniform in character, resembling somewhat the fingers of a glove, or they may be *sacculated* or *globular*, forming actual cavities in the bronchial structure.

In the *mucous variety* the secretion consists of young cells and mucous corpuscles, having a yellowish color; in the *dry variety*, the "catarrh sec" of Lænnec, or "dry bronchial irritation;" the secretion is scanty, tough, semi-transparent, and occurs in defined globular masses; *in bronchorrhœa*, which is usually associated with bronchial dilatation, the secretion is abundant, greenish-yellow in color, and often fetid.

Symptoms. The most characteristic symptoms of chronic bronchitis are the *cough* and *expectoration*. Unless associated with other diseases, the general health suffers but little, if at all, constitutional symptoms being present only during acute exacerbations.

Mucous catarrh, or, from its occurring most commonly during the winter

months, "winter cough," is characterized by paroxysms of cough, more or less violent, followed by the expectoration of a yellowish mucus.

Dry catarrh is characterized by a harsh cough, a feeling of soreness or rawness under the sternum, and the expectoration of *small globular masses*.

Bronchorrhœa, which is associated with *bronchial dilatation*, and most common in the elderly, is characterized by paroxysms of severe coughing, followed by copious expectoration of greenish-yellow, often fetid, mucus.

Percussion. Unless complicated with other affections, *normal;* if bronchial dilatation occur, there are *diffused* spots of the *tympanitic* or *amphoric* percussion sound, the physical condition being a circumscribed cavity containing air and connecting with a bronchial tube.

Auscultation. Harsh, or *vesiculo-bronchial* respiration, associated with more or less profuse, *sonorous, sibilant* and *large* and *small bubbling râles;* in *bronchial dilatation*, in addition to the harsh respiration, is found *broncho-cavernous breathing*, with large and small *gurgling râles.*

If *emphysema* complicate chronic bronchitis, the physical signs are somewhat modified, and will be pointed out when discussing that affection.

Prognosis. If unassociated with disease of the lungs or heart, chronic bronchitis is never dangerous to life, although the symptoms are present more or less continually, and aggravated upon the least exposure.

If associated with phthisis, emphysema, disease of the heart, or of the kidneys, the prognosis is governed by these affections.

Treatment. Cases of chronic bronchitis, of whatever variety, should observe the following general rules: 1. Attention to the general health. 2. The clothing, wearing flannel the year round, or, what is better, silk under-clothing, taking care that the opposite extreme of too much clothing be not practiced.

The *medical treatment* is guided by the *cause*, *character* and *severity* of the disease.

If *secondary* to other affections, in the majority of cases, remedies directed to the bronchial mucous membrane are *contra-indicated.* If the result of the rheumatic or gouty diathesis, in addition to the remedies directed to the disease itself, should be combined change to a warm climate if possible, and a more or less protracted course of *potassii iodidum*, or *lithii citras* or a residence at one of the *alkaline springs.*

For mucous catarrh, with acute exacerbations—

℞. Ammonii muriat..... gr. xv–xx
Vini picis, liq..... ℥j. M.
Three or four times in twenty-four hours.

Dry catarrh is greatly benefited by—

℞. Potassii iodidi..... gr. v–x
Ol. eucalyptus..... gtt. j–v
Vini picis, liq..... ℥j. M.
Three times a day.

For *bronchorrhœa, copaiba,* gtt. v–x every three hours, or *spts. terebinthinæ,* gtt. v, every four hours, or *acidum carbolicum,* gr. ss, four times a day, and at the same time using *ol. morrhuæ* and *arsenicum,* or, if these means fail, inhalations of *alumen, acid gallicum* or *acid tannicum.*

If the *expectoration be fetid,* "fetid bronchitis," Prof. Da Costa recommends the internal use of *acidum carbolicum,* gtt. j every third hour, with *inhalations* of *acidum carbolicum,* gr. x, *aqua,* ℥j, two or three times a day.

ASTHMA.

Synonyms. Nervous asthma; bronchial asthma.

Definition. A paroxysmal spasmodic contraction of the muscular layer surrounding the bronchial tubes, and perhaps associated with a tonic spasm of the diaphragm, and more or less bronchial catarrh; characterized by spasmodic attacks of dyspnœa, lasting some hours and terminating in health.

Causes. A true neurosis of the respiratory apparatus.

The result of peripheral or local disturbances in the nervous system, often hereditary; pressure on the pneumogastric nerve; dyspepsia and constipation, resulting in irritation of the end organs of the pneumogastric; uterine, hepatic, or nephritic disease; inhalation of various substances, as ipecac, turpentine, etc.; climate; mental and moral influences. Asthma is more common in men than in women; in childhood and young adults than those of middle and old age; in the well-to-do and wealthy than in the poor.

Symptoms. The onset of a *first attack* of asthma is *abrupt* and *sudden,* the succeeding attacks being preceded by *prodromes,* which the individual rapidly learns to appreciate, viz: *coryza, bronchial irritation,* or marked *dyspepsia.*

The *paroxysm* begins, in the majority of cases, in the *early morning hours* or during the *afternoon,* with a *feeling of anguish* and *constriction in the chest* and an *intense desire for air.* The *breathing* is accompanied with *loud wheezing,* the *face is flushed,* at times even *cyanosed,* and *bathed in perspiration,* the *eyes stare,* the *eyeballs protrude,* and the muscles of the neck become prominent as they aid in the effort for air. The dyspnœa

soon becomes so severe that the *inspiration is but a gasp*, the *lips are pallid, cyanosis deepens*, and the patient feels as if death were impending.

After some minutes or hours the *respiration* becomes *easier*, more air enters the lungs, the cyanosis disappears, and gradually the paroxysm ceases, the patient feeling exhausted and the chest fatigued.

During the paroxysm there is a short dry cough, becoming looser as the attack subsides, the expectoration consisting of white pellets of mucus, at times streaked with blood.

The *duration* of an attack varies from three to ten hours. Instead of single paroxysms, slight remissions may occur at intervals of one, two or three hours, to be followed by exacerbations lasting from four to six hours, continuing for a week or two, preventing the patient lying down or taking food

Percussion. During the paroxysm, *hyper-resonant* over both lungs, termed *vesiculo-tympanitic*, the "bandbox tone" of Bamberger.

Auscultation. First stage feeble or *absent vesicular murmur*, with prolonged expiration associated with loud *wheezing, whistling, sibilant* and *sonorous râles;* as the *paroxysm subsides* the vesicular *breathing* becomes more apparent and is associated with *moist râles.*

Prognosis. In itself asthma is not fatal to life; but if the paroxysms are frequently repeated there results either *emphysema, cardiac dilatation*, with subsequent dropsy, or even cerebral hemorrhage.

Attacks of asthma frequently occur as a complication in emphysema, chronic bronchitis and valvular diseases of the heart.

Treatment. There are two indications, viz: To relieve the paroxysm, and to prevent its recurrence.

To relieve the paroxysm, no medication is so effective as the *hypodermatic* injection of *morphinæ sulph.*, gr. ⅙ to ¼, combined with *atropinæ sulph.*, gr. $\frac{1}{150}$. *Chloral*, gr. x, repeated, where no heart complication exists, is often effective, or *amyl nitris* inhalations have been recommended; also *nauseant expectorants*, viz: *lobelia, ipecac, squill*, or *ext. grindeliæ fld.*, gtt. xx, repeated every two or three hours.

Inhalations of the fumes of belladonna, stramonium, nitre-paper, chloroform, ethyl bromid., or the use of various pastilles or cigarettes, are of immense benefit in many cases.

If an *attack* is *impending* it may often be aborted by drinking freely of strong *black coffee*, or by full doses of the *bromides.*

To prevent recurrence of the paroxysms, the general health must be strictly watched, any of the complications or causes of the attack attended

to, systematic exercise, bathing, regulated diet, and change of climate when possible.

Internally, good results are sometimes attained by a long course of *belladonna, arsenicum* or *potassii iodidum.*

HAY ASTHMA.

Synonyms. Hay fever; autumnal catarrh; rose fever.

Definition. An acute catarrhal inflammation of the upper air passages, extending to the bronchial tubes, associated with spasmodic contraction of their muscular layer; characterized by coryza, croupy or wheezy cough and difficult respiration.

Causes. An affection of the nervous system; often hereditary; mental impressions.

Persons in whom the predisposition exists have attacks excited by the inhalation of the pollen of grasses, rye, corn, wheat etc.

Symptoms. Begins by severe *coryza*, with *sneezing*, a clear, watery, *nasal discharge*, congested eyes and Eustachian tubes, rapidly extending to the *larynx* and *bronchial tubes*, when occur a *hoarse, croupy* and wheezing *cough*, and *difficulty of breathing*. The dyspnœa occurs in paroxysms, which are often as severe as those occurring during a regular asthmatic attack.

The paroxysms remit after a few days, returning again for several days or weeks, and again remitting, the bronchial catarrh persisting for a month or more.

The constitutional symptoms are mild, unless complications occur.

Complications. The affection may extend to the finer bronchial tubes (capillary bronchitis); congestion or œdema of the lungs and pneumonia are not infrequent.

Duration. Unless a change of climate is resorted to, paroxysms of hay fever continue more or less severe for six, eight or ten weeks of the year; each year the paroxysms growing more severe.

Prognosis. The affection never proves fatal in itself, but one or more of the following *sequellæ* may result, viz:—Asthma, chronic bronchitis, or loss of the special sense of hearing or of smelling.

Treatment. No specific. An attack of hay asthma is often prevented by a *change of climate* during the season of the year when the attacks are most common, viz., the *early autumn.* Any of the following locations

may be selected, viz.—White Mountains, Catskills, Adirondacks, Rocky Mountains, or a sea voyage.

Success has followed the use of *quinina*, gr. v, three times a day, beginning a month before the expected paroxysm. After the attack has fairly begun, *potassii iodidum*, gr. xv, three times a day, seems to modify somewhat the severity of the paroxysms; or the following powder, by *insufflation* :—

℞. Bismuth. subnit..... ℥ij
Acid. tannic..... ℥x
Iodoformi..... gr. v. M.

Sig.—Every three or four hours.

Cases accompanied by a profuse watery discharge have this symptom at least modified by minute doses of *atropinæ sulph.* with *morphinæ sulph.*, every three or four hours.

A long course of *arsenicum* in minute doses sometimes removes the susceptibility to the disease.

WHOOPING COUGH.

Synonyms. Hooping cough; pertussis.

Definition. A convulsive, paroxysmal cough, consisting of a number of forcible expirations, followed by a series of deep, loud, sonorous inspirations (the whoop), repeated several times during each paroxysm, and associated with catarrh of the larger bronchi.

Causes. Chiefly a disease of childhood, one attack generally removing the susceptibility; contagious; the result of an unknown poison, perhaps atmospheric, affecting the nervous system.

Pathology. The changes, if any, occurring in the nervous system are unknown. It is said that "irritation of the internal branch of the superior laryngeal nerve produces relaxation of the diaphragm, spasm of the glottis and a convulsive expiration, the series of phenomena present in a paroxysm of asthma."

Hyperæmia of the mucous membrane of the nares, pharynx, larynx and bronchial tubes, with diminished *secretion*, followed by an increased secretion of a transparent mucus, afterward becoming purulent, the mucous membrane afterward being pale and anæmic.

Symptoms. Divided into three stages, viz.—*catarrhal*, *spasmodic* and *terminal*.

Catarrhal stage originates as an ordinary naso-laryngo-bronchial catarrh with a loose cough. *Duration* one to two weeks.

Spasmodic stage, the *cough* becomes *paroxysmal*, consisting of a succession of *short, rapid, expiratory* efforts, the face becoming red, the eyes swollen and protruding, the body bending forward, and when these expiratory efforts have exhausted the breath, they are followed by a *deep, loud, crowing inspiration—the whoop.* Each paroxysm being composed of three such spells, the last one followed by the *expectoration* of a small amount of *tough, viscid mucus.*

The attacks of *cough* may be so severe as to cause *vomiting*, and if the vomiting occur shortly after food has been taken, the nutrition of the patient will suffer. Profuse *epistaxis* is not unfrequent. *Duration* about four weeks.

Terminal stage. The paroxysms recur at longer intervals, are of less duration and intensity, the catarrhal symptoms being more marked, the expectoration freer. *Duration*, one or two weeks, often followed by the "cough of habit."

Complications. Congestion of the lungs, capillary bronchitis, pneumonia and emphysema, or, rarely, convulsions, hydrocephalus, or apoplexy.

Prognosis. Depends upon the age and strength of the patient, the severity of the paroxysms, and the presence or absence of complications. Ordinary cases, favorable. Moderately severe attacks during infancy are followed by head symptoms, while attacks occurring in adults are followed by chest symptoms.

Diagnosis. During the catarrhal stage, whooping cough cannot be distinguished from a common cold, but on the advent of the characteristic whoop the diagnosis is settled.

Treatment. Of the immense number and character of remedies recommended and employed for the cure of whooping cough, the author has obtained the best results with *ammonii bromidum*, gr. ss to iv, every three or four hours, according to age; in severe cases combined with *tinct. belladonnæ*, in doses sufficient to produce its physiological effect.

The diet to be regulated, the clothing to be warm, but not too heavy, and the patient kept in the open air as long as possible.

EMPHYSEMA.

Synonym. Vesicular emphysema.

Definition. Dilatation of, or increase in the size and capacity of, the air vesicles; characterized by enlargement of the chest, difficulty of breathing, especially on exertion, and associated sooner or later with dilatation of the heart.

Causes. The *predisposing* cause of emphysema is a hereditary nutritive derangement of the lung structure, often associated with a rigid enlargement of the thorax.

The *exciting* cause is the result either of a *too forcible* and long continued inspiration, *the theory of inspiration*, or the *excessive* mechanical distention of the vesicular walls by forced expiration, the *theory of expiration*.

What is known as *vicarious emphysema* is the dilatation of the air cells of the healthy portion of the lung, some other part being the seat of consolidation.

Interlobular emphysema is the presence of air in the spaces between the lobules of the lungs underneath the pulmonary pleura.

Pathological Anatomy. The situation of vesicular emphysema is, in the majority of cases, the *superior portions* of the chest, and is more marked on the *left* side than on the right.

An emphysematous lung feels remarkably soft to the touch, and upon cutting, a dull, creaking sound is barely perceptible. It is of a pale red color, the vesicular walls are thinner and slighter, the vesicles are greatly enlarged, sometimes to the size of a pea or bean, and have an irregular shape, and traversing most of these large cysts (dilated vesicles) a few delicate bands, the remains of the lacerated inter-alveolar septa, are visible. With the destruction of the septa many of the capillaries are destroyed, whereby the emphysematous tissue is remarkably bloodless and dry.

In consequence of the destruction of so many of the capillaries, the obstruction to the pulmonary circulation becomes so great that the pulmonary artery and right cavities of the heart are greatly distended; finally, the muscular tissue of the heart undergoes granular, followed by fatty degeneration. The distention of the veins results in a general venous stasis, viz.: nutmeg liver, congested kidneys, gastro-intestinal catarrh, etc.

Symptoms. The chief symptoms of vesicular emphysema are *difficulty of breathing*, greatly aggravated on exertion, more or less *cough*, the result of an attending bronchitis, and the various symptoms resulting from *dilatation of the heart*. The distress of the patient is often increased by paroxysms of asthma.

Inspection. The shoulders are rounded, the intercostal spaces widened, the vertical diameter elongated, with circumscribed prominences between the clavicles and nipples, often increased by the act of coughing—the peculiar "barrel-shaped" chest characteristic of this disease.

The character of the respiratory movements is marked, there being but slight movement observed on forcible respiration, the chest having the constant appearance of full inspiration.

Palpation. The vocal fremitus is diminished, and the cardiac impulse depressed and nearer to the sternum.

Percussion. The *resonance is increased* (hyper-resonant) over all the emphysematous portions, and if the whole lung is involved, extends to the seventh or eighth rib anteriorly, and to the twelfth rib posteriorly. The hepatic dullness may not begin until the inferior margin of the ribs is reached; the cardiac dullness is lessened, on account of the emphysematous lung nearly covering the heart.

Auscultation. The vesicular murmur is *weakened*, and in pronounced cases almost *absent*. If bronchitis is present the inspiratory sound may be rough or sibilant in character, but its duration is always shortened. *Expiration is always prolonged*, and if bronchitis is present, may be associated with more or less pronounced moist or *bubbling râles*.

The *first sound* of the heart is lessened in intensity and duration, the *second sound* sharply accentuated.

Prognosis. Vesicular emphysema is essentially a chronic disease. In itself it rarely proves fatal, but if aggravated, from any cause, or if associated with frequent or prolonged asthmatic paroxysms, the cardiac changes are hastened, general dropsy supervenes, death occurring from exhaustion, or, more commonly, as the result of intercurrent attacks of pneumonia.

Diagnosis. *Bronchitis* is distinguished from emphysema by the absence of dyspnœa, hyper-resonance of the chest, changes in its shape, size, and movements, and the disturbance of the circulation.

Spasmodic asthma by the paroxysmal character of the affection, emphysema being a permanent malady, with attacks of asthma.

Cardiac diseases due to other causes than emphysema do not have the characteristic physical signs of that affection.

Treatment. It being impossible to restore the altered lung structure, the indications for treatment are to relieve the *symptoms* and to endeavor to prevent its further *progress*.

For the *relief* of the asthmatic paroxysms *morphina* combined with *atropina* may be used hypodermatically, or *ext. quebracho fld.*, ʒ ss–j, every hour until relief, or large doses of *potassii bromidum*, frequently repeated.

To *prevent the progress* of the affection, remove the bronchial catarrh, relieve the difficulty of breathing, and strengthen the cardiac action, no one combination seems to compare with the following:—

℞. Potassii iodidi..... gr. v
Strychninæ sulph..... gr. $\frac{1}{40}$
Liq. potassii arsenit..... ♏v
Aq. lauro-cerasi..... ʒj. M.

Sig.—Four times a day.

But of all means hitherto proposed for the relief of emphysema, nothing has approached the *inhalation of compressed air*, by means of the apparatus of Waldenberg.

The *dropsy* arising from failure of the heart to compensate for the circulatory derangement in the lungs, for a time, may be relieved by the use of *digitalis*, or, if this fails, *scilla* combined with *hydragogue cathartics*.

CONGESTION OF THE LUNGS.

Synonym. Hyperæmia of the lungs.

Definition. An increase in, or an abnormal fullness of, the capillaries of the air cells; *active* when the result of an accelerated circulation; *passive* when caused by an impeded outflow from the capillaries.

Causes. *Active.* Increased cardiac action; too great bodily exertion; alcoholic excesses; mental excitement; inhalation of cold or hot air.

Passive. Dilated heart; valvular diseases; low fevers (hypostatic congestion); Bright's disease.

Pathology. The hyperæmic lung has a bloated, dark red appearance, its vessels are distended to the uttermost, the tissues succulent and relaxed, blood flowing freely over the cut surface; a bloody, frothy liquid is present in the bronchi, and the alveolar walls are so much swollen that the condensed lung shows scarcely any indication of its cellular structure, resembling the tissue of the spleen (*splenification*).

Symptoms. *Active.* Rapidly developing oppression *of the chest* and *difficulty of breathing*, flushed face, strong, full pulse, throbbing carotids and congested eyes, with a short, dry *cough*, followed by scanty, frothy *expectoration* slightly streaked with *blood*.

Passive. Developed slowly, with difficulty of breathing, blueness of the surface, almost continuous hacking cough, followed by scanty, blood-streaked expectoration.

Percussion. The resonance of the lungs slightly diminished, the quality of the sound being somewhat tympanitic.

Auscultation. The vesicular murmur is diminished and accompanied with *sub-crepitant râles*.

Duration. *Active.* Usually from three to five days, terminating either by resolution, hemorrhage, or rarely, pneumonia. The onset may be so complete and sudden that death soon occurs.

Passive. Developed slowly and subject to great variations, depending upon the cause.

Prognosis. An acute congestion of the lungs may prove fatal within a few hours, but under prompt treatment it generally terminates favorably.

The passive form is controlled entirely by the cause.

Diagnosis. Active congestion of the lungs cannot be distinguished from the stage of engorgement of a true pneumonia, in the majority of cases.

Treatment. *Active.* In the strong and vigorous *wet cups* to the chest, or, if the symptoms are pronounced, a general *venesection. Internally, tinct. aconit.*, gtt. j–ij every half hour or hour, as indicated, with *free purgation.*

Passive. Dry or *wet cups* over the chest, *hydragogue cathartics*, and the internal administration of *digitalis.*

ŒDEMA OF THE LUNGS.

Definition. An effusion of serum upon the free surface of the lung, viz.: in the pulmonary vesicles; characterized by dyspnœa, cough and frothy, blood-streaked expectoration.

Causes. Increased cardiac action; too great bodily exertion; alcoholic excesses; mental excitement; inhalation of cold or hot air.

Pathology. The lung tissue is swollen, and does not collapse when the chest is opened. The elasticity of the tissue has disappeared, and it pits upon pressure.

If following congestion of the lungs the color is red; if a symptom of a general dropsy, its color is pale.

On cutting into the œdematous spots an enormous quantity of liquid, sometimes clear, at other times of a red color, mixed more or less with blood, flows over the cut surface. The liquid is filled with bubbles, is frothy, from being copiously mixed with air, providing the air cells have not been entirely filled with serum, thereby excluding the air.

Symptoms. Following a more or less rapidly developing hyperæmia of the lungs are *great difficulty* and *extreme rapidity of breathing*, with a strong sense of *oppression*, great *anxiety*, *rapid* and tumultuous *cardiac action*, *throbbing carotids and temporals*, fullness of the head and *head-*

ache, flushed face and *congested eyes*, with a *constant, short cough*, with the *expectoration* of a *tough, frothy mucus*, streaked with *blood.*

If the effusion into the air cells is sufficient to prevent the entrance of air, symptoms of *cyanosis* rapidly supervenes, the *pulse* becoming *feeble*, the *surface cold*, the *breathing shallow* and hurried, the *cough suppressed*, *stupor* replacing the restlessness, soon deepening into *coma.*

Percussion. Slightly impaired or vesiculo-tympanitic.

Auscultation. The vesicular murmur is supplanted by *sub-crepitant* and *bubbling râles.*

Prognosis. Œdema of the lungs is always a serious malady, and frequently, unless promptly relieved, terminates fatally.

Diagnosis. *Pneumonia* in the earlier stages is the only condition likely to be confounded with œdema of the lungs, and the subsequent course of the two maladies soon determines the diagnosis.

Treatment. If the œdema be of an active kind, prompt *blood-letting*, either by *venesection* or *wet cups* to the chest, is indicated.

The *internal* administration of *tinct. aconit.*, gtt. j–ij, repeated every fifteen minutes, until the cardiac action is markedly reduced, when every hour or two, with the use of the preparations of *ammonium*, either the *carbonas* or *iodidum*, to liquefy the effusion, produces marked relief.

The above means may be aided by *counter-irritation* to the chest, *hot mustard foot-baths*, and active *saline purgatives.*

HÆMOPTYSIS.

Synonyms. Bronchial hemorrhage; broncho-pulmonary hemorrhage; bronchorrhagia.

Definition. The expectoration of pure or unmixed blood, usually of a bright red color, following the act of coughing.

Causes. In the majority of cases, the result of *tubercular* deposition in the walls of the minute bronchial arteries; excessive cardiac action; excessive bodily exertion, straining, lifting, running, etc., a symptom of *hæmophilia* ("bleeder's disease").

Pathological Anatomy. Hæmoptysis rarely causes death in itself, so that few opportunities for observing post-mortem appearances are obtained, and when they do occur, the location of the hemorrhage is seldom found.

The air passages are more or less filled with clotted blood, the mucous membrane swollen, and of dark red color, rarely, pale and bloodless. The air cells contain blood clots, or else are distended with air, the bronchi

being filled with clots preventing its egress. Unless the clots are rapidly removed by expectoration or absorption, a secondary inflammation originates around them.

Symptoms. "Spitting of blood" occurs suddenly; rarely, it is preceded by epistaxis, palpitation and some difficulty of breathing.

It begins with a sensation of *warmth* under the sternum, *tickling* in the throat, a *sweetish taste* in the mouth, which, upon attempting to remove by the act of coughing, a *warm, saltish, bright red, frothy liquid* gushes from the mouth and nose. The quantity of blood raised varies from an ounce to a pint. The appearance of the blood depresses the individual, he becoming *pale, tremulous,* often *fainting.*

The attack may subside within half an hour to several hours, returning for several days, in the meantime the expectoration being either bloody or streaked with blood.

A slight febrile reaction, with chest pains, supervenes upon the hemorrhage, the result of the inflammation at the site of the bleeding, which soon subsides, except where blood clots develop a secondary pneumonia, which may undergo the cheesy metamorphosis.

Auscultation. *Coarse, bubbling râles* are discerned in circumscribed portions of the chest.

Prognosis. Hæmoptysis in itself rarely terminates fatally, although causing much depression; the patient rapidly recovers, unless secondary pneumonia results. In nine cases out of ten it is the prognostic sign of *phthisis.*

Diagnosis. From *epistaxis,* or hemorrhage from the posterior nares, it is distinguished by the absence of air bubbles and inspection of the fauces.

Hæmatemesis, or hemorrhage from the stomach, differs from hæmoptysis in that the blood is *vomited* instead of expectorated, commonly of a *dark color, clotted,* mixed with the acid contents of the stomach, followed with black, tar-like stools, and *the absence of râles in the chest.*

Exceptions to the above occur when the blood from the lungs is first swallowed and afterwards raised by vomiting, or when the hemorrhage in the stomach is caused by the erosion of a large artery, the result of ulcer of the stomach; in these cases, however, the raising of blood is preceded by epigastric pain and the blood is not frothy.

Treatment. *Perfect rest in bed,* the head and shoulders elevated, and perfect quiet, the diet to be bland, the drinks cool, the patient slowly swallowing small particles of ice. *Common salt,* slowly dissolved in the

mouth, is a popular remedy, which, if it does no good, serves to occupy the attention of the patient and friends until medical advice is obtained.

The hypodermatic injection of *ergotin*, gr. x–xxx, or the internal administration of *ext. ergotæ, fld.*, or,—

℞. Acid gallic..... gr. xv
Acid sulph. dil..... ♏x
Aqua cinnamon..... ℥iv M.

Repeated every fifteen or twenty minutes.

Or *tinct. matico*, ℥j, or *alumen*, gr. xx, frequently repeated.

If the hemorrhage causes great nervous excitement, or depression, *opium*, either hypodermatically or internally, to quiet the patient, is indicated.

Inhalations, by means of the steam atomizer, of either *Monsell's solution* or *tinct. ferri chlor.*, are recommended when the above means fail.

Prof. Da Costa recommends for frequent small hemorrhages, continuing day after day, *cupri sulph.*, gr. $\frac{1}{12}$, ext. opii, gr. $\frac{1}{12}$.

CROUPOUS PNEUMONIA.

Synonyms. Lobar pneumonia; pneumonitis; lung fever; winter fever.

Definition. An acute croupous inflammation involving the vesicular structure of the lungs, rendering the alveoli impervious to air; characterized by a chill, fever, pain, dyspnœa, cough, rusty sputum and great physical prostration.

Causes. The question of pneumonia being a constitutional disease is still *sub judice*. It is most common in winter, at times occurring *epidemically*, the result of atmospheric conditions; exposure to draughts and cold; injuries to the chest walls; alcoholic excesses; gout or rheumatism.

Pathological Anatomy. The inflammatory changes most commonly affect the lower right lobe, rarely, the upper lobe, very rarely, corresponding lobes in both lungs.

The changes are, I. *Hyperæmia* (engorgement); II. *Exudation* (red hepatization); III. *Resolution* (yellow hepatization); or it may undergo purulent transformation (gray hepatization).

I. *Stage of hyperæmia* or engorgement consists in the vessels of the alveoli being distended to their utmost, encroaching upon the cavity of the air vesicle; the lung has a reddish-brown color, is heavier, sinking somewhat lower in water than a normal lung, and having a slight exudation upon the vesicular surface. The same changes are perceived in the adjacent bronchioles.

II. *Stage of exudation*, consists in the exudation of a viscid, fibrinous fluid, admixed with white and red corpuscles and blood, which rapidly coagulates, firmly enclosing the corpuscles and completely filling the alveoli. When the exudation and coagulation are completed, the lung is red, sinks at once when placed in water, and its elasticity is destroyed. When cut into, the color, density and granular appearance so closely resembles the cut surface of a section of the liver, that Lænnec termed it *red hepatization*.

III. *Resolution*, or yellow hepatization, follows the above condition in the majority of cases, the coagulated albuminous exudation undergoing liquefaction and absorption, the cellular element undergoing a fatty degeneration, the greater part being absorbed, the remainder expelled during acts of expectoration, the alveoli returning to their normal condition, both as to capacity, function and elasticity.

If resolution is retarded and portions of the coagulated exudation undergo *purulent transformation*, changing from a yellowish to a greenish-yellow color (gray hepatization), pus cells are rapidly formed, the part becoming a granular, fatty mass. The portions of the lung not undergoing this purulent transformation retain the reddish color with intermixed yellowish patches, the lung structure proper remaining intact. The purulent contents may be ejected in part, the remainder undergoing fatty degeneration and finally absorption.

Abscess of the lung may result from the lung structure becoming involved in the purulent disintegration. Abscesses may be solitary or in great numbers, which by disintegration of intervening structure form one or more large abscesses; these abscesses either terminate fatally, or open into the pleural cavity, cause *empyema* and exhaustion, or open into the bronchi and are expectorated, or an *interstitial pneumonia* is developed and the abscess encapsulated in a firm cicatricial tissue.

Gangrene of the lungs may result from blocking up of the bronchial arteries or pulmonary arteries by coagula, during any stage of the disease.

The uninflamed portions of the lungs are hyperæmic and their functional activity is increased.

Death sometimes results from a *general œdema* of the unaffected lung, such cases being often erroneously termed "double pneumonia."

Symptoms. Begins by severe and prolonged *chill* (in children convulsions), followed by rapid *rise of temperature*, 103°–105° F., strong, full, *rapid pulse*, either a *dull or sharp pain*, aggravated by pressure, breathing or coughing, *shortness of breath*, the number increasing to 40, 50, or more per minute, causing *interrupted speech, cough*, first short, ringing and hacking,

soon followed by a scanty, *rusty* sputum, tough and adhesive, becoming more copious and of a yellow color as the disease advances. There are present headache, sleeplessness, rarely delirium, save in drunkards, gastric disturbances and scanty, high colored urine, with *diminished chlorides*.

The above symptoms continue more or less marked until either the *fifth*, *seventh*, *ninth* or *eleventh* day, when a *crisis* occurs, and within twenty-four hours convalescence is established, recovery rapidly following.

Typhoid pneumonia is a term applied to those cases which are accompanied by signs of *extreme prostration*, very *high temperature* and profuse and *prolonged exudation*. They may also terminate by a *crisis*.

Bilious pneumonia occurs in cases accompanied by *congestion of the liver*, the result of venous stasis from pulmonary obstruction or from an accompanying *acute catarrhal jaundice*. In malarial districts pneumonia and malaria are frequently associated, when jaundice, more or less pronounced, occurs. Such cases are termed *malarial pneumonia*.

If purulent infiltration follows the stage of red hepatization, instead of a crisis, there occur symptoms of exhaustion, with profuse expectoration, etc. Pneumonia occurring in persons of *intemperate* habits usually begins with symptoms closely resembling an attack of *delirium tremens*, cough, expectoration and pain being very slight, or even absent.

Inspection. *First stage*, deficient movement of the affected side, due to the pain. *Second stage*, the healthy side rises normally, the affected side lagging behind. If both lower lobes are impervious to air, the diaphragm cannot descend and the epigastrium does not project during inspiration, the breathing being conducted by the upper part of the chest (superior costal respiration).

Palpation. *First stage*, the *vocal fremitus* more distinct than normal. *Second stage*, the vocal fremitus is markedly *exaggerated*, except in those rare instances of occlusion of the bronchi by secretion.

The *cardiac impulse* is felt in the normal position.

Percussion. *First stage*, the percussion note is slightly *impaired*; indeed, at times having a hollow or tympanitic quality. *Second stage*, *dullness* over the affected parts, with an increased sense of *resistance*.

Auscultation. *First stage*, over affected part, *feeble vesicular murmur*, associated with the true vesicular or *crepitant* (crackling) *râle*, most distinct during inspiration. *Second stage*, harsh, high-pitched *bronchial respiration*, at times resembling a to and fro metallic sound, except in those rare instances in which the bronchi are more or less filled with secretion. *Bronchophony*, or distinctly transmitted voice, at times *pectoriloquy*, or distinct transmission of articulated sounds. *Third stage*, breathing

changing from bronchial to *vesiculo-bronchial*, the *crepitant* (crepitatio redux) *râle* returning, and if resolution proceed the breath sounds are associated with *large* and *small moist* and bubbling *râles*.

Terminations. Asthenic cases recover within two weeks. When purulent infiltration supervenes, the disease pursues a tedious course of several weeks' duration, with a low exhaustive fever.

If death occurs during the first or second stages it is usually the result of a *collateral œdema* of the uninflamed lung.

Death in the third stage is the result of exhaustion. It is especially trying for the weak, the aged or drunkards.

If *abscesses* occur, there are exhausting sweats, frequent cough, with a large amount of yellowish-gray, at times blood-streaked, expectoration.

Gangrene of the lungs is a rare termination, and is associated with intense collapse and the expectoration of a blackish fetid sputum, and associated with the physical signs of a cavity.

Diagnosis. *Œdema of the lungs* may be confounded with the first stage of pneumonia, but the subsequent history, its presence on both sides, and the waterish expectoration and absence of the physical signs of pneumonia soon determine the diagnosis.

Pleurisy is oftener confounded with pneumonia than any other disease, the points of distinction between which will be pointed out when discussing that affection.

Prognosis. Depends upon the extent of the inflammation, double pneumonia being very grave, but not near so frequent as was at one time supposed. A temperature of 106° F., and a pulse above 120 are of bad omen. Pneumonia of drunkards almost invariably terminates fatally. Typhoid pneumonia, the so-called bilious pneumonia, purulent infiltration, abscesses of the lungs and gangrene, all give a grave prognosis.

Treatment. *First stage*, wet or dry cups over the chest, followed by the application of poultices. Internally, *tinct. verat. virid.*, gtt. j–iij, or *tinct. aconiti*, gtt. ij–iv, repeated every half hour or hour, until a decided impression is made upon the circulation, and at the same time *quinina*, gr. v, every three or four hours. If the patient is strong and vigorous, the circulation full, the arterial tension high, the dyspnœa early and marked and the surface flushed, marked relief is obtained by a good *venesection*.

Second stage, the arterial sedative should be replaced by *quinina*, gr. iij, every three hours, and *ammonii carb.*, gr. v, every two hours, and a good, nutritious diet. Local applications are useless at this stage.

Third stage, *ammonii carb.*, gr. v, every three hours, *quinina*, gr. xij–xx.

during the day, *nutritious diet*, *stimulants*, and if the hepatization shows signs of lingering, *flying blisters* over the chest.

For typhoid pneumonia, purulent infiltration, abscess of the lungs, or pneumonia in drunkards, the weak or aged, *quinina*, *ferrum*, strong, *nourishing* diet, bold *stimulation*, and the free use of *ammonii carb.*, are the indications.

CATARRHAL PNEUMONIA.

Synonyms. Broncho-pneumonia; lobular pneumonia; capillary bronchitis (?)

Definition. An acute catarrhal inflammation of the bronchioles and alveoli of the lungs; characterized by fever, cough, dyspnœa, copious expectoration and great depression.

Causes. From an extension of a bronchial catarrh downward; following the eruptive fevers, especially measles and whooping cough. Persons of the rickety or scrofulous diathesis, in whom there is a greater irritability of the epithelial elements, are particularly predisposed to this form of pneumonia on slight exposure; emphysema; diseases of the heart; childhood and old age.

Pathological Anatomy. *Hyperæmia* of the mucous membrane of the bronchi, and also of the bronchioles and air cells, with *swelling* and *succulence* of these tissues, accompanied by an *abnormal secretion* and an immense *production* of *young cells* from the proliferation of the bronchial and alveolar epithelium, admixed with a yellowish, creamy, mucoid material, which blocks up the bronchioles and air cells.

The affected parts first have a reddish-gray, soon changing to a yellowish-gray color, due to the rapid metamorphosis of the newly developed cells. If the fatty change be completed, absorption takes place, and the consolidation is removed; if it remains incomplete the cells atrophy, the little mass becoming caseous, and the disease passes into a chronic state.

The bronchial tubes also participate in the disease, the walls of the air tubes become thickened, from a hyperplasia of the connective tissue, and their calibre is often dilated.

Symptoms. Catarrhal pneumonia is preceded by catarrhal bronchitis. Its onset is announced by a *rise of temperature*, 102°–103° F., *rapid*, laborious and shallow *breathing*, as shown by the widely dilated nares and violent action of all the accessory muscles, while the insufficient distention of the lungs is shown by the great recession of the lower part of the chest walls and sinking in of the intercostal spaces. The *inspiration* is short

and imperfect, the *expiration* noisy and prolonged; the *pulse* is *frequent* and somewhat compressible; the *cough*, which, during the bronchitis, was loose, now becomes *short*, *hacking*, dry and *painful*, soon followed by more or less copious *muco-purulent expectoration;* the appetite is impaired, bowels somewhat loose, urine scanty, high-colored, and the surface frequently covered with a more or less profuse perspiration.

The progress of catarrhal pneumonia is sometimes, although not often, a very acute one. The disease may prove fatal in a few days, especially if it attack feeble children; in such the countenance becomes pale and livid, the lips bluish, the eyes dull, and restlessness giving place to apathy and a continually augmented somnolence.

Resolution, when it occurs, is by *lysis*, several weeks elapsing before complete recovery.

Percussion. Dullness, scattered in patches, over both lungs, the intervening healthy lung often giving a more or less *hollow* or *tympanitic* note.

Auscultation. Vesiculo-bronchial breathing, changing to moist bronchial breathing, associated with *small bubbling* (sub-crepitant) *râles*. As the disease progresses toward resolution, the râles become larger (large, bubbling) and more copious. If pneumonic phthisis results, physical signs indicative of that condition are soon evident.

Sequellæ. Attacks of catarrhal pneumonia complicated with atelectasis, or collapse of the lobules, when recovery occurs, are followed by emphysema of the lungs.

If the catarrhal products which fill the alveoli and bronchioles and intervening connective tissue do not rapidly undergo complete fatty metamorphosis and consequent absorption, *pneumonic phthisis* results.

Prognosis. Fully one-half of the cases of true catarrhal pneumonia terminate fatally. The prognosis must be guarded for scrofulous or rachitic subjects, or those enfeebled by other diseases, for, unless prompt resolution can be effected, it will terminate fatally early, or develop pneumonic phthisis.

Diagnosis. *Ordinary bronchial catarrh* differs from catarrhal pneumonia by the absence of dyspnœa, fever, and dullness on percussion, and the presence of the large bubbling râles, and also by the subsequent history of the two affections.

Croupous pneumonia is a unilateral disease; catarrhal pneumonia is bilateral and diffused over both lungs; the former a self-limited disease, the latter having no fixed duration.

Acute tuberculosis at its onset is characterized by the presence of a

capillary bronchitis, a differentiation being possible only by a study of the clinical history and course of the two maladies.

Œdema of the lungs is a bilateral disease associated with a short, dry cough and dyspnœa, but lacks the previous catarrhal history and high temperature of catarrhal pneumonia.

Treatment. Confinement to bed, repeated applications of *weak mustard poultices* to the chest and back, and the internal administration of *tinct. aconiti*, gtt. j–iij, or *infus. digitalis*, ʒ ss–j, if the fever be high, combined with *ext. ipecac. fld.* in a simple saline mixture, viz.: *liq. ammon. citratis.* As the swelling of the mucous membrane becomes less and the secretion more free, one of the following prescriptions produces great relief:—

℞. Ammon. carb. ..... gr. v
Mucil. acaciæ ..... q. s.
Acet. scillæ ..... ♏xx
Tinct. opii camph. ..... ʒ ss
Ext. glycyrrh. pulv. ..... gr. iij
Syr. tolu ..... fʒ ij. M.

Every three or four hours; or—

℞. Syr. scillæ,
Syr. ipecac,
Syr. senegæ,
Ext. opii camph. .....āā..... fʒ ss
Syr. prun. virg. ..... fʒ ij. M.

Every three or four hours.

Quinina, gr. ij–iv, every three hours, should be administered from the onset; the diet should be nutritious, but easily digestible, milk and broths being the most efficient, *stimulants* used only as indicated. The air of the apartment should be moistened by disengaging the vapor of water in it.

If symptoms of pulmonary collapse occur, as shown by cyanosis and increased difficulty of breathing, *emetics*, of which *hydrargyri subsulphas flav.* (turpeth mineral) should be used and repeated whenever indications call for its use.

PNEUMONIC PHTHISIS.

Synonyms. Chronic catarrhal pneumonia; catarrhal phthisis; caseous pneumonia; caseous phthisis.

Definition. A form of destruction of the pulmonary tissue caused by the *caseation* or cheesy degeneration of inflammatory products in the lungs and the subsequent softening and destruction of the caseous matter, with greater or less destruction of the pulmonary tissue; characterized by

hectic fever, cough, purulent expectoration, and more or less rapid prostration.

Causes. The *predisposing* factor in the etiology of pneumonic phthisis is a strumous or scrofulous diathesis, or a condition of lowered health, the result of various bad hygienic influences. The *exciting* causes are catarrhal pneumonia in any portion of the lung, but especially at the *apex*; inflammation occurring about a blood clot; inhalation of irritant particles occurring in certain occupations, viz.: weaving, grinding, mining, etc.

Pathological Anatomy. When pneumonia terminates in resolution the inflammatory products are absorbed. If the fatty metamorphosis be incomplete, the cells are atrophied and undergo the caseous degeneration, which consists in the absorption of the watery parts and the fatty degeneration of the cellular elements and granular disintegration of the fibrinous material, so that ultimately a soft, solid mass is produced, yellowish in color, having the appearance of cheese.

The destructive changes are thus described by Niemeyer: "Cells, the products of inflammation, accumulate in the alveoli and minute bronchi, crowd upon each other, becoming densely packed, and thus by their mutual pressure they bring about their own decay, as well as that of the lung textures, by interfering with their nutrition, the alveolar walls being also themselves damaged by the inflammatory process."

The position of the catarrhal pneumonia resulting in the above changes is usually at the apex, but it may occur at any portion of the lungs, or a whole lung becomes infiltrated, and undergoes the cheesy degeneration (phthisis florida).

In many cases tubercle is deposited in the inflamed lung, hastening the destruction and formation of cavities.

Symptoms. Pneumonic phthisis occurs in three forms, to wit: *chronic*, *subacute* and *acute*.

Chronic form. The origin is rather insidious, the individual being susceptible to cold on the slightest exposure; gradually a *persistent cough*, with the *expectoration of muco-pus* is established, each severe cold being accompanied with *chills*, *fever*, *pain* in the chest, and either slight *hemorrhage* or *blood-streaked sputa*. Finally the attacks become persistent, with morning *chills*, evening *fevers* and rather profuse *night sweats*, great weakness and exhaustion, loss of appetite and feeble digestion, the symptoms growing persistently worse, *death* occurring from *exhaustion* after one or two years' duration.

Subacute variety. History of an acute attack of pneumonia of one or

two weeks' duration, followed by a decided improvement, but not complete recovery. After some weeks or months symptoms of *softening* begin, destroying the lung structure and forming cavities, accompanied by *chills, fever, night sweats, emaciation, cough, muco-purulent* and *blood-streaked expectoration*, the patient dying, from exhaustion, within a year.

Acute variety, the so-called *phthisis florida*, runs a rapid course, beginning as a catarrhal pneumonia, involving the whole of one or part of both lungs, associated with rapid *loss of flesh* and strength, *high* but variable *temperature*, 103°–105° F., with remissions, profuse *night sweats, shortness of breath*, severe cough, *profuse*, purulent and *blood-streaked sputa, loss of appetite, feeble digestion, rapid emaciation*, the patient succumbing in a few weeks or months, from exhaustion.

A decided remission in the local and general symptoms of the acute variety may occur, the disease afterward pursuing a more chronic course.

Inspection. Shows *deficient* respiratory *movements* of the diseased portion of the lungs.

Palpation. Increased vocal *fremitus* over the consolidated lung tissue and cavities.

Percussion. The percussion note varies from a slight *impairment* of the normal note to *dullness*, and when cavities are formed, associated with scattered points of the *tympanitic* or *hollow* note. If the cavities communicate with a bronchial tube the *cracked-pot* or *cracked-metal* sound is elicited. If the cavities are filled with pus the percussion note is *dull*. If the pus be expelled the tympanitic or cracked-pot sound returns.

Auscultation. The vesicular murmur is unimpaired in those parts free from disease; it is *feeble* or indistinct if many bronchioles are obstructed; and is harsh or *blowing* if the bronchioles are narrowed. The *inspiratory* sound will be *jerking*, and the *expiratory* sound *prolonged* and *blowing* when the lung has lost its elasticity.

Associated with impaired vesicular murmur is a *fine, dry, crackling sound* (crepitation), appearing at the *end of inspiration.* If bronchitis be associated, large and small *moist or bubbling* râles are heard during respiration.

When cavities form, either *bronchial* or *broncho-cavernous* respiration is heard, associated with more or less distinct *gurgling râles.* If the cavity be free from pus and have rather firm walls, the breathing is more *amphoric* in character.

Prognosis. *Acute* variety, so-called phthisis florida, usually terminates fatally within a few months.

The *subacute* and *chronic* forms may, under judicious treatment and favorable hygienic conditions, be arrested, the caseous matter partly expectorated and partly absorbed, with more or less loss of structure, cicatricial tissue supplying its place, which, after a time, contracts, causing more or less retraction of the chest walls. The termination is usually fatal, however, in from two to three years.

Diagnosis. *Catarrhal bronchitis* has many points of resemblance to pneumonic phthisis. The subsequent course of the latter, high temperature, prostration and emaciation, should prevent error.

Tubercular phthisis is often confounded with pneumonic phthisis, an error difficult to prevent in many cases.

Treatment. An attempt should always be made to remove the caseous matter by absorption and expectoration. The following prescriptions will sometimes prove successful:—

℞. Ammon. carb..... gr. v
Ammon. iodidi..... gr. v–x
Syr. tolu..... ʒij
Syr. prun. virg..... ʒij. M.

Every five hours, alternating with

℞. Liq. potass. arsenitis..... ♏v
Mas. ferri carb..... gr. v
Vini xerici..... ʒj
Aqua..... ʒiij M.

The diet should be of the most nutritious character, the clothing warm, and, if practicable, change of residence should be made to a dry and elevated climate. If the digestion will permit, *ol. morrhuæ*, ʒj–ij, three times a day.

For the *fever*, *quinina*, gr. xv–xx, is more successful than the combination of quinina and digitalis in small doses.

Night sweats are best controlled by *atropinæ sulph.*, gr. $\frac{1}{80}$, at bedtime, or

℞. Extract. belladonnæ..... gr. ss
Zinci. oxidi..... gr. iij. M.

At bedtime.

For the *cough* and *sleeplessness*, *codeinæ sulph.*, gr. ss–j, p. r. n.

TUBERCULAR PHTHISIS.

Synonyms. Tuberculosis; consumption; incipient phthisis.

Definition. The deposition of tubercle in the lung structure, which undergoes softening, followed by more or less loss of the tissue proper; characterized by fever, cough, dyspnœa, emaciation and exhaustion.

Causes. Chiefly hereditary; closely associated with scrofula and struma; probably contagious under certain conditions; secondary to catarrhal (caseous) pneumonia; the theory of the "*bacillus tuberculosis*" of Koch is *sub judice.*

Pathological Anatomy. Tubercle is a grayish-white, translucent and semi-solid granulation, about the size of a millet seed, most commonly deposited in the walls of the bronchioles, exciting a low form of inflammation, the result of its own death. The masses of tubercle soon undergo softening (cheesy transformation); the lung structure is secondarily affected, undergoes softening, which results in more or less destruction of the tissue, whence cavities are formed.

The inflammation may extend to the small arteries, causing hemorrhage.

The deposit of tubercle is generally at one of the apices, soon spreading to other parts; depositions may also occur in the brain, intestines and liver.

The pleura is usually the seat of a chronic inflammation (dry pleurisy), resulting in the obliteration of the cavity.

The larynx suffers from extensive tubercular ulcerations, causing more or less destruction of the parts.

Symptoms. The symptoms correspond closely to the stages of *deposition*, of *softening*, and of the *formation of cavities.*

The development is *insidious*, with increasing *dyspepsia*, *irritable heart*, a light, dry, hacking *cough*, referred to the throat or stomach, scanty, glairy *expectoration*, gradual *loss of weight*, impaired muscular *strength*, *pallid appearance*, more or less copious *hæmoptysis* often following. *Pain*, sharp in character, below the clavicles, is often present.

The *beginning of softening* is announced by increased *cough*, freer *expectoration*, *dyspnœa* increased on exertion, morning *chills*, evening *fever*, *night sweats*—the so-called hectic fever, *diarrhœa*, increased *emaciation* and *weakness*, the patient, however, continuing very hopeful.

With the *formation of the cavities*, the *cough* is more aggravated, with profuse and purulent *expectoration*, at times containing yellow striæ, the amount depending upon the number and size of the cavities; hæmoptysis not common at this stage; the *pulse* rapid and weak; *increased hectic;*

burning of the soles and palms; copious *night sweats;* greater debility and *emaciation*, with *œdema* of the feet and ankles, denoting failure of the circulation; death soon following from asthenia; the mind clear and hopeful to the end.

Inspection. First stage often shows slight *depressions* in the supraclavicular, and at times in the infraclavicular regions.

Palpation. Second stage, the vocal *fremitus* is slightly *increased.*

Percussion. First stage, slight impairment of the normal percussion resonance can sometimes be elicited. *Second stage*, the resonance is *impaired*, or even *dull. Third stage, dullness* with circumscribed spots of the *amphoric*, or *tympanitic* or *cracked-pot* sound.

Auscultation. First stage, inspiration jerky, expiration prolonged, the pitch higher than normal, inspiration associated with *crackling râles. Second stage, vesiculo-bronchial* breathing, associated with *sub-crepitant* and large and small moist or *bubbling râles. Third stage, bronchial, broncho-cavernous* and *cavernous respiration*, associated with large and small moist or *bubbling*, and localized *gurgling* râles.

Bronchophony in its various degrees is associated with the second and third stages of tuberculosis.

Complications. Tubercular diseases of the brain, larynx, pleura, intestines and peritoneum; perineal abscess leading to fistula.

Prognosis. In the main unfavorable, although under proper treatment, change of climate and like favorable conditions, life may be prolonged for years. The question of perfect recovery is, to say the least, doubtful.

Diagnosis. The early diagnosis of tubercular phthisis rests mainly on the history, symptoms and physical signs. In the first stage it is often mistaken for dyspepsia, anæmia, malarial fever, or disease of the heart.

Treatment. *First stage*, life may be prolonged, and perhaps the further deposition of tubercle stayed, by a change of climate, nutritious food, warm clothing, out-door exercise and the internal administration of *ol. morrhuæ, ferri et iodidi, arsenicum, hypophosphites*, or the *elixir quininæ, ferri et strychninæ.*

Special symptoms require treatment only when indicated, being careful to avoid everything which tends to impair the appetite, disorder digestion or lower the vital powers.

For the *fever* the "Niemeyer pill" is usually recommended:—

℞. Quininæ sulph..... gr. ij
Pulv. digitalis..... gr. ss–j
Pulv. opii..... gr. ¼–ss
Pulv. ipecac..... gr. $\frac{1}{12}$ M.

For *night sweats*, *atropinæ sulph.*, gr. $\frac{1}{60}$ or *picrotoxinum* gr. $\frac{1}{60}$ at bedtime.

For *cough*, only when troublesome, preventing sleep, *codeina*, *acidum hydrocyanicum*, and finally *morphinæ sulph.*

The *dyspeptic symptoms*, which often cause great suffering, are benefited by—

℞. Strychninæ sulph..... gr. $\frac{1}{30}$
Acidi hydrochlorici dil..... gtt. x
Aquæ..... ℥j.

Sig.—Three times a day, before meals.

FIBROID PHTHISIS.

Synonyms. Chronic pneumonia; cirrhosis of the lungs; Corrigan's disease.

Definition. A hyperplasia (thickening) of the pulmonary connective tissue, resulting in atrophy and degeneration of the vesicular structure, associated with bronchial inflammation; characterized by cough, profuse expectoration, fever, emaciation, and ultimately death by asthenia.

Causes. Hereditary; inhalation of irritants; chronic bronchitis; alcoholism.

Pathological Anatomy. Thickening of the bronchial mucous membrane and dilatation of the air tubes; hyperplasia of the pulmonary connective tissue, resulting in the compression and consequent destruction of the vesicular structure, which is assisted by the contraction of the newly formed tissues. Sooner or later catarrhal pneumonia results, the product undergoing the cheesy degeneration, cavities being formed, and as a result of the long-continued suppuration, tubercular depositions occur, hastening the destruction of the lung tissue.

Symptoms. The course is chronic, beginning as a *bronchial catarrh*, worse in winter, better in summer, when, after several years, the *cough* becomes more *continuous*, the *expectoration* freer, muco-purulent, often raised in paroxysms, in large amounts, *hectic fever* develops, *night sweats*, *dyspnœa* and rapid *emaciation*, soon followed by *œdema* of the feet and ankles, the result of failing circulation, death occurring by asthenia.

Percussion. *Impaired* resonance, followed by *dullness*, with irregular spots of amphoric or *tympanitic* percussion note.

Auscultation. *First stage*, *vesiculo-bronchial*, or harsh respiration, associated with large and small moist or *bubbling râles*, followed by *bronchial*, *broncho-cavernous* and *cavernous* respiration, with circumscribed *gurgling* râles.

Prognosis. The duration of fibroid phthisis is most protracted, four or five years being the average duration; death, however, is the inevitable termination.

Diagnosis. Beginning as a bronchial catarrh, slowly progressing, with the remission of the symptoms during the summer months, finally becoming progressively worse, with the formation of cavities, and symptoms of asthenia, are the chief points in the diagnosis.

Treatment. To prevent the hyperplasia of the connective tissue, *hydrargyri corrosivum chloridum*, *potassii iodidum* or *auri et sodii chloridum*, are recommended.

The *bronchial catarrh*, *hectic fever* and *night sweats* should be treated only when their severity becomes marked.

ACUTE PHTHISIS.

Synonyms. Acute miliary tuberculosis; galloping consumption.

Definition. An acute febrile affection, due to the rapid deposition throughout the body, but especially in the lungs, of the gray tubercle-granule; characterized by high fever, cough, profuse expectoration and rapid prostration.

Causes. Most common between puberty and middle life.

"That the gray granulation is deposited throughout the body under the influence of certain conditions of irritation, it is necessary that a peculiar vulnerability of the constitution exist, in other words, that it be of the scrofulous type." The result of caseous or suppurative changes in the lungs.

Pathological Anatomy. "The gray granulation or miliary tubercle consists of a fine reticulation of fibres, with a mass of epithelioid cells and granules, and often having a giant-cell for its centre."

The deposit is generally over both lungs and the bronchial tubes, and is followed by hyperæmia, increase of the secretion, having a viscid and adhesive character, and the destruction of all the tissue with which it comes in contact.

Deposits also take place in the brain, pleura, intestines, peritoneum and kidneys.

Symptoms. The onset is usually sudden, with a *chill* or *chilliness*, followed by *fever*, 102°–104° F., *rapid*, dicrotic *pulse*, 120–140, *cough*, with scanty, glairy sputum, *increased respiration*, 30–50 per minute, *pain* in the chest, hot skin, dry tongue, deranged digestion and *great prostration*,

the symptoms rapidly increasing, the sputum more abundant and often rusty in color, with more or less frequent attacks of *hæmoptysis*, soon followed by headache, vertigo, sleeplessness, often delirium, coma and death.

If deposits have occurred in the meninges or the intestines, symptoms of these affections are superadded.

Percussion. The percussion resonance is normal until considerable deposits have occurred, when it is either slightly *impaired* or even slightly *tympanitic*. With the development of cavities the *amphoric* percussion note is present.

Auscultation. *Vesiculo-bronchial* breathing, associated with large and small moist or *bubbling râles*, soon followed by *bronchial* and *broncho-cavernous* breathing, with large and small moist and circumscribed *gurgling* râles.

Duration. Acute phthisis terminates fatally in from four to twelve weeks.

Diagnosis. Commonly mistaken for typhoid fever with lung complications, an error that is readily made unless a close study of the history, symptoms and physical signs is made.

Treatment. We possess no means of retarding the progress of this malady. The various symptoms should be met as they occur, the patient at the same time being supplied with large quantities of *stimulants*.

DISEASES OF THE PLEURA.

PLEURISY.

Synonyms. Pleuritis; "stitch in the side."

Definition. A fibrinous inflammation of the pleura, either acute or chronic in character; characterized by sharp pain, dry cough, dyspnœa and fever. It may be limited to a part, or may involve the whole of one or both membranes.

Causes. *Idiopathic* pleuritis is said to be due to cold and exposure, to injuries of the chest walls, or the result of muscular exertion.

Secondary pleuritis occurs during an attack of pneumonia, pericarditis, rheumatism, smallpox, or puerperal fever.

Chronic pleurisy follows an acute attack, or is the result of tuberculosis, Bright's disease, or alcoholism.

Pathological Anatomy. The course pursued by an inflammation of serous membrane is *hyperæmia* followed by *exudation of lymph*, the *effusion of fluid*, its *absorption* and the *adhesion* of the membranes.

The *first or dry stage* of pleurisy is a hyperæmia or diffused, irregular redness of the membrane, with little specks of exudation. The *second stage* is characterized by the copious exudation of lymph, more or less completely covering the membrane, giving it a dull, cloudy, or shaggy appearance. If the inflammation ceases at this point, it is termed *dry pleurisy*. *The third*, or stage of effusion, is characterized by the pouring out of a sero-fibrinous fluid; more or less completely filling and distending the pleural cavity, and floating in the fluid are fibrinous flocculi, blood and epithelial cells.

Absorption of the fluid and more or less of the exudative lymph soon occurs, the unabsorbed portion becoming organized, forming adhesions which obliterate the cavity.

The effusion, if on the right side, pushes the heart further to the left; if on the left side, the heart is displaced to the right, the impulse often being present to the right of the sternum. The lungs are also compressed and displaced upward and against the spinal column, and, on removal of the fluid, expand again, except in cases of chronic pleurisy, when the functional activity of the pulmonary structure is more or less permanently impaired.

Chronic pleurisy is the result when the fluid is not absorbed or is effused into the cavity in a slow and insidious manner. The membrane is irregularly thickened, with firm adhesions, fluid being found in the meshes, and depressions of the thoracic walls also occurring. The fluid may be serum, pus, or pus and blood (empyema). Openings may form, through which there is a permanent discharge, either externally (fistulous empyema) or into the bronchi, or, rarely, into the bowels.

Symptoms. Begins with a *chill*, followed by a *sharp*, lancinating *pain* (stitch) near the nipple or in the axilla, aggravated by coughing and breathing, associated with slight *tenderness on pressure*. The *respirations are rapid* and shallow, 30–35 per minute, a short, dry, hacking *cough*, moderate *fever*, compressible *pulse*, 90–120. With the effusion of liquid the *dyspnœa* becomes aggravated, the *cough* more distressing, the *cardiac action* embarrassed, the *countenance* wearing an anxious expression, the patient usually lying on the affected side. With the absorption of the fluid

the symptoms gradually ameliorate, convalescence being more or less rapid.

Chronic variety, irregular chills, fever, night sweats, dyspnœa, palpitation, embarrassed circulation, with more or less prostration.

Inspection. First stage, deficient movement of the affected side, on account of the pain induced by full breathing. *Second stage*, bulging or fullness of the affected side, with obliteration of the intercostal spaces and displacement of the cardiac impulse.

Palpation. Second stage, vocal *fremitus* feeble or absent over the site of the effusion, exaggerated above the site of the fluid. Rarely, *fluctuation* may be obtained.

Percussion. First stage, may be slightly *impaired. Second stage, dullness* or even flatness over the site of the effusion; *tympanitic* percussion note above the fluid.

Auscultation. First stage, feeble vesicular murmur over the affected side, the patient breathing superficially, to prevent the pain; a *friction* sound, slight and grating or creaking, becoming louder as the exudation of lymph progresses, limited usually to the angle of the scapula of the affected side, rarely heard over the entire side, accompanies the respiratory movements. *Second stage*, feeble or absent vesicular murmur on the affected side, depending upon partial or complete compression of the lungs by the fluid. Above the fluid puerile breathing, and just at the upper margin of the fluid a friction sound may be heard.

The *vocal resonance* is diminished or absent over the site of the fluid and markedly increased above, *ægophony* being present at the upper margin of the fluid. .

With the absorption of the fluid the vesicular murmur gradually returns, associated with a moist friction sound.

Prognosis. *Idiopathic* pleurisy usually terminates in recovery within three weeks. Pleurisy the result of constitutional causes has its prognosis modified by the condition with which it is associated. *Empyema*, unless the result of a diathesis, terminates favorably. *Double pleurisy is unfavorable.*

Diagnosis. *Acute pneumonia* is often mistaken for the effusion stage of pleurisy. The points of distinction are, in pneumonia there is high fever, and characteristic sputa, bronchial breathing, exaggerated vocal fremitus and resonance, and no displacement of the heart, the reverse occurring in pleurisy.

Enlargement of the liver may be mistaken for pleurisy with effusion, the chief point of distinction being that, in enlargement of the liver the superior

line of dullness is depressed upon full inspiration, while in pleurisy with effusion inspiration does not modify the location of the dullness.

Treatment. At the onset, in plethoric patients, *wet cups* over the affected side; if great dyspnœa, severe pain and high arterial tension, even *venesection*, and in anæmic or weak persons, *dry cups*, in all cases followed by *hot fomentations* or *poultices* to the chest. The severe pain is promptly relieved by the hypodermatic injection of *morphina* over its site.

Tinct. verat. virid., or *tinctura aconiti*, in small doses, frequently repeated, in the plethoric, and *digitalis* in the weak, control the circulation, and lessen the amount of blood distributed to the affected membrane.

After effusion has begun *extractum pilocarpi fluidum*, gtt. xx, every two or three hours, or—

℞. Potassii acetat..... gr. xxx
Infus. digitalis..... ʒij. M.

Every three or four hours.

If the effusion is uninfluenced by the above, use *potassii iodidum*, gr. xv, every four hours, with flying *blisters* over the affected side; or the fluid may be evacuated by *aspiration*, using at the same time full doses of *mistura ferri et ammonii acetatis* (*Basham's mixture*).

If *double pleuritic effusion*, evacuate the fluid at once with the *aspirator*, and use the potassium and digitalis mixture mentioned above.

Chronic pleurisy, if the effusion is still serous, is often absorbed by the internal use of *potassii iodidum*, alternating with "*Basham's mixture*," and *blisters*, the secretions being regularly attended to. If, however, the liquid is pus, the *aspirator* should be used at once, the patient placed upon "*Basham's mixture*," *stimulants* and *quinina*, and if the *empyema* shows a tendency to linger, the drainage tube may be indicated.

HYDROTHORAX.

Synonym. Dropsy of the pleura.

Definition. The effusion of serum into the pleural cavities (bilateral), the result of a general dropsy from renal or cardiac disease.

Pathological Anatomy. More or less clear serous fluid in both pleural sacs, compressing the lungs. No signs of inflammation are present.

Symptoms. Following dropsy of the abdomen occurs *dyspnœa*, with signs of deficient blood aeration, both lungs being compressed.

Palpation. Absent vocal fremitus over the site of the fluid.

Percussion. Dullness over the site of the fluid.

Auscultation. Absent vesicular murmur over the site of the fluid.

Prognosis. Controlled by the cause producing the general dropsy.

Diagnosis. Easily determined by association of the symptoms with a general dropsy.

Treatment. Depending upon the condition causing the dropsy. *Dry cups* over the chest afford relief. If the symptoms of non-aeration of the blood are severe, the fluid should be at once evacuated with the *aspirator*.

PNEUMOTHORAX.

Synonyms. Air in the pleural cavity; hydropneumothorax.

Definition. The accumulation of air in the pleural cavities, with the consequent development of inflammation of the membranes; characterized by sharp pain, followed by rapidly developing dyspnœa and cough.

Causes. Generally the result of tubercular phthisis, causing perforation of the pleura. Perforation may take place from the pleura into the lung, in connection with empyema or abscess of the chest walls. Direct perforation from without, by laceration of a fractured rib or severe contusion.

Pathological Anatomy. The gas in the pleura consists of oxygen, carbon anhydride, and nitrogen in variable proportions. It may fill the pleural sac completely, compressing the lung, or is sometimes limited by adhesions. The gas tends to excite inflammation, the resulting effusion being either serous or purulent.

Symptoms. Symptoms of pneumothorax, the result of perforation, are *sudden or sharp pain* in the side, *intense dyspnœa*, attended with symptoms of *collapse*, coldness of the surface and cold sweats.

The above symptoms, in many instances, follow a severe or violent paroxysm of *coughing*. In severe cases there is never a moment's cessation of the acute pain and distressing dyspnœa, causing orthopnœa, from the onset until death.

Inspection. Enlargement of the affected side, the intercostal spaces being widened and effaced, or even bulged out so that the surface of the chest is smooth. Respiratory movements of the affected side are diminished or absent.

Percussion. Immediately after the rupture the percussion note is hyperresonant, or even tympanitic or amphoric in quality. If the amount of air in the pleural cavity becomes extreme there is dullness on percussion, associated with a feeling of great resistance or density. When effusion of

fluid occurs dullness is observed over the lower part of the chest, hyper-resonant or tympanitic percussion note over the upper portions of the chest, these sounds changing as the patient changes his position.

Auscultation. The normal vesicular murmur may be diminished or absent. The typical amphoric respiratory sound is heard when the fistula is open, usually associated with a metallic echo.

Metallic tinkling, or the bell sound, is sometimes distinctly produced by breathing, coughing or speaking, after the development of inflammation of the pleura.

The vocal resonance may be diminished or absent, or, rarely, it may be exaggerated, with a distinct metallic echo.

After the development of inflammation in the pleura, suddenly shaking the patient gives rise to a *splashing sensation*, the succussion sound, if both air and fluid are present in the pleural cavity.

Prognosis. When occurring as the result of tuberculosis, the prognosis is extremely unfavorable; rarely, the fistulous opening being enclosed by inflammatory action; the case then becomes one of chronic pleurisy.

Treatment. At once a hypodermatic injection of *morphina*, which relieves the severe pain and modifies somewhat the distressing dyspnœa, followed by the evacuation of the fluid and air with the *aspirator*.

If the fistulous opening is closed by inflammatory action, the case resolves itself into one of chronic pleurisy, the treatment indicated for that affection plus the treatment of tuberculosis, being the indication.

DISEASES OF THE CIRCULATORY SYSTEM.

The methods employed in making a physical examination of the heart are: I. *Inspection.* II. *Palpation.* III. *Percussion.* IV. *Auscultation.*

Inspection indicates the exact point of the *cardiac impulse*, whether there are any unusual *pulsations* or any *change* in the form of the *præcordium*.

Normally the *impulse* is visible only in the *fifth interspace*, midway between the left nipple and the sternum, its area covering about one square inch, most distinct in the thin, while often barely seen in the very fleshy; often displaced downward by full inspiration and elevated by complete expiration.

Disease may alter the *position* and *area* of the impulse.

Position of the impulse is moved to the right by left pleuritic effusions or emphysema; downward by hypertrophy; upward by pericardial effusion.

Area of the impulse is changed and enlarged by pericardial adhesions or cardiac dilatation.

Palpation confirms the observations of inspection, and determines as well the *force, frequency* and *regularity* of the *cardiac impulse.*

Impulse diminished by cardiac dilatation, fatty degeneration of the heart, emphysema, pericardial effusion, and adynamic diseases.

Impulse increased by cardiac hypertrophy, during the first stage of endocarditis and pericarditis, functional cardiac disturbances and sthenic inflammations.

Percussion will indicate the boundaries of the *superficial* and *deep cardiac space*, the so-called *præcordium.* It is essential that the upper, lower, and two lateral boundaries of the pericardial region be memorized, viz: *superior boundary*, the upper edge of the third rib; *the lower boundary* is a horizontal line passing through the fifth intercostal space; the *left lateral boundary* is about or a little within a vertical line passing through the nipple, the *linea mammalis;* and the *right lateral boundary* is an imaginary vertical line situated one-half an inch to the right of the sternum. These boundaries vary somewhat in health, but are sufficiently accurate for all practical purposes.

The superficial cardiac space represents that portion of the heart uncovered with lung; it is triangular in form, its apex being the junction of the lower border of the left third rib with the sternum, its area not exceeding two inches in any direction.

The superficial space is *increased* by cardiac hypertrophy, dilatation or pericardial effusion.

Diminished at the end of full inspiration or by emphysema.

The deep cardiac space represents that portion of the heart covered by lung, and extends from the upper border of the third rib to the lower edge of the fifth interspace, and from half an inch to the right of the sternum to near the left nipple.

It is *increased* by hypertrophy or dilatation of the heart, left pleuritic effusion, and apparently increased by consolidation of the anterior border of the investing lung.

Auscultation indicates the character of the normal cardiac sounds and the point of greatest intensity at which they are heard, and should be thoroughly familiarized if abnormal sounds are to be fully appreciated.

The ear or stethoscope applied to the præcordium distinguishes *two*

sounds, separated by a momentary silence, the short pause, and the second sound followed by an interval of silence, the long pause.

The first sound, corresponding to the contraction of the heart, the *systole*, is louder, longer and of lower pitch and a more booming quality than the second sound, and has its point of greatest intensity at the cardiac apex or a little to the left. It corresponds closely to the pulsations as felt in the carotid or radial arteries.

The second sound is shorter, weaker and higher in pitch than the first sound, and has a clicking or valvular quality, having its point of greatest intensity at the second right costal cartilage and a little above, and corresponds to the closure of the aortic and pulmonary valves. The sound made by the closure of the tricuspid valves is best isolated at the ensiform cartilage. The sound made by the closure of the pulmonary valves at the third left costal cartilage. The extent of surface over which the cardiac sounds are heard varies, according to the size of the heart and the condition of the adjacent organs for transmitting sounds.

The cardiac sounds may be altered in *intensity*, *quality*, *pitch*, *seat*, and *rhythm*, or they may be accompanied, preceded or followed by adventitious or new sounds, the so-called *endocardial murmurs*.

The intensity is increased by cardiac hypertrophy, irritability of the heart or consolidation of adjacent lung structure.

The intensity is diminished by cardiac dilatation or degeneration during the course of adynamic fevers, emphysematous lung overlapping the heart, or pericardial effusion.

The quality and pitch of the first sound may be sharp or short and of higher pitch when the ventricular walls are thin and the valves normal; its pitch and quality are also raised during the course of low fevers. The second sound becomes duller and lower in pitch when the elasticity of the aorta is diminished or the aortic valves thickened. Either or both sounds have a more or less metallic quality in irritable heart and during gaseous distention of the stomach.

The seat of greatest intensity of the cardiac sound is changed by displacement of the heart, pleuritic effusion, pericardial effusion, and abdominal tympanites.

The rhythm is often interrupted by sudden pause or silence, the heart missing a beat, or the sounds are irregular, confused and tumultuous, the result of organic changes in the cardiac muscles, valves, or orifices; or a reduplication of one or both sounds of the heart may occur.

The *adventitious cardiac sounds or murmurs* are of two kinds, those made external to the heart, as *pericardial*, exocardial, or frictional

murmurs, and those made within the cardiac cavity, *endocardial murmurs.*

Pericardial murmurs, or friction sounds, are made by the rubbing upon one another of the roughened surfaces of the pericardial membrane during the early stage of inflammation. The sounds have a rubbing, creaking, or grating character, and are differentiated from a pleural friction sound by their being limited to the præcordium, synchronous with every sound of the heart, and not influenced by respiration.

They are distinguished from an endocardial murmur by their superficial rubbing, creaking or grating character, and by not being transmitted beyond the limits of the heart, either along the course of the vessels, or to the left axilla, or back.

Endocardial murmurs are of two kinds, viz.; *organic* and *functional.*

Functional endocardial or blood murmurs are the result of some change in the natural constituents of the blood.

Their character is soft, they are heard most distinctly at the base during systole, not transmitted beyond the limits of the heart, either to the left axilla or the back, and are associated with anæmia.

Organic endocardial murmurs are produced by blood currents pursuing either a *normal* or an *abnormal* direction.

In health there are *two direct blood currents* upon each side of the heart, viz.: the current from the left auricle to the left ventricle, the *mitral direct current;* the current from the left ventricle to the aorta, *the aortic direct current;* the current from the right auricle to the right ventricle, the *tricuspid direct current*, and the current from the right ventricle to the pulmonary artery, the *pulmonic direct current.*

When, from disease, the valves are not properly closed, the blood is allowed to flow back against the direct current, producing abnormal blood currents, viz.: when the mitral valve is incompetent, the blood flows from the left ventricle back to the left auricle during the cardiac systole, producing the *mitral regurgitant or indirect current;* when the aortic valves are incompetent, the blood is permitted to flow from the aorta into the left ventricle during the cardiac systole, producing the *aortic regurgitant or indirect current;* when the tricuspid valves are incompetent, the blood flows from the right ventricle back into the right auricle during the systole, producing the *tricuspid regurgitant or indirect current;* when the pulmonary valves are incompetent, the blood flows from the pulmonary artery into the right ventricle, producing the *pulmonic regurgitant or indirect current.*

The mitral direct current occurs during the contraction of the left

auricle, or just *before* the first sound of the heart and immediately *after* its second sound. *The aortic direct current* is produced by the contraction of the left ventricle, and occurs with the first sound of the heart. *The tricuspid direct current* occurs during the contraction of the right auricle, or just before the first or immediately after the second sound. The pulmonic direct current is produced by the contraction of the heart, occurring during its first sound.

The mitral direct, or presystolic murmur, occurs *before* the first sound of the heart and immediately *after* the second sonnd. It is caused by a narrowing of the mitral orifice, has a blubbering quality, well imitated by throwing the lips into vibration by the breath, of a low pitch, and it has its seat of greatest intensity at the cardiac apex, and is not transmitted to the left axilla or to the base of the heart.

The mitral regurgitant, or systolic murmur, occurs with the first sound of the heart, resulting from the failure of the mitral valves to close the mitral orifice during the systole, in consequence of which the blood flows back, or regurgitates into the left auricle. It is usually of a blowing or churning character, and has its seat of greatest intensity at the cardiac apex, being well transmitted to the left axilla and inferior angle of the left scapula.

The aortic direct murmur occurs with the first sound of the heart. It is caused by a narrowing of the aortic orifice, has a rough or creaking character, is of high pitch, having its seat of greatest intensity in the second intercostal space, to the right of the sternum, and is well transmitted over the carotid artery.

The aortic regurgitant murmur occurs with the second sound of the heart, and is caused by the failure of the aortic valves to close the aortic orifice during the diastole, whereby the blood flows back or regurgitates into the left ventricle. It is usually of a blowing or churning character and of low pitch, having its seat of greatest intensity over the base of the heart, and is well transmitted downward towards or below the cardiac apex. It is the only organic murmur produced in the left side of the heart which occurs with the second sound of the heart.

The tricuspid direct murmur occurs before the first sound of the heart and immediately after the second sound. It is caused by a narrowing of the tricuspid orifice, has a blubbering quality, and is low in pitch, having its seat of greatest intensity near the ensiform cartilage. This murmur is exceedingly rare.

The tricuspid regurgitaut murmur occurs with the first sound of the heart, the result of the failure of the tricuspid valves to close the tricuspid

orifice during the systole, thus allowing the blood to flow back or regurgitate into the right auricle. It is usually of a blowing or soft, churning character, having its seat of greatest intensity at the ensiform cartilage. This murmur is also very infrequent, and occurs mostly when the right ventricle is considerably dilated, without the existence of any valvular disease.

The pulmonic direct murmur occurs with the first sound of the heart. It is generally connected with congenital lesions. It occurs at the same instant that the aortic direct murmur occurs, and is distinguished from the latter by its not being transmitted into the carotid artery, whereas the aortic direct murmur is always thus transmitted.

The pulmonic regurgitant murmur occurs, like the aortic regurgitant murmur, with the second sound of the heart. This murmur is exceedingly rare, and its presence is only positively differentiated from aortic regurgitant by the absence of aortic lesions and symptoms.

ACUTE PERICARDITIS.

Definition. An acute fibrinous inflammation of the pericardium; characterized by slight fever, pain, præcordial distress and disturbed cardiac action and circulation.

Causes. May follow injuries of the chest walls, but generally secondary to either acute articular rheumatism, pneumonia, pleurisy, erysipelas, Bright's disease or pyæmia.

Pathological Anatomy. The same as serous membranes in other situations.

Hyperæmia of the membrane, most marked on the visceral layer, followed by the exudation of lymph scattered in irregular patches, giving it a rough and shaggy appearance (dry pericarditis), followed by the effusion of a sero-fibrinous fluid, with flocculi floating in it, and at times mixed with blood. Rarely, the fluid is purulent.

The fluid and lymph undergo absorption with resulting adhesions identical with those described under pleurisy.

Symptoms. Begins with *rigors, fever, præcordial distress, acute* shooting *pains*, increased by breathing and coughing, *tenderness*, dry, suppressed *cough, increased cardiac action*, sometimes violent palpitation. Duration of this early stage from a few hours to a day.

Effusion stage: the symptoms of this stage depend upon the amount and rapidity of the effusion: *præcordial oppression*, tendency to *syncope, dyspnœa*, sometimes amounting to orthopnœa, *dysphagia, hiccough*, nausea,

and *vomiting*, feeble, irregular *pulse*, sometimes either melancholia, delirium, or acute maniacal excitement.

Absorption is generally rapid, the heart remaining "irritable" for a long time. If instead of absorption, the fluid accumulates, and life is not destroyed, the pericardial sac becomes dilated, the affection becoming chronic.

Inspection. Early stage, excited cardiac action is evidenced by the impulse. *Effusion stage*, feeble, undulatory or absent impulse, its position being displaced upward, or rarely, downward; bulging of the præcordium and protruding abdomen.

Palpation. Early stage, excited or tumultuous impulse; pericardial *friction fremitus* rare. *Effusion stage*, feeble or absent impulse, and if present its position is changed.

Percussion. Early stage, normal. *Effusion stage*, cardiac *dullness* enlarged vertically and laterally, and if considerable fluid, of a *triangular shape*, with the base of the triangle on a line with the sixth rib, extending from the right of the sternum to the left of the left nipple, narrowing as it proceeds upward to the second rib, or above, which represents the apex of the triangle. The shape of the dullness is sometimes altered by changing the position of the patient.

Auscultation. Early stage, excited cardiac action, and usually a *friction sound* (exocardial murmur) synchronous with cardiac sounds and uninfluenced by respiration, but often increased by pressure with the stethoscope. *Effusion stage*, cardiac sounds feeble and deep-seated at the cardiac apex, becoming louder and distinct toward the cardiac base. The friction sound is sometimes heard at the cardiac base.

If *absorption* occur the above signs gradually give place to the normal, the friction sound returning, of a churning, or clicking, or grating character, gradually disappearing.

Prognosis. Controlled by the severity of the inflammation and coexisting affections. If slight effusion, favorable. Death has rapidly occurred when a large quantity of fluid has been rapidly effused, result of cardiac paralysis. *Adherent pericardium* is a frequent sequella.

Diagnosis. *Endocarditis* is often confounded with pericarditis, the points of distinction between which will be pointed out when discussing that affection.

Cardiac hypertrophy or *dilatation* is sometimes confounded with pericardial effusion; the difference between them will be pointed out when discussing those affections.

Hydropericardium may be mistaken for pericardial effusion; see that affection.

Treatment *Perfect rest* in bed; for the vigorous, the application of *leeches* or *wet cups* to the præcordium, followed by the application of either *ice or poultices;* in the feeble *dry cups* to the præcordium, followed by poultices.

Early stages; in the strong, control the excited cardiac action by small doses of *aconitum* or *veratrum viride*, in the feeble using *digitalis;* in all cases *quinina* is indicated.

Effusion stage; as the effusion progresses the free administration of *alkalies*, viz.: *ammonii carb.*, gr. v, every two hours, with *liquor ammonii acetat.*, or *potassii acetat.*, or *potassii carbon*, with *quinina*, nutritious liquid diet and *stimulants*, being cautious with the use of cardiac sedatives or tonics.

If the effusion has a tendency to linger, *blisters* to the præcordium, or *paracentesis*, is indicated.

CHRONIC PERICARDITIS.

Definition. A chronic inflammation of the pericardium, with either distention of the sac by fluid or adhesions of the pericardium (adherent pericardium); characterized by impaired cardiac action and disturbances of the circulation.

Causes. Almost always the result of an acute attack.

Pathological Anatomy. If the effusion is absorbed, the pericardial surfaces are *agglutinated* by several layers of lymph, which increase the thickness of the membranes half an inch or more, and the outer surface of the pericardium becomes adherent to the chest walls.

If the fluid is not absorbed it may progressively accumulate, distending the sac in all directions, displacing the diaphragm, interfering with the functions of the surrounding viscera, or a low grade of inflammation supervenes, the fluid becoming purulent, the disease terminating fatally after a variable period.

As much as eight to ten pints of fluid have accumulated in the sac.

Symptoms. *Præcordial pain* and *distress*, irregular, *feeble cardiac action*, *dyspnœa*, aggravated by movement and *disturbed circulation*.

An agglutinated pericardium seriously increases the danger from an attack of any pulmonary inflammation.

Inspection. If the effusion be present, bulging of the præcordium and displacement of the impulse.

If adhesions are formed between the præcordial surfaces as well as with the chest walls, inspection reveals *depression of the præcordium*, narrowing of the spaces, increased extent but displaced impulse, uninfluenced by deep inspiration, and *recession* of the intercostal spaces and epigastrium with every systole of the heart, the result of the adhesions.

Palpation. If effusion, displaced, feeble or absent impulse; if adhesion, displaced and tumultuous impulse; occasionally a pericardial fremitus is distinguished.

Percussion. If effusion, the dullness has more or less the character described for acute pericarditis.

If adhesions, the cardiac dullness is but slightly modified.

Auscultation. If effusion, cardiac sounds feeble and deep-seated at the apex, louder and more distinct at the cardiac base.

If adhesions, cardiac sounds are heard with equal distinctness in their several positions, associated with a rough friction sound (exocardial murmur).

Treatment. If effusion, *blisters* to the præcordium, with *potassii iodidum* to hasten absorption, the patient supported by nutritious diet, *quinina*, *ferrum and stimulants*, and perfect quiet. If these means fail to remove the fluid, or if the fluid be purulent, *paracentesis* should be performed at once.

If adhesions of the pericardium have resulted, the application of blisters to the præcordium, with the administration of *potassii iodidum*, alternating with *ferrum* and *quinina* are indicated, with nutritious diet, stimulants and perfect quiet.

HYDRO-PERICARDIUM.

Synonym. Pericardial dropsy.

Definition. The accumulation of water in the pericardial sac, *minus* inflammation; characterized by præcordial distress, disturbed cardiac action, dyspnœa and dysphagia.

Causes. Usually a part of a general dropsy; Bright's disease; sudden pneumothorax; pressure of an aneurism or other mediastinal tumor; disease or thrombosis of the cardiac veins.

Pathological Anatomy. The fluid may range in quantity from an ounce to one or two pints, and is of a clear, yellowish or straw-colored serum, at times turbid or bloody, and of an alkaline reaction.

If the amount of fluid is large the sac is dilated, its walls thinned by the pressure, and has a sodden appearance.

use of *ammon. carbonat.*, *digitalis* and *stimulants* are indicated. The free use of *ammon. carbonat.* will often prevent or break up heart clots. After the acute symptoms have subsided, more or less absorption of the exuded lymph has been promoted by the free use of *potassii iodidum*. During the entire course of the affection the diet should be of the most nutritious character.

ACUTE MYOCARDITIS.

Definition. An inflammation of the muscular tissue of the heart, by extension from an inflamed pericardium or endocardium, or secondary to pyæmia; characterized by pain, feeble circulation, symptoms of blood poisoning and collapse.

Causes. The result of endocarditis or pericarditis; pyæmia; typhoid fever; emboli of the coronary arteries.

Pathological Anatomy. Discoloration and softening of the cardiac substance and the infiltration of a sero-sanguinous fluid, fibrinous exudation and pus, leading to the formation of abscesses in the muscular structure of the heart.

The disease leads to the formation of either a cardiac aneurism or to rupture of the walls of the heart. If recovery occurs, cicatrices or depressed scars may mark the site of a former abscess.

Symptoms. The clinical evidences of inflammation of the cardiac muscle are very obscure. If, during the course of one of the maladies mentioned, there are developed *pain*, irregular and feeble *cardiac action*, *pyrexia* of a low type, with symptoms of *blood poisoning*, and a tendency to *collapse*, or the symptoms of the so-called *typhoid state*, myocarditis may be suspected.

Prognosis. The course of acute myocarditis is very rapid, death being the usual termination, in from three to five days. Chronic myocarditis pursues a very latent course.

Diagnosis. The existence of myocarditis can scarcely ever be anything but a presumption, the signs being all negative rather than positive. If during the course of rheumatism, pyæmia, puerperal fever, typhoid fever, pericarditis or endocarditis, symptoms of cardiac failure appear suddenly, associated with signs of blood poisoning and collapse, inflammation of the cardiac muscle may be suspected.

Treatment. Largely symptomatic. Perfect rest of mind, generous diet, free stimulation and the administration of *quinina* and *ferrum*.

Pulmonary systolic murmur is heard
about 3rd left costal Cartilage; Congen
Aortic systolic murmur caused by
accompanied by regurgitation.
Tricuspid systolic Murmur. due to
regurgitation through tricuspid valve
Mitral systolic Murmur. Uncommon
Intensification of the Pulmonary secon
sound is undoubtedly present in many
of the most marked cases of mitral
regurgitant diseases. Its cause is undou
the increased tension of the blood
within the pulmonary system of vess
If apex murmur be audible in the
back, it indicates mitral regurgitation
Systolic apex murmur, when not du
to mitral regurgitation, may be due to
dilatation of left Ventricle.
Diastolic Murmur, accompanies th
elastic recoil of the aorta and pulmonic
artery. It indicates regurgitation thr

the span should be closed by one or the other set of sigmoid valves into the ventricle. In Aortic Stenosis the blood can not be forced into the aorta so easily or quickly as in health and the Ventricle then becomes dilated and having to exert increased force it becomes hypertrophied. In Aortic Regurgitation the Ventricle, may empty itself readily enough during its Systole, but in its Diastole it not only has to receive the blood flowing onwards from the auricle but also that which regurgitates from the aorta—hence the conditions are the same in Stenosis and Regurgitation.—

Tricuspid Valves.—The primary effect of disease of the Pulmonary valves is to cause dilatation and hypertrophy of right auricle. When [illegible]

CARDIAC HYPERTROPHY.

Definition. An overgrowth or increase in the muscular tissue which ...s the walls of the heart; characterized by forcible impulse, over fullness ...ue arteries, diminished blood in the veins and accelerated circulation.

Causes. Obstruction to the outflow of blood, viz: aortic stenosis; ...ysema; Bright's disease; functional over action; excessive use of ...acco, tea, coffee, or excessive muscular action.

Varieties. I. *Simple hypertrophy*, or a simple increase in the thickness ...f the cardiac walls; II. *Eccentric hypertrophy*, increase in the cardiac ...walls and dilatation of the cavities, viz :—*Dilated hypertrophy;* III. *Concentric hypertrophy*, increase in the cardiac walls and decrease of the ...vities, a very rare form.

...athological Anatomy. Hypertrophy of the heart is usually limited ... left side, the ventricles more commonly than the auricles, the latter ...ting.

The shape of the heart is altered by hypertrophy; if the right ventricle, ...eart is widened transversely and the apex blunted; if the left ven..., the heart is elongated and, as a rule, the cavity is dilated; if both ...ricles are hypertrophied, the heart has a globular shape. From ...crease in weight the heart may sink lower during the recumbent position, ...reby lessening the area of cardiac dullness, but during the sitting or ...ht posture it sinks lower in the chest and to the left, causing more or ...s prominence of the abdomen.

...he increase in the size of the organ is a true increase or hypertrophy ...he muscular tissue, and not a hyperplasia. The tissue is firmer and the ...lor brighter and fresher than when the size of the organ is normal.

Symptoms. Depends upon the amount of hypertrophy. The most common are *increased and forcible cardiac action*, the arteries becoming ...er, the veins less full and the circulation accelerated, *pulsating carotids ...orta, headache*, often vertigo, frequent *epistaxis, congestion of the face ... eyes, tinnitus aurium, dyspnœa* on exertion, *dry cough*, restless nights, with more or less jerking of the limbs, occasional præcordial pains shooting ...ards the left axilla, full, firm, *bounding pulse*, and pulsations in the ...rficial arteries.

A sphygmographic tracing shows the line of ascent vertical and abrupt, but the apex is rounded, and the line of descent is oblique, unless there is more or less insufficiency of the valves.

Inspection. Often fullness or prominence of the præcordium, with distinct impulse.

Palpation. The impulse is felt one or two intercostal spaces lower down and to the left, and is stronger and more or less diffused, termed the heaving impulse, and is very characteristic of extreme hypertrophy.

Percussion. The area of cardiac dullness is increased vertically and transversely upon the left side of the sternum, unless the right ventricle is also hypertrophied, when the cardiac dullness is increased to the right of the sternum.

Auscultation. If simple hypertrophy without any coexisting changes in the valves or orifices, the first sound has a loud and somewhat metallic quality, the second sound being strongly accentuated.

Sequellæ. Cerebral hemorrhage; miliary cerebral aneurisms; dilation of the heart; fatty changes in the cardiac tissue.

Prognosis. When the result of valvular disease, the hypertrophy is said to be compensatory. If the result of Bright's disease, emphysema of the lung, or if occurring late in life, or associated with atheromatous degeneration of the vessels, the prognosis is unfavorable; when the result of functional over action in the strong and robust, a further enlargement can often be prevented by active and persistent treatment.

Diagnosis. Hypertrophy of the heart can scarcely be mistaken for any other disease if a careful study of the physical signs is made.

Treatment. The indications are to *lessen the force* and *number* of the cardiac pulsations and to *remove the cause* whenever possible.

The former indications are best met by the persistent use of *aconitum* in small doses, viz: gtt. i–ij, three times a day, or *veratrum viride*, gtt. i–ij, three times a day, at the same time keeping the bowels, kidneys and skin acting freely.

The habits of the patient are to be corrected, all laborious or active exercise to be restricted, the patient to be in the recumbent posture several hours during the day if possible, the diet being restricted, avoiding all forms of stimulants, viz: liquors, tobacco, tea, coffee, etc.

Cases of cardiac hypertrophy associated with anæmia should, in addition to the above, be placed upon a course of *ferrum*.

DILATATION OF THE HEART.

Definition. An increase in the size of one or more of the cavities of the heart, without any increase or thickening of the cardiac walls; in fact, the walls are frequently thinner; characterized by feebleness of the circulation, terminating in venous stasis, œdema and exhaustion.

Causes. Over-exertion in those of feeble resisting powers, as youths or soldiers, as first pointed out by Prof. Da Costa; insufficiency of the valves; emphysema; chronic bronchitis; gout; Bright's disease.

Varieties. I. *Simple dilatation*, the cavities being enlarged, the walls normal. II. *Active dilatation*, corresponding to eccentric hypertrophy; the cavities being enlarged and the walls increased in thickness, the so-called "dilated hypertrophy." III. *Passive dilatation*, the cavitie being enlarged and the walls thinned or stretched.

Pathological Anatomy. The right side of the heart is far more frequently involved than the left side. The shape of the organ is altered, according to the part affected. The weight of the organ is, as a rule, increased, as hypertrophy almost always accompanies or precedes dilatation.

The muscular tissue is generally pale, mottled and softened, and under the microscope presents evidences of degeneration. The orifices also participate, and especially the auriculo-ventricular, resulting in the valves becoming incompetent to close the orifices, and this latter effect is added to by the removal of the basis of the papillary muscles to a great distance from the orifice, in consequence of the extension of the wall.

When the auricles dilate, the large venous trunks opening into them unprotected by valves commonly participate in the dilatation, and may become greatly enlarged.

The passive congestion of the organs that follows the feeble circulation produces changes in their structure.

Symptoms. Those associated with enfeebled circulation, viz: *feeble pulse*, veins distended, arteries emptied, *headache*, aggravated by the upright position, attacks of *syncope*, *cough*, with the phenomena of venous congestion; of the lungs, *dyspnœa;* liver, *jaundice;* stomach, *dyspepsia;* intestines, *constipation;* kidneys, *scanty* often albuminous *urine;* brain, *dullness* of the mind and *vertigo*, often relieved by a copious epistaxis; and, finally, *dropsy*, beginning in the lower extremities, the patient dying worn out.

Great relief often temporarily follows any of the above symptoms under treatment; sooner or later, however, the venous stasis produces the final symptoms noted.

Inspection. Veins of the surface distended and enlarged; indistinct cardiac impulse, often diffused and wavy; if associated with tricuspid insufficiency, there is pulsation of the jugular.

Palpation. Feeble and irregular fluttering but heaving impulse.

Percussion. Cardiac dullness extended transversely, and especially increased on the right side.

Auscultation. If no valvular lesions accompany the dilatation the cardiac sounds are weaker than normal, the first having a sharper quality than normal; if accompanied by valvular lesions, murmurs are present.

Prognosis. Unfavorable, death resulting from gradual exhaustion, or suddenly by cardiac paralysis if there is undue excitement.

Diagnosis. *Hypertrophy* of the heart shows increased cardiac dullness, and is a disease of powerful cardiac action, while dilatation is an affection of feeble action associated with dropsy.

Pericardial effusion has many points of resemblance to cardiac dilatation, but it begins suddenly, associated with some acute malady; and while the heart sounds are indistinct or feeble at the apex, they both become louder toward the base, while dilatation of the heart has a chronic history, results in general venous stasis, the cardiac sounds having the same intensity over the entire præcordia.

Treatment. The general nutrition of the patient must be promoted to the uttermost. Generous diet, moderate exercise, with *bitters* to increase the appetite and *ferrum* to improve the blood, and, in a majority of cases, the more or less free use of a good *red wine.*

The heart tonics are *digitalis* in powder or infusion; *ext. convallariæ, fld.*, gtt. v, t. d., *quinina, caffeina* and *morphina sulph.*, in small doses, the latter when the dropsy becomes great, associated with marked cyanosis, hypodermatically, as suggested by Prof. Bartholow, "often acts like magic in restoring the circulation."

The following pill is often of great advantage, viz:—

℞. Ferri redact..... gr. j–ij
Quininæ sulph..... gr. j–ij
Pulv. digitalis..... gr. j
Morphinæ sulph..... gr. $\frac{1}{24}$. M.

SIG.—Three times a day.

The secretions should be stimulated by *purgatives, diuretics* and *diaphoretics.*

If pulmonary congestion, *dry cups, digitalis* and *stimulants.*

Cardiac asthma, *dry cups, morphinæ sulph.*, hypodermatically, *spts. ætheris compositus* (Hoffman's Anodyne).

Hepatic congestion, *blue mass* and *podophyllin.*

Dropsy, *dry cups* over the kidney, *digitalis* or *potassii acetat.*, with *scoparius* and *juniperus* and *pulv. jalap comp.*, ʒ j–ij, in water, before breakfast.

FATTY DEGENERATION OF THE HEART.

Definition. A change in the muscular fibres of the heart, in which the transverse striæ are replaced by granules and globules of fat; characterized by feeble cardiac action, venous stasis and dyspnœa.

Causes. Impaired nutrition in the elderly; prolonged anæmia; chronic gout; alcoholism; phosphorus poisoning; cancer, tuberculosis and scrofula; disease of the coronary arteries.

Pathological Anatomy. The distinction must be made between a deposit of fatty tissue upon or around the heart, and the degeneration of its muscular tissue.

The fatty metamorphosis may affect the whole organ, or the entire ventricles, or be limited to portions of them. If the degeneration is marked the color is yellowish, the tissues soft and easily torn, and to the touch have a greasy feeling, oil being yielded on pressure.

The microscopic changes are characteristic. The striæ of the muscle are early rendered indistinct by fat and oil globules, gradually becoming more and more obscured, and finally disappearing altogether, the fibres being replaced by fat granules.

Symptoms. Those of weak heart, anæmia of organs and venous stasis, viz.: *feeble, irregular* but slow *cardiac action, compressible pulse, præcordial distress*, often aggravated by attacks of angina pectoris; *dyspnœa*, aggravated on exertion, with anæmia of the various organs, from the feeble propulsive power; of brain, *vertigo*, swooning, or pseudo-epileptic attacks, especially marked on suddenly rising from a recumbent position; lungs, *dry*, hacking *cough;* gastro-intestinal tract, *dyspepsia* and *constipation;* kidneys, *scanty urine*, at times albuminous; and, finally, *dropsy*, beginning in the lower extremities.

A formidable symptom, causing much inconvenience as well as alarm to the patient, is what he will term his constant "sighing," the Cheyne-Stokes breathing, viz.: "A pause in the breathing, a complete suspension in the respiratory acts for a period of time (during which breathing might occur several times in the normal manner), then the resumption of respiration very feebly and slowly, and a gradual and progressive increase in the number and depth of respirations until the maximum is reached, and then again a gradual and progressive diminution, in the same order, in the number and depth of the respirations, until another pause occurs." The "oscillating respiration."

Concomitant symptoms are atheromatous change in the vessels, and the *arcus senilis*.

Palpation. Weak apical impulse.

Percussion. Not markedly changed unless preceded by enlargement of the heart.

Auscultation. First sound feeble, toneless, almost inaudible, the second sound being normal, unless changes in the valves are present.

Prognosis. Incurable, the affection pursuing a more or less chronic course. Life may be prolonged at times by treatment, but death finally results from exhaustion, or suddenly, from cardiac paralysis or rupture of the heart.

Diagnosis. If aged persons, or those exposed to the causes have feeble heart, associated with atheroma of the vessels and arcus senilis, the diagnosis of fatty heart is almost positive. If dropsy occurs, however, it is difficult to distinguish from dilatation of the heart.

Treatment. Palliative. Generous diet, very moderate exercise, *stimulants*, *ol. morrhuæ* and the "triple elixirs," viz.: *elixir ferri, quininæ et strychninæ.*

To sustain the cardiac action, *caffeina* or *morphina* in small doses, or hypodermatically, for the so-called cardiac asthma. Digitalis is contra-indicated.

VALVULAR DISEASES OF THE HEART.

Definition. Alterations in the cardiac valves or orifices, rendering the former incapable of properly closing the latter, or causing the latter to impede the blood current in its normal movement.

The lesions are of two kinds, viz.: *obstructive* and *regurgitant.*

An *obstructive lesion*, termed also *stenosis*, is a narrowing of the orifice, thereby obstructing the passage of the blood.

A *regurgitant lesion*, termed also *insufficiency*, is such change in the valves as to permit the blood to flow backward instead of onward, the true direction of the blood current.

Varieties. I. Mitral regurgitation. II. Aortic regurgitation. III. Tricuspid regurgitation. IV. Pulmonic regurgitation. V. Mitral obstruction. VI. Aortic obstruction. VII. Tricuspid obstruction. VIII. Pulmonic obstruction.

Causes. In the young, usually the result of endocarditis, and generally affecting the mitral; in the elderly, chronic endocarditis or atheromatous degeneration, most commonly affecting the aortic.

Prof. Da Costa has clearly established the production of aortic disease in early life by overwork and strain of the heart; syphilis; dilatation of the *heart; atrophy* or contraction of the valves, and congenital malformations.

MITRAL REGURGITATION.

Pathological Anatomy. The most common conditions observed are more or less contraction and narrowing of the tongues of the valves, with irregular thickening and rigidity; atheroma or calcification of the segments; laceration of one or more segments; adhesion of one or more segments to the inner surface of the ventricle; rupture of the *cordæ tendineæ*, and also contraction and hardening of the musculi papillares.

As a result of the regurgitation of the blood into the left auricle, there is dilated hypertrophy.

Symptoms. Insufficiency of the mitral valves soon leads to cardiac hypertrophy to compensate for the diminished amount of blood sent onward by the ventricular systole. When the "compensation ruptures" occur, *præcordial distress*, *cough*, *dyspnœa*, *feeble*, soft, rapid, *irregular pulse;* finally pulmonary congestion, œdematous limbs, the abdominal cavity filled, liver congested, urine scanty and albuminous, the patient dying "drowned in his own fluid."

Inspection. Cardiac impulse lower than normal, the heart being enlarged.

Palpation. Early, forcible and diffused impulse; later, feeble diffused impulse.

Percussion. Transverse and vertical cardiac dullness increased.

Auscultation. Systolic blowing or churning murmur, audible in the mitral area, propagated to the apex, left axilla and under the angle of the scapula, either occurring with or taking the place of the *first sound* of the heart; the second sound markedly accentuated.

Prognosis. So long as the compensating hypertrophy can be maintained the prognosis is not bad; when dilatation supervenes, however, the patient soon perishes, from either congestion of the lungs or dropsy and exhaustion.

AORTIC REGURGITATION.

Pathological Anatomy. The valves or segments adhere to the walls of the aorta, or a segment is lacerated or may be perforated, or, more commonly, the segments are shrunken, deformed and rigid, permitting the regurgitation of the blood. These deficiencies in the valves are usually associated with more or less narrowing of the orifices.

The cardiac muscle rapidly hypertrophies, its cavity enlarging, "dilated hypertrophy."

Symptoms. Those of marked hypertrophy, viz: forcible cardiac action, headache, tinnitus aurium, congestion of the face and eyes, with

pulsating vessels, even small ones pulsating that before were not visible to the eye; pulsations of the retinal vessels can be recognized with the ophthalmoscope; the *receding pulse*, which is particularly characteristic, viz; forcible impulse but rapidly declining, called "water-hammer" pulse, also the "Corrigan pulse."

When "compensation ruptures," dyspnœa, cough, hepatic enlargement, congestion of the kidneys, with scanty albuminous urine, ascites and dropsy. If mitral insufficiency is now superadded, general venous stasis and death rapidly occur.

Inspection. Forcible cardiac impulse.

Palpation. Strong, full cardiac impulse.

Percussion. Cardiac dullness increased transversely and vertically.

Auscultation. *First sound*, forcible; *Second sound*, replaced or associated with a *churning, rushing or blowing murmur* of low pitch, distinct at the second right costal cartilage, but most distinct at the junction of the sternum and the fourth left costal cartilage, transmitted downward toward and below the apex.

Prognosis. The one valvular disease most likely to occasion sudden death; still, so long as the compensating hypertrophy remains intact, compatible with quite an active life.

TRICUSPID REGURGITATION.

Pathological Anatomy. This form of valvular insufficiency is either associated with right-sided cardiac dilatation from pulmonary obstruction, or is the result of mitral disease.

The tricuspid orifice is dilated in the majority of cases; occasionally the segments of the valves are contracted or adherent to the ventricle.

Symptoms. Venous stasis with its various consequences, and especially *pulsation of the jugular*, synchronous with the cardiac movement, and finally general venous pulsation, especially of the liver, pulmonary congestion, engorgement of the kidneys and dropsy. These symptoms are superadded to those of the affections with which tricuspid insufficiency is always associated.

Inspection. Diffused wavy cardiac impulse: jugular pulsation synchronous with the cardiac movement, uninfluenced by respiration; also more or less prominent hepatic pulsation.

Palpation. The cardiac impulse extended but feeble.

Percussion. Dullness on percussion, extending to the right and below the sternum.

Auscultation. This first sound is accompanied by a blowing murmur

most intense at the junction of the fourth and fifth ribs with the sternum, distinct over the xiphoid appendix, becoming feeble or lost in the left axillary region; often associated, however, with a mitral systolic murmur.

PULMONIC REGURGITATION.

Pathological Anatomy. Insufficiency of the pulmonary valves is of rare occurrence, but when present the changes correspond more or less closely to those described for aortic regurgitation.

Symptoms. Those of dilatation of the right side of the heart and consequent pulmonary congestion, viz.: dyspnœa, deficient aeration of the blood, and cyanosis, distention of the superficial vessels, palpitation of the heart, præcordial distress, sudden suffocative attacks and dropsy.

Percussion. The cardiac dullness extending to the right of the sternum.

Auscultation. A loud blowing murmur associated with the second sound of the heart, most distinct at the junction of the third left costal cartilage and the sternum.

Prognosis. Death results sooner or later, from dropsy and exhaustion.

MITRAL OBSTRUCTION.

Pathological Anatomy. Mitral stenosis is caused by deposits around the orifice, the result of endocarditis, or else the segments of the valves are "glued together by their margins," leaving but a funnel-shaped opening, the so-called "buttonhole" mitral valve. Vegetations on the valves lead to more or less obstruction of the blood current.

Symptoms. Hypertrophy of the left auricle results from obstruction at the mitral orifice, the symptoms of stenosis being unobservable until the "compensation ruptures," when occur *irregular*, small and *feeble pulse*, *dyspnœa*, *cough*, bronchorrhœa, the result of bronchial congestion; and dilatation of the right side of the heart, soon leading to general venous stasis, dropsy and death.

Inspection. Normal until hypertrophy, when an undulatory impulse is observed over the left auricle.

Palpation. When cardiac dilation occurs, a diffused, feeble and irregular cardiac impulse is felt near the xiphoid appendix.

Auscultation. First sound normal in character but often irregular in rhythm. The second sound normal. A blowing, sometimes rasping, sound is heard immediately *after the second sound* of the heart ceases, and immediately *before the first sound* begins *a presystolic murmur*, heard most distinctly in the mitral area, lessening in intensity toward the cardiac base. The cardiac sounds are all more or less enfeebled when cardiac dilatation occurs.

Prognosis. The prognosis is controlled by the hypertrophy. Under favorable circumstances mitral stenosis is compatible with a long and rather active life.

AORTIC OBSTRUCTION.

Pathological Anatomy. Stenosis of the aortic orifice depends upon the projection of the valves inward, and their becoming rigid and thickened, or atheromatous or calcareous, so that they cannot be pressed back by the blood, but remain constantly in the current of the circulation. Occasionally the valves are covered with fibrinous masses, the opening into the artery being thus more or less completely closed, or the segments may be adherent by their lateral surfaces, leaving a central opening, which may be so contracted as to only permit the passage of the smallest article.

Symptoms. Hypertrophy of the left ventricle rapidly supervenes upon aortic stenosis. The *pulse* is *small*, slow and hard. The supply of blood to the brain is insufficient, in many cases, and hence attacks of *vertigo*, *syncope* or slight epileptiform seizures occur; finally, dilatation of the left ventricle and incompetence of the mitral valve result, with subsequent pulmonary congestion, dyspnœa and general venous stasis, the pulse being soft and feeble.

Palpation. Lowered cardiac impulse, strong in the early stage, feeble when dilation occurs.

Percussion. The cardiac dullness is increased vertically, the transverse dullness being slightly affected.

Auscultation. The first sound replaced or associated with a *harsh rasping sound*, whistling at times, having its greatest intensity at the junction of the second right costal cartilage with the sternum, transmitted along the vessels; the murmur may sometimes be heard a short distance from the patient.

Usually aortic stenosis is associated with more or less aortic regurgitation, whence a *double murmur occurs*, having its greatest intensity at the base of the heart, the so-called "see-saw" murmur.

Prognosis. So long as compensation is maintained the symptoms of aortic stenosis are *nil*. When the compensation is ruptured, the usual symptoms of dilatation, venous stasis and dropsy soon follow.

TRICUSPID OBSTRUCTION.

This condition is one of the rarest affections of the heart, and if it ever does occur with or following an attack of endocarditis, the anatomical changes are similar to those of mitral obstruction. This condition soon leads to auricular dilatation; venous stasis rapidly supervenes, associated

with venous pulsations similar to those described when speaking of tricuspid regurgitation.

PULMONIC OBSTRUCTION.

Pathological Anatomy. Always a congenital malady, the changes consisting in "constriction of the pulmonary artery, unclosed foramen ovale, unclosed ductus Botalli, stricture at the ductus Botalli, with hypertrophy of the right cavity and frequent association with tuberculosis of the lungs."

Hypertrophy of the right ventricle may ensue, the walls becoming as thick almost as those upon the left side.

Those in whom these congenital defects in the cardiac structure occur are otherwise weak, develop slowly, have flabby tissues, soft bones and seem poorly nourished.

Symptoms. The hypertrophy which often ensues may keep life apparently comfortable for some time, but sooner or later "compensation ruptures," when cough, dyspnœa, cyanosis and death occur.

Prognosis. The duration of these congenital affections is short, usually from a few days to a few months; although several well authenticated cases are of a much longer duration.

DIAGNOSIS OF VALVULAR DISEASES.

In making a differential diagnosis between the various forms of valvular diseases of the heart, strict attention must be paid to the points of intensity at which the several murmurs are heard.

A *murmur* occurring with or taking the place of the *first sound* of the heart, the ventricular systole, heard most distinctly at the apex, transmitted to the left axilla, and at the inferior angle of the scapula, signifies mitral regurgitation—*a mitral systolic murmur.*

A *murmur* occurring with or taking the place of the *first sound* of the heart, with its point of greatest intensity at the xiphoid appendix, signifies regurgitation at the tricuspid orifice—*a tricuspid systolic murmur.*

A *murmur* heard with the *first sound* of the heart, high-pitched, rasping or grating in character, with its point of intensity greatest at the second right costal cartilage, signifies obstruction at the aortic orifice—*an aortic systolic murmur.*

A *murmur* heard with the *first sound* of the heart, soft in character, with its point of intensity most distinct at the junction of the third left costal cartilage with the sternum, signifies obstruction at the pulmonic orifice—*a pulmonic systolic murmur.*

A *murmur* occurring immediately after the *second sound* of the heart,

and immediately before the beginning of the first sound of the heart, signifies obstruction at the mitral orifice—*a presystolic mitral murmur.*

A *murmur* heard with or taking the place of the *second sound* of the heart, most distinct at the second costal cartilage, to the right of the sternum, and well transmitted toward the apex or below, signifies insufficiency or regurgitation at the aortic orifice—*an aortic regurgitant or diasystolic murmur.*

Although eight distinct valvular murmurs have been described as occurring in the heart, those on the right side are of rarer occurrence, and are of little clinical importance.

If a *murmur* is heard with the *first sound* of the heart it is almost certainly *aortic obstructive or mitral regurgitant;* and if *heard* with the *second* sound, it is probably *aortic regurgitant.* A *presystolic mitral* murmur is also of comparatively rare occurrence, the force with which the blood passes from the left auricle into the left ventricle being, under ordinary circumstances, insufficient to excite sonorous vibrations.

Functional or anæmic murmurs may be confounded with the various forms of valvular disease of the heart. The chief points of distinction between them are, that an anæmic murmur, which is always heard at the base of the heart, is always systolic in time, not transmitted away from the heart, and is soft in character, low in pitch, and of variable intensity, now being heard, now entirely absent.

Treatment. There is no special plan of treatment for each form of valvular disease. The important point to bear in mind is that they are associated either with *cardiac hypertrophy or dilatation*, and the treatment, if any at all is required, is directed towards the secondary conditions. If compensation is complete, attention to the condition of the bowels, kidneys and digestion, with some general directions as to exercise, is all that is required.

If the hypertrophy becomes marked and excessive, it is best controlled by either *aconitum* or *veratrum viride.*

If dilatation has occurred, the heart weak and feeble, the circulation impeded, and venous stasis has followed, *digitalis,* with more or less active purgation, are indicated.

PALPITATION OF THE HEART.

Synonym. Irritable heart.

Definition. A functional disturbance of the heart; characterized by increasing frequency of its movements and more or less irregularity of the rhythm, having a strong tendency toward hypertrophy.

Causes. Over-exertion, "the heart strain" of Da Costa; dyspepsia; uterine diseases; excesses in tea, coffee, tobacco, alcohol or venery; moral and emotional causes, grief, anxiety and fear.

Symptoms. Usually palpitation of the heart has a sudden onset after some one of the causes mentioned, *præcordial oppression or pain, rapid, tumultuous beating*, the impulse being visible through the patient's clothing, *dyspnœa, anxiety*, and a sense of *choking or fullness in the throat*, the recumbent position impossible, *vertigo*, faintness, flashes of light, the pulse full and strong or feeble, the *face flushed or pale*, the patient having a feeling of anxiety with a sense of *impending danger* and a fear of sudden death. These attacks are paroxysmal, lasting from a few moments to several hours, or a day, the patient often voiding a large quantity of limpid urine after the paroxysm has subsided, when there is a strong tendency to sleep.

Diagnosis. Irritability of the heart is differentiated from the various forms of cardiac disease by the absence of all the physical signs mentioned as occurring in those conditions.

Prognosis. If early and properly treated, favorable.

Treatment. The first point in the treatment of irritability of the heart is to remove the cause, the next to prevent the recurrence of the attacks of palpitation.

The majority of cases do well by a combination of *digitalis* and *belladonna*. Permanent relief is often afforded by a combination of *potassii bromidum* and *veratrum viride*. *Chloral* is also used. If the patient is anæmic, the author has had excellent results follow the prolonged use of the *elixir ferri, quininæ et strychninæ*. Locally *emplastrum belladonnæ* to the præcordium affords relief.

ANGINA PECTORIS.

Synonym. Neuralgia of the heart.

Definition. Paroxysms in which there occur sharp cardiac pains, extending usually into the left shoulder and down the left arm, accompanied by a feeling of constriction of the thorax and a strong sense of impending death.

Causes. Often hereditary; associated with chronic cardiac changes, as diseases of the coronary arteries or calcification of the valves; the excessive use of tobacco; according to Trousseau, it is a form of masked

epilepsy, and may alternate with true epileptic attacks; often associated with hysteria.

Pathological Anatomy. "The pathological changes which stand in a causative relation to the attacks are those of the cardiac plexus of the phrenic and of the pneumogastric nerves. Pressure of enlarged lymphatics, inflammation of parts of the cardiac plexus, with changes in the coronary artery, seem to be most constant."

Symptoms. A paroxysmal affection, the attacks occurring irregularly; in the interval entire absence of symptoms.

"The patient suddenly sits up in his bed; with a cry of horror indicates the sense of pain at the præcordium. This pain is of great intensity, but is of a cold and sickening character; the chest is fixed, the breathing quickened, and the hand placed over the epigastrium finds that the heart's action is slight and enfeebled. The face wears a look of horror, pale and slightly leadened; a cold sweat breaks out upon the forehead; worse than the pain is the feeling of fearful sickening and depression. The poor patient gasps, 'I shall die! I shall die!' and, sometimes, his short but concentrated sufferings in a few moments end in death."

The unpleasant condition of these patients during an attack, and the nervous disorder associated with it, slowly bring about a mental change. They are depressed and gloomy, sometimes suicidal, often developing epilepsy.

Diagnosis. The points to be remembered are that the attacks are always paroxysmal, the patient having a sense of coldness, and frequently a cold sweat, the heart's action not increased, the chest fixed and the breathing slow.

Prognosis. Unfavorable, the patient either succumbing during a paroxysm or by exhaustion, the result of the cardiac changes.

Treatment. As far as possible attempt to remove the cause.

Prompt relief follows the use of *amyl. nitris*, ♏iij, inhaled at the instant. To prevent the paroxysms, *arsenicum*, ♏v, three times a day, *ol. morrhuæ*, *hypophosphites*, and *elixir ferri, quininæ et strychninæ*.

DISEASES OF THE NERVOUS SYSTEM.

CONGESTION OF THE BRAIN.

Synonyms. Cerebral hyperæmia; cerebral congestion.

Definition. An abnormal fullness of the vessels of the brain; *active*, when arterial fullness; *passive*, when venous fullness; characterized by headache, vertigo, disorders of the special senses, and if the hyperæmia is extreme, convulsions.

Causes. *Active.* Increased cardiac action, as from hypertrophy of the left ventricle, etc.; general plethora; excesses in eating and drinking; alcohol; sunstroke; prolonged mental labor.

Passive. Dilatation of right heart; pressure upon veins returning cerebral blood.

Pathological Anatomy. The *post-mortem* appearances are, overloading of the venous sinuses and of the meningeal vessels, including the finer branches; the *pia mater* appears vascular and opaque; the *gray matter* of the convolutions unduly red; the *convolutions* may be compressed and the *ventricles* contracted.

Long continued or repeated congestions lead to enlargement and tortuosity of all the vessels, a moist and slimy condition (œdema) of the cerebral substance, and an increase in the sub-arachnoid fluid.

Symptoms. "Rush of blood to the head" may be gradual or sudden in its onset, the symptoms aggravated by the recumbent position. *Headache* with paroxysmal neuralgic darts, *disorders of vision* and *hearing*, buzzing in the ears and sparks before the eyes, *vertigo*, *blunted intellect*, inability to concentrate thought, *irritable temper* and curious *hallucinations*. The *face* is *red*, the *eyes congested*, and *the carotids pulsating*. The *sleep* is disturbed by *dreams* and *jerkings of the limbs*. In children *convulsions*. If the attack is sudden (apoplectiform), *sudden unconsciousness* with *muscular relaxation* occur.

Prognosis. *Mild cases* terminate favorably in a few hours to a day or two, with strong tendency to recur. *Severe cases* (apoplectiform) may terminate in health, but usually foretell cerebral hemorrhage.

The *passive* form is controlled by the lesions causing it.

Treatment. *Active.* Remove cause if possible. *Elevate head* and apply *cold*, either cold cloths or the ice cap. *Leeches* to the mastoid, or *cups* to the neck, or in the *apoplectiform* variety *venesection*, to diminish

the intra-cranial blood pressure; compression of the carotids, or ligatures about the thighs, have been recommended.

An active purgative is also indicated, lessening the vascular tension.

In mild cases the application of *cold* and *potassii bromidum*, gr. xxx–xl, repeated, controls the congestion; in more severe cases any or all of the above mentioned means, together with full doses of *tinct. veratri viridis*, or *aconiti*, may be needed.

Passive form. Becomes a part of the treatment causing the hyperæmia.

CEREBRAL ANÆMIA.

Definition. An abnormal decrease in the quantity of blood in the cerebral vessels; *general*, when the diminished supply includes all the vessels; *partial*, when the diminished supply is limited in area; characterized by pallor, headache, vertigo, some loss of power, and, rarely, convulsions.

Causes. *Partial* cerebral anæmia results from obstruction of a vessel, from embolism or thrombosis. *General* cerebral anæmia results from hemorrhages, wasting diseases, sudden shock, feeble cardiac action and general anæmia.

Pathological Anatomy. The cerebral vessels are less full than normal; the brain is pale and milky in color, and on transverse section there are no bloody points; the ventricles and perivascular lymph spaces are well filled with fluid.

In *partial* anæmia the local conditions differ somewhat from the above.

Symptoms. *General:—Headache*, relieved by the recumbent position; *vertigo*, aggravated by exertion; general *pallor* and anæmia, with attacks of *fainting*.

Partial anæmia, sudden loss of power, of limited muscular area, gradually returning to the normal condition.

Prognosis. Favorable in all cases save those of prolonged hemorrhage.

Treatment. Regulated *nourishment*, with *stimulants*, and certain number of hours daily in recumbent position. When tendency to attacks of *swooning*, stimulants or even cautious inhalation *amyl nitris*. For the quantity or quality of blood,—

℞. Tinct. ferri chlor..... ♏xv
Acid. phosph. dil..... ♏v
Liq. arsenici chloridi..... ♏iij
Syr. limonis..... ♏xx
Syr. zingiberis, q. s. ad..... ℥ij. M.

Every six hours, well diluted.

CEBEBRAL HEMORRHAGE.

Synonym. Apoplexy.

Definition. The sudden rupture of a vessel and the escape of blood into the cerebral tissue; characterized by sudden unconsciousness, irregular, noisy respiration and complete muscular relaxation.

Causes. Rare under forty years of age. The principal cause is disease of the vessels, and especially if associated with cardiac hypertrophy; hereditary tendency; Bright's disease. More frequent in the spring and autumn.

Pathological Anatomy. Most common locations of cerebral hemorrhage are the *corpus striatum* and *thalamus opticus;* less common the *anterior* and *middle lobes* and the *cerebellum;* next in frequency the *pons* and *medulla oblongata;* and rarely on the *convexity* of the brain, termed *meningeal* hemorrhage.

When the hemorrhage is large, the blood may break into the ventricles and pass by the *iter* from the third to the fourth ventricle.

The *clot* is dark in color, excites inflammation around it, resulting in its being encysted and then gradually absorbed, leaving a cicatrix, or the brain tissue around the clot softens and degenerates.

Symptoms. Two modes of onset, to wit: with and without *prodromes* or "warnings."

Prodromes. Headache, vertigo, transient deafness or blindness, sensations of numbness of the extremities, with local palsies and the constant *dread of an attack.*

The *attack* begins with *vomiting*, followed by either partial or complete *insensibility; respiration slow, irregular* and *noisy;* during inspiration the paralyzed cheek is drawn in and puffed out in expiration; *pulse* slow and full; *pupils* uninfluenced by light, the *face* flushed, the *eyes* congested and the *carotids* throbbing; the *temperature* declines below the norm, a degree or two.

The *muscular system* is profoundly relaxed, and the *reflex movements* are abolished. The head and eyes *deviate*, in many cases, *towards* the affected side in the brain *or from* the paralyzed side.

If the unconsciousness continue longer than twenty-four hours, death is the usual termination, preceded by pale face, irregular and rapid pulse and respiration, and rise of temperature.

Reaction obtains in from a half to three hours, consciousness returning, reflex excitability reviving, associated with headache, confusion of mind,

and more or less *paralysis* of motion and sensibility of one side of the body, termed—*hemiplegia*.

The *electric excitability* of the paralyzed parts is preserved.

Restoration may be delayed by inflammatory symptoms, the temperature rising to 101°–104° F., and tonic contractions (*early rigidity*) of the paralyzed muscles and severe neuralgic pains.

Sequellæ. *Paralysis* of the muscles of the face, tongue, body and extremities of one side, *opposite* to the location of the hemorrhage, termed *unilateral* paralysis or *right* or *left hemiplegia*.

Paralysis of both sides of the body, due to simultaneous hemorrhage on *both* sides, termed *bilateral hemiplegia*.

Paralysis of one side of the face and the extremities of the opposite side, due to hemorrhage into the *pons varolii*, termed *alternating* or *crossed paralysis*.

Occasionally *tonic contractions* occur in muscles long paralyzed, termed *late rigidity*, and is evidence of a *secondary degeneration* of the nerve fibres.

Choreic movements in paralyzed muscles is termed *post-hemiplegic chorea*, due, according to Charcot, to changes in the motor centres.

The *mental powers* are always more or less permanently impaired, the patient irritable and emotional, and the same holds good concerning the *memory*.

Prognosis. If the patient survives the immediate effects of a cerebral hemorrhage, he is always in danger of a new attack, since the causes of the original attack still remain. Another attack or two is the usual course, a fatal termination ultimately occurring.

The *hemiplegia* is uncertain; a partial recovery may occur within a few months, or it may continue for years.

Diagnosis. *Insensibility from drink* differs from apoplexy in the following points, to wit: insensibility not so complete, no drawing-in and puffing-out of one cheek with respiration, the pulse frequent instead of slow, the pupils influenced by light; upon raising both legs no difference is apparent on allowing them to fall; the eyes and head are not turned to one side, and lastly, the condition is ameliorated on the inhalation of ammonia.

Opium poisoning differs from apoplexy by the gradual approach of the coma, and that the patient can be momentarily aroused, and also by the absence of the heavy stertor of apoplexy.

Uræmia causes a coma that greatly resembles apoplexy. A history of Bright's disease at once clears up the case; also uræmic coma is always preceded by convulsions, and has a continued depressed temperature.

Syncope or a fainting-fit is of sudden onset, but being due to a failure of the circulation, the pulse is feeble, the face pale, the respiration quiet, and the duration of unconsciousness short, all the very opposite of an apoplectic fit.

The differential diagnosis from cases of *embolism* or *thrombosis* will be pointed out when treating of those conditions.

Treatment. If there are prodromal indications, the most prompt means of reducing the intra-cranial blood pressure is by *venesection*, followed by a brisk purgative; if the patient is weak, *leeches* to the mastoid, or *potassii bromidum*, gr. xl–lx, may be substituted.

For the *attack*, loosen clothing, remove constrictions, place in cool room, have perfect quiet, and at once *venesection*, *cold to head*, *mustard foot bath*, and *oleum tiglii*, gtt. j–iij, *glycerini*, gtt. xv, placed on back of tongue; if the pulse is full and strong, when consciousness is regained, either *tinct. verat. virid.* or *tinct. aconiti* are indicated.

If during the attack the *face* is *pallid* and the *pulse irregular*, the patient is prostrated by the *shock* and *stimulants* and *digitalis* are indicated, with, perhaps, *leeches* to the mastoid and an *enema* of *terebinthina*.

For secondary fever, either *tinct. aconit.* or *tinct. verat. virid.*; for the headache and delirium, *camphoræ bromidum*.

For aiding the *absorption* of the clot, keep the secretions acting, good diet and a course of *potassii iodidum* or *hydrarg. chlor. corros.*, alternated with—

℞. Liq. potassii arsenit..... gtt. v
Syr. calcii lacto-phosph..... f℥ij.
Three times a day.

After two or three months a weak *galvanic current* applied directly to the brain, by placing an electrode on each mastoid process, promotes absorption.

For the *paralyzed muscles*, the *faradic current* applied by placing one electrode over or near the nerve innervating the muscle and the other over its belly, acts as a tonic, preventing wasting; it is assisted by hypodermatic injections of *strychninæ sulph.*, gr. $\frac{1}{30}$ three times a week.

ACUTE MENINGITIS.

Synonym. Cerebral fever.

Definition. An acute inflammation of the cerebral pia mater and arachnoid membranes; characterized by headache, chill, fever, delirium, and followed by symptoms of general collapse.

Causes. Cerebral overwork; prolonged wakefulness; exposure to the sun; disease of the internal ear; erysipelas; secondary to diseases of serous membranes. Most frequent between the ages of 16 and 45 years.

Pathological Anatomy. The inflammatory changes may be limited either to the *convexity* or the *base* of the *brain*.

Intense *hyperæmia* of both membranes, followed by a purulent and fibrinous *exudation*. The ventricles may be filled with fluid, compressing and flattening the convolutions.

Symptoms. Vary according to the stages:—

Prodromes; Headache, vertigo, cerebral *vomiting*, more or less *feverishness*, continuing from a few hours to one or two days, when the

Stage of Invasion; onset sudden, with *chill*, high *fever*, 103–104°, *pulse* 100–120, *face flushed*, with *congested eyes, headache*, and *vertigo*, the *nausea* and *vomiting* greatly aggravated.

Stage of Excitation; General sensibility of the body increased, sensitiveness to light, and acuteness of hearing, *delirium* furious, often resembling insanity, continual *jerking of the limbs*, oscillations of the eyeballs, twitching of the muscles of the face, and in children convulsions. Duration, from a day to a week or two.

Stage of Depression or Collapse: The patient gradually becomes more quiet; the delirium subsides, as well as the muscular agitation; *somnolence* occurs, passing into *coma*, at times temporary consciousness, coma soon following again; *pulse* irregular and slow, *fever* less; *various palsies*, viz: strabismus, ptosis, pupils uninfluenced by light, mouth drawn to one side, urine and fæces involuntarily discharged. Death following, either by convulsions or by deepening coma.

Prognosis. Not very favorable. If recognized early and treated, a fair number of recoveries occur, but it usually leaves the patient subject to attacks of epilepsy or with a persistent headache.

Diagnosis. *Cerebro-spinal fever* closely resembles acute meningitis, the points of distinction between which are, the first named occurring epidemically, associated with marked spinal symptoms and an eruption.

The *cerebral symptoms* of rheumatism are differentiated from idiopathic meningitis by the association of the joint trouble.

Cerebral symptoms of typhoid and typhus fever have a close resemblance to idiopathic meningitis, and are only determined by a study of the clinical history.

Treatment. Must be energetic from the onset.

In vigorous subjects, *venesection* or *leeches* behind the ear or to the inside

of the nostrils; in weak subjects, *cups* to the nucha, more or less persistent application of *cold* to the head, viz: *ice or cold compresses.*

Active purgation, calomel, gr. x, followed by *ol. tiglii*, gtt. j–ij, or *magnesii sulph.*, ℥j, well diluted, frequently repeated.

Control the active circulation with *aconitum* in small doses, frequently repeated, combined with *potassii bromidum*, gr. xx–xl. The cerebral circulation may be markedly influenced by compression of the carotids.

The apartment should be cool, the air pure, the patient's head elevated, and an easily digestible diet.

If the case show a disposition to linger, small doses of *calomel* or *potassii iodidum* are of benefit.

Third stage: Free *stimulation*, nutritious food, *ferri iodidum* and flying *blisters.*

TUBERCULAR MENINGITIS.

Definition. An inflammation of the membranes of the brain attended with or due to the deposit of miliary tubercle; characterized by gradual decline of the bodily and mental powers.

Causes. Most frequently occurs in children between two and six years of age, although numerous cases are reported occurring between the ages of twenty and thirty years; inherited diathesis. The "gelatinous children of albuminous parents," as the phrase goes, possess a special susceptibility to tubercular meningitis.

Pathological Anatomy. The deposition of tubercle usually occurs at the base of the brain.

Depositions of grayish-white granules, of a translucent, somewhat gelatinous appearance, miliary tubercle, are distributed along the vessels of the pia mater, resulting in inflammation and the exudation of lymph, with the consequent thickening and opacity of the membranes.

The cerebral tissue is not usually involved, although on section the lines indicative of blood vessels are very much increased in number. The ventricles are distended by a clear, or milky, or even bloody serum.

Tubercular deposits occur in the lungs, intestines, and, at times, in other organs.

Symptoms. *Prodromes:* child becomes irritable, has loss of appetite, loss of flesh, swollen abdomen, constipation alternating with diarrhœa, irregular attacks of feverishness, the child grinding its teeth during sleep. Duration of this stage is from one week to a month or two.

Stage of excitation: onset rather sudden, with obstinate *vomiting*, severe *headache, convulsions, fever*, 102–103°, in the evening, falling to 99, in the morning, *pulse* soft and compressible, with irregular rhythm, and on drawing the finger nail lightly over the surface a red line results, "the cerebral stain" of Trousseau. The symptoms grow progressively worse with exaltation of the special and general senses; the least pinch or even touch causing exquisite pain; spasmodic movements of the muscles, with contraction and rigidity, at times opisthotonos. Duration of this stage is about two weeks.

Stage of depression: the result of the pressure of fluid; the *pulse* slow and compressible, with irregular rhythm; *temperature* depressed; tendency to *somnolence*, alternating with quiet *delirium*, mental stupor, continual movement of the fingers, as in picking up objects; convulsions from time to time, strabismus, oscillation of the eyeballs, followed by intervals of wakefulness, when the headache is excruciating, causing the peculiar, unearthly shrill cry or shriek, "the hydrocephalic cry," associated with contraction of the muscles of the face, as if suffering were experienced; finally *collapse*, occurring with the "Cheyne-Stokes" respiration, the *coma* deepening, followed by death, *convulsions* often ending the scene. Duration, from a day or two to two weeks.

Prognosis. Unfavorable. Usual duration, three or four weeks after fully developed prodromes.

Diagnosis. *Acute meningitis* and tubercular meningitis have closely analogous symptoms during the stage of excitation, but the history and clinical course of the two maladies determine the diagnosis.

Treatment. Most unsatisfactory. No means of retarding the disease. Treat symptoms as they develop. Blisters, leeches, active purgation, pustulating ointments, potass. iodid., etc., are all useless.

If the hereditary tendency is marked, nutritious food, *ol. morrhuæ*, *iodum* and *quinina* may somewhat delay the development of the affection.

CEREBRAL TUMORS.

Synonym. Intra-cranial tumors.

Definition. Tumor of the brain is either a growth in the cerebral tissue, on the meninges, or in the vessels; characterized by symptoms of pressure upon the brain structure.

Causes. Injuries to the head; syphilis; changes in the vessels; tubercle and cancer; hereditary.

Pathological Anatomy. The size of tumors vary, and may be as large as an orange before they will give rise to symptoms.

Tumors of the brain are of various kinds, viz.: *vascular tumors*, aneurisms; *parasitic tumors*, cysticercus; *diathetic tumors*, tubercle or syphilis; *accidental tumors*, fibroplastic.

Whatever the character of growth, it produces irritation of the surrounding parts, and by pressure, destruction of the tissues, or it interferes with the arterial or venous flow.

Symptoms. Those common to tumors in general are, *headache*, persistent and increasing in intensity, *defects of vision*, even blindness, *defects of hearing*, *taste* and of *speech*, the result of paresis of the vocal chords, *vertigo*, associated with nausea and *vomiting; convulsions*, epileptiform in character, usually limited to one side of the body, occurring at regular intervals, or confined to the eyeballs or one limb, with *no loss of consciousness; palsies*, beginning first as strabismus, ptosis and dilatation of the pupil, of the facial muscles, paraplegia and general hemiplegia; defects of sensibility, viz.; sensations of numbness, and coldness in the limbs and body. Occasionally disturbances of equilibrium manifested by a tendency to go backward or turn to the right or left; intellectual faculties well preserved until late in the affection, when the memory becomes impaired or lost for certain articles, and finally a gradually advancing imbecility.

Prognosis. Unless of syphilitic origin, unfavorable.

Diagnosis. Rarely can a positive diagnosis be made. The following points will aid: long-continued, persistent headache, without appreciable cause, epileptiform convulsions, unilateral, without loss of consciousness, difficulty of vision, hearing and speech, associated with nausea and vomiting, and local and general palsies.

The location of the tumor must be determined by the more or less pronounced character of certain symptoms.

The diagnosis of the character of the growth can only be determined by a close study of the history.

Treatment. Unsatisfactory. Mostly symptomatic. As benefit occasionally follows the use of *potassii iodidum*, gr. xx, three times a day, or *ext. ergotæ fld.*, ʒ ss–j three times a day, continued until their physiological effects are produced, these remedies should be used in all cases, discontinuing them if no benefit follows their physiological effects.

APHASIA.

Definition. The inability to use spoken language or give utterance to ideas.

Amnesic aphasia, or loss of memory of words.

Ataxic aphasia, the inability to combine the different parts of the vocal apparatus for vocal expression.

Agraphia, the inability to recognize and make the signs by which ideas are communicated in written language.

Amnesic agraphia, the loss of memory of written signs.

Ataxic agraphia, the inability to combine the muscular apparatus, "writers' cramp."

Pathological Anatomy. The distinction between aphasia and aphonia must be clearly determined. Aphasia is not the result of any one specific lesion, but occurs during the course of several, viz.: occlusion of certain cerebral vessels; cerebral hemorrhage; cerebral abscess or softening; meningitis; tumors; mental or moral causes; hysteria.

It is now almost definitely determined that lesions of the left middle cerebral artery, island of Reil, third frontal convolution, and parts of the corpus striatum, are associated in the production of aphasia. The lesions are usually upon the left side of the brain, the aphasia being associated with right hemiplegia.

Symptoms. The degree to which articulate language is impaired varies, from the loss of a few words to complete inability to communicate ideas. The intellect does not suffer in proportion to the loss of words; for, showing the individual an article, while he may miscall it, if you call it by name he will recognize it. This inability to convey thoughts is a source of great mental suffering, in some leading to a suicidal tendency.

A strange clinical fact is the strong tendency to profanity shown by aphasic patients.

Prognosis. Controlled entirely by the cause. If the result of congestion of the brain or a syphilitic tumor, the prognosis is favorable. If associated with hemiplegia the clot may undergo absorption, the prognosis being favorable. If associated with softening of the brain, however, the disease grows progressively worse.

Diagnosis. *Aphonia*, or loss of voice, should not be confounded with aphasia, or the inabilty to remember words.

Paralysis of the tongue, or inability to move this organ, thereby interfering with articulate language, should not be confounded with aphasia, which, as a rule, is not associated with paralysis of the tongue.

Aphasia.

Cause most frequent - plugging of middle cerebral artery on left side by an embolus derived from valvular disease of the heart, also disease of the brain, congestion hemorrhage, tumor. Those who can not write are paralyzed on right side. A patient may be dumb because he has no idea to convey, but he is not aphasic: he may have much to say, but unable to find words in which to express his thoughts, he is aphasic. - If lesion involves convolutions near corpus striatum usually the left - there is more or less defect or even complete loss of speech. -

Paralysis Agitans.

Lesions in Paralysis Agitans supposed to be either the cerebral, cerebellar peduncles or the Pons Varolii.

Two Tremors. 1st Simple, which occur during a voluntary act and cease with it being evidently due to want of power only. 2nd Spasmodic which occur during rest when the parts are supported and unemployed, these are short alternate clonic convulsions of antagonist muscles and imply some irritation in the motor nerve centers. The spasmodic tremor is characteristic of Paralysis Agitans.

1st Simple, is peculiar to disseminated Sclerosis.

Treatment. Depends upon the cause, which must be energetically treated, as the aphasia pursues a course parallel to the associated malady. Cases not associated with cerebral softening have regained the memory of words by a course of carefully conducted speech lessons.

SPINAL HYPERÆMIA.

Definition. An abnormal fullness of the spinal vessels; active when arterial hyperæmia; passive when venous hyperæmia; characterized by pain in the back, with more or less pronounced, but temporary, disorders of locomotion.

Causes. Cold and exposure; arrested menses; arrest of habitual hemorrhoidal discharge; malaria; protracted erect posture; injuries to the back; certain spinal poisons, as strychnina, picrotoxinum, alcoholic excesses.

Pathological Anatomy. *Active.* The post-mortem appearances are congestion of the meninges and cord, the same vessels supplying both, with numerous points of extravasation, due to the rupture of capillary vessels. The spinal fluid is increased in amount.

Passive. A general bluish discoloration, owing to the abnormal fullness of the large anastomosing vessels; spinal fluid somewhat increased.

Symptoms. *Active.* Dull *pain* in the back; persistent and increased by pressure, tenderness or motion; *tingling sensations* in the limbs and feet, and sometimes in the hands and arms. *Increased reflexes*, with *disorders of motility*, and when the patient is in the recumbent position, *jerking of the limbs.* On attempting to walk it is accomplished with difficulty, from an *incomplete loss of power.*

If the upper part of the cord is affected, have *dyspnœa* and *palpitation.*

There often occur painful priapism and frequent nocturnal emissions.

The above symptoms may be followed by a more or less pronounced temporary depression.

The electro-contractility is preserved, and in many cases even increased or exalted.

Duration. Two or three days; if longer, myelitis may result.

Prognosis. Favorable, recovery occurring in three or four days.

If the symptoms show a tendency to linger, myelitis more or less pronounced will ensue.

Diagnosis. *Anæmia* causes more or less spinal irritability and tender-

ness; but the history, pallor and general weakness, unassociated with defects of motility or sensibility, will prevent error.

Myelitis and spinal meningitis have symptoms in common with spinal congestion, which will be pointed out when discussing those affections.

Treatment. Rest, cups or leeches along the spine, followed either by ice or hot douche, or hot sponges, with active purgation, to diminish the blood pressure.

If the result of suddenly arrested perspiration, *pilocarpus*. If following suddenly arrested menses, *aconitum*. If associated with active circulation, *potassii bromidum*, *ergota* or *digitalis*.

For the passive form, treating the cause, *digitalis*, tonics, and purgatives.

SPINAL MENINGITIS.

Definition. Inflammation of the membranes of the spinal cord, either acute, sub-acute or chronic; characterized by pain in the back, rigidity of the muscles, disorders of motility and sensibility.

Causes. Exposure to cold and dampness; injuries to the vertebræ or membranes; rheumatism; puerperal fever; syphilis.

Pathological Anatomy. *Acute.* Hyperæmia of the membranes, with swelling of the tissues, the result of serous infiltration followed by purulent and fibrinous exudations. The roots of the spinal nerves are covered with exudation, and are swollen and soft. The cord proper is more or less congested and œdematous.

Chronic. Adhesions of the membranes, with more or less accumulation of fluid, resulting in atrophic degeneration of the cord from pressure.

Symptoms. Although an inflammatory affection, yet its onset is usually sub-acute, the febrile reaction being moderate, with intense boring *pain* in the back, aggravated by motion, *rigidity of the spine* and sense of *constriction around the body*, "the girdle." *Spasmodic contractions* of the muscle enervated by nerves originating at the seat of lesion, with inability to straighten the limbs. If the lower part of the spine, *retention of urine*, and *constipation*; if upper part, *dysphagia*, *dyspnœa* and *feeble heart*. The muscular contractions are excited or increased by motion, but uninfluenced by pressure. The rigidity and spasmodic contraction of the muscles are followed by *paralysis* more or less complete, death following from paralysis of the muscles of respiration.

If the inflammation extends to the medulla, the above symptoms are associated with *disorders of speech*, *vomiting* and *delirium*.

Electro-contractility lessened or absent, both as to motility and sensibility, in the affected parts.

Prognosis. Grave. Death is either sudden, from paralysis of respiration or heart, or gradual, the result of exhaustion.

Critical discharges, such as profuse perspiration, or urinary flow, or epistaxis occur and are followed by rapid recovery. Cases recovering may have more or less pronounced partial or complete paralysis.

Diagnosis. The points of importance are, deep, boring pain in the back, aggravated by motion but not by pressure, with spasmodic contraction of the muscles, followed by paralysis.

Myelitis will be differentiated from spinal meningitis when discussing that affection.

Tetanus may be confounded with spinal meningitis. The points of distinction are, in the former occur early trismus with rhythmical spasms excited by peripheral irritation, progressively increasing and not associated with fever.

Treatment. Rest in bed, upon the side or face. *Cups* or *leeches* along the spine, followed by *ice*, or the *hot douche*, or *hot sponges*, or mustard. Active purgation.

To reduce the amount of blood in the vessels of the cord, *aconitum* and *ergota* combined with an *opium* impression. When paralysis (depression) occurs, *quinina*, gr. iij, combined with *ext. belladonnæ alcohol*, gr. ¼, three times a day, or *potassii iodidum*, gr. xx–xxx, three times a day, with flying *blisters* along the spine. If the paralysis still persist a *hydrargyrum* impression often benefits.

For paralysis, the *galvanic current* to the spine and nerve trunks, and the *faradic current* to the affected muscles, with the deep injection of *strychnina* and the use of *massage*.

ACUTE MYELITIS.

Definition. An inflammation affecting all the tissues of the spinal cord. It may be acute or chronic, general or partial; characterized by more or less sudden and complete loss of motion and sensation.

Causes. Following spinal meningitis; exposure to cold and damp; injuries of the vertebræ; prolonged functional activity of the cord; typhus fever; rheumatism; puerperal fever, or during the course of the exanthemata.

Pathological Anatomy. Intense hyperæmia of the substance of the cord, with extravasations, giving the tissues a reddish-brown or chocolate

tint, and also serous transudations, resulting in softening of the structure of the cord, the color changing to yellow and white, the nerve elements undergoing fatty degeneration, presenting the appearance and consistence of cream. The membranes also undergo more or less change.

Symptoms. Extent of the symptoms depends upon the extent of the changes and their location. The onset is usually sudden, with a *chill*, *fever*, 103°, *frequent pulse*, with *alterations in sensibility and motility*, viz.: *pain* in the back, aggravated by touch and by heat or cold, with sensations of formication ("pins and needles"), the limb feeling as if asleep, or else complete anæsthesia, associated with severe *neuralgic pains*.

The distinction between *anæsthesia*, insensibility to touch, and *analgesia*, insensibility to pain, must be clearly made.

A sensation of *constriction* around the body and limbs, as if encircled by a tight cord, "the girdle pains," rapidly developing *paralysis*, complete in a few hours, with involuntary discharges. The *reflex functions* are abolished, as seen by attempting to cause movement of the limbs by tickling the feet or by striking the patella tendon. The temperature of the affected limbs is lowered three or four degrees.

Sloughs and bedsores soon result.

The above symptoms of loss of motion and sensibility are associated with more or less pronounced vomiting, hepatic disorders, irregularity of the heart, dyspnœa, dysphagia, apnœa and painful priapisms. The urine is markedly alkaline in reaction.

The electro-contractility is abolished.

Prognosis. Unfavorable, death resulting in about ten days; rarely, the duration is prolonged several weeks.

Diagnosis. Acute meningitis is distinguished from acute myelitis by severe pains increased by pressure, with muscular contractions increased by motion, followed by paralysis much less profound, and its favorable termination.

Congestion of the spinal cord is characterized by the mild character and short duration of all the symptoms.

The principal diagnostic points of acute myelitis are the "girdle" around the limbs or body, rapid and complete paralysis, lowered temperature in the affected parts, early and persistent sloughing (bedsores) and alkaline urine.

Treatment. The treatment offers no encouragement. The most that can be done is to endeavor to prevent, as far as possible, the formation of sloughs, by the use of a water bed and sponging the parts exposed.

Induration. (Sclerosis.)

Pathology. The nervous elements, cells or fi
according to the part involved, waste away,
in their place the connective tissue in embryo
form undergoes increase with fibroid, atroph
and pigmentary degeneration, in various deg
proportion and extent. In progressive muscular
atrophy and general spinal paralysis, sclerosis ha
been found in the Ant. horns of the gray matter
the cord. In unfavorable cases of Infantile Paraly
and similar spinal paralysis of adults. The pa
morbid change is believed to occur. Locom
Ataxia has for its lesion sclerosis of the Post
White Col. of the cord. Lateral Sclerosis gi
rise to symptoms of progressive spasmodic
paralysis: a like affection of the motor
nuclei in the medulla oblongata is connecte
with glosso-labio-laryngeal paralysis and
disseminated sclerosis vary according to
parts of brain, medulla and spinal marro

Lateral Spinal Sclerosis. —

Two affections 1st in cord — 2nd following cerebral hemorrhage or softening. 2nd is apt to be unilateral as a descending sclerosis. It occurs on the side opposite to the primary lesion & can be traced upwards thro' the decussation to its site, in its descent the sclerosis becomes more and more limited so as in the lumbar part of the cord to include only but a small portion of the lateral columns.

In 1st form — lesion is symmetrical upon the two sides of the cord. It occurs at first and chiefly in the crossed pyramidal columns of Flechsig: Post. to the lateral col. proper, but also to the direct cerebellar columns. Extension may take place horizontally so as to include the whole of the Post. half of the lateral col. reaching to the Post. Cornua. Form of patch wedge shaped.

Charcot

Ant. Lateral Sclerosis.

Post. Lateral Sclerosis

Symptoms. Lateral Sclerosis -
muscular weakness and paresis, gradually
truly paralytic condition comes. Limbs ataxic
mainly, twitchings of leg at rest after motion
trembling of legs when toes are made to touch
the floor without sitting. In walking, knee bent
forward; legs together. - Increase of tendon
reflex. No disturb. of sensibility, intelligence
nor muscular atrophy; no trouble of bladder
rectum or sexual organs. Ataxia comes slowly
to complete paralysis 1st of lower than upper
limbs. Recovery not to be expected. -

Disseminated Sclerosis. -

Most frequent in Women bet. 20-30yrs
Causes. heredity, exposure to cold, great
mental and moral influences, injuries to head
shock from concussion of the whole body
pregnancy, typhus, cholera, small pox.

Disseminated Sclerosis, Charcot

When brain and spinal cord are examined gray
spots are seen irregularly distributed over the

Symptomatology. – 1st Signs, absence of weakness and dragging of limbs, trouble in memory – pains in various parts of the body: giddiness headache are among indications of cerebro-nervous disorders. Later, ataxia may be present. In such cases, the Post. White Col.'s have been involved. Tremor accompanying all voluntary movements; impairment of speech such as monotone, nystagmus; amblyopsia, diplopia vertigo. Tremor, – differs from paralysis agitans in the latter we have trembling while pat. is at rest, even while lying; but in Dis. Sel. it is absent except when an effort is made with some of the muscles. Tremor is coarse, head is sometimes involved in latter. This tremor is due to localization of the sclerotic lesion in some part of the brain. If a form choreiform attacks occur may be diagnosticated from true chorea by the high temp. present, 104°, 105 4/5°

pressure with whisky or with hot and cold water, alternately applied, and the internal use of ergota, or, as recommended by Dr. Bartholow, *quininæ sulph.*, gr. iij, *ext. belladonnæ*, gr. ½, in pill, three times a day, and the application of the hot douche along the spine.

SPINAL SCLEROSIS.

Synonym. Duchenne's disease.

Definition. A myelitis; an increase in the connective tissue of the cord and atrophy of the nerve structure proper.

Varieties. I. *Antero-lateral sclerosis;* II. *Cerebro-spinal sclerosis;* III. *Posterior sclerosis*, or *locomotor ataxia.*

Causes. Generally a hereditary neuropathic diathesis; syphilis; mineral poisons; shocks or injuries to the cord; exposure to cold and wet; mostly occurring between the ages of 35 and 55; males more liable than females.

Pathological Anatomy. The changes in the cord are gradual in their development, and follow a longitudinal instead of a transverse direction.

The form, consistence and color of the cord are altered, it being atrophied, indurated, and of a grayish color.

The changes are hyperplasia of the connective tissue, with granular degeneration, atrophy and disappearance of the proper nerve elements. The nerve roots undergo the same fibroid change. The joints undergo remarkable atrophic degeneration.

ANTERO-LATERAL SCLEROSIS.

Symptoms. The chief symptom is *paraplegia*, or entire loss of motion in the lower extremities. Preceding the paralysis occur *jerking and twitching*, with *cramps* and *stiffness* of the muscles of the affected parts. As the disease is progressing the gait is of a peculiar character, termed by Hammond "the waddle," the patient stepping on the toes and showing a tendency to fall forward. There is a gradual and increasing feeling of heaviness and weakness in the affected limbs. Sensation is unaffected. Reflex phenomena are preserved, at times even exalted. As the morbid process extends upward, the superior extremities suffer in the same manner as those of the lower.

Electro-contractility early impaired, and gradually declining until abolished.

POSTERIOR SCLEROSIS, OR LOCOMOTOR ATAXIA.

Symptoms. Gradual onset by *sharp, darting, electric-like pains* in the limbs, with *loss of sensation* in the feet, the subject being unable to distinguish between hard and soft substances in walking, and if the superior portion of the spinal cord is affected, is unable to coördinate the muscles of the fingers sufficiently to button his clothing.

Loss of coördination, the subject being unable to walk upon a straight line with his eyes closed, and with difficulty if his eyes are opened. Inability to preserve the erect position with feet close together. The *sight* impaired; either double vision or inability to distinguish between different colors. *Reflexes abolished*, "girdle" pains about the body and limbs. Inordinate stimulation of the genital functions and frequent nocturnal emissions. Although the patient is unable to coördinate the muscles, the power is not lost; for, on being supported, he can kick or strike with power.

There is generally entire absence of cerebral phenomena.

Prognosis. Sclerosis sooner or later terminates unfavorably. It may be retarded for years, but the patient is never able to walk without great difficulty.

Diagnosis. The symptoms are so characteristic that with care an error in the diagnosis seems impossible.

Chronic myelitis is characterized by paralysis, but the course of the two affections is otherwise so different that error should not occur.

Disease of the cerebellum presents symptoms of incoördination, but they are the result of vertigo, and associated with headache, nausea and vomiting.

Treatment. Insist upon as complete rest as possible. Good nutritious diet, milk being the most desirable.

Potassii iodidum, or *hydrargyri chloridum corrosivum*, in full doses, often remarkably retard the progress of the affection. The best results are obtained, however, from *argenti nitras*, gr. ¼–½, or *oxidum*, gr. ½, three times a day, withholding it at intervals of a few weeks, to prevent discoloration of the skin.

The severe and sharp pains require treatment, at first giving preference to any of the substitutes of opium, but finally *opium* itself will have to be resorted to.

Galvanism to the spine and *faradism* to the affected limbs are beneficial.

Locomotor Ataxy.

Origin, either from primary irritation and degeneration of the nerve elements themselves (parenchymatous sclerosis) or from a primary irritation proliferation of the interstitial tissue (interstitial sclerosis) giving a double method of origination of the disease. It begins in the internal band of the Post. Col. and spreads from thence, & that sclerosis of the fasciculus gracilis or Goll's Col. must be regarded as a secondary degeneration. It does not begin in the Post. Col. as sclerosis of the Post. Col. is not the exclusive and essential change in tabes, but that a simultaneous involvement of the Post. Gray horns and of certain portions of the lateral col. is constant and perhaps essential. Symptoms. a peculiar gait arising from want of coördinating motor power in the lower extremities - a gait precipitate and staggering, the legs starting suddenly and thither in very disorderly manner and the heel comes down with a stamp. No true paralysis in the lower extremities or elsewhere. Characteristic pseudo-neuralgia pains, erratic, paroxysmal, in the feet and legs chiefly. Pains of a burning

throbbing, shooting character, like those caus
by a sharp electric shock. More or less numb
in the feet and legs chiefly in all forms o
sensibility, excepting that by which differen
of temperature are recognized. Frequent impa
ment of sight or vision both.

Frequent transitory or permanent strabi
or ptosis, one or both.

No very obvious paralysis of the bladder or b

No necessary impairment of sexual pow

No tingling or kindred phenomenon.

No marked tremulous, convulsion or spasmod phen

No marked impairment of muscular nutrit
and irritability.

No impairment of the mental faculties

Absence or diminution of tendon reflex mo

Trouble is confined to lower extremit

of the body on the same side and the part of the foot first coming in contact with the ground being the toes. In Common Paraplegia impairment of sight or hearing or strabismus or ptosis or injection of ~~Cornea~~ Conjunctiva or contraction of the pupil, frequent if not constant symptoms in Locomotor Ataxia, form not part of history of C. P.

NEURALGIA.

Definition. A disease of the nervous system, manifesting itself by sudden pain of a sharp and darting character, mostly unilateral, following the course of the sensory nerves.

Varieties. I. *Neuralgia of the fifth nerve;* II. *Cervico-occipital neuralgia;* III. *Cervico-brachial neuralgia;* IV. *Dorso-intercostal neuralgia;* V. *Lumbo-abdominal neuralgia;* VI. *Sciatica.*

Causes. Heredity; anæmia; malaria; syphilis; metallic poisons; [illegible] mental exertion; exposure to cold and damp.

Pathological Anatomy. The old axiom of neuralgia being "the cry of the nerves for pure blood" is perhaps only part of the truth. The changes in the nerve trunks or centres have not as yet been determined. A fair number of cases present the changes of neuritis.

NEURALGIA OF THE FIFTH NERVE.

Symptoms. *Paroxysmal pain,* of a sharp, darting, stabbing character, most common at points along the course of the supra- and infra-orbital branches of the fifth nerve of the left side, attended with *increased lachrymation.* When of any duration nutritive changes are observed in the nervous distribution, viz.: *œdema* along the course of the nerve, *gray eyebrows* and *convulsive twitches* of the muscles, termed "*tic douloureux,*" *tenderness* at the infra- and supra-orbital foramina, as well as along the course of the nerve.

CERVICO-OCCIPITAL NEURALGIA.

Symptoms. *Paroxysmal pain* of a sharp and lancinating, or deep, heavy, tensive character along the course of the occipital nerve upon one or both sides, extending from the vertex and on the neck as far down as the clavicle, and upward and forward to the cheek. May be associated with *hyperæsthesia* of the skin, and with *cramps* in the cervical muscles, and attacks of *herpes.*

CERVICO-BRACHIAL NEURALGIA.

Symptoms. *Paroxysmal pains,* of a severe, boring, burning or tensive character, with *sensations of numbness* and *weakness* of the arm, hand, shoulder, scapula and mamma, with tenderness along the cervical plexus. *Œdema* of the arm and other parts along the distribution of the cervical plexus occur if the neuralgia is of long duration, the result of nutritive changes, the limb at times becoming pale, the skin glossy, dry and harsh.

DORSO-INTERCOSTAL NEURALGIA.

Symptoms. *Paroxysmal pain*, of a sharp and lancinating character, along the fifth and sixth left intercostal spaces, often associated with the development of herpes, the so-called *herpes zoster*, or "shingles."

Tenderness at the points where the nerves emerge from the inter-vertebral foramina at the sides of the chest, and at points in front.

LUMBO-ABDOMINAL NEURALGIA.

Symptoms. *Paroxysmal pain* of a sharp and lancinating, at times heavy and dull character, following the course of the ileo-hypogastric nerve, ileo-inguinal and external spermatic nerve, supplying the integument of the hip, the inner side of the thigh, the scrotum and labium.

SCIATICA.

Definition. Pain following the course of the sciatic nerve. The sacral plexus is made up of the fourth and fifth lumbar and the first two pairs of sacral nerves.

Symptoms. Sciatica usually follows an attack of lumbago, the pain becoming fixed in the sciatic nerve, at times being a true neuritis. *The pain is sharp*, tearing, shooting or lancinating in character, increased upon motion, shooting along the course of the nerve into the hip, inner side of the thigh, half of the leg, ankle and heel, at one or all of these points, in paroxysms lasting from a few hours to twenty-four hours or longer. The tactile sensation in the foot and motility in the limbs impaired, and if of long duration, wasting of the limb.

Prognosis. If promptly and properly treated, unless the result of pressure of an exostosis, aneurism or other tumor, favorable.

Diagnosis. *Rheumatism*, so-called, is the only condition likely to be confounded with neuralgia.

The history of the attack, the character of the pain, with its localized spots of tenderness, should prevent such an error.

Treatment. Rest; easily assimilated but nutritious diet; removal of the cause, if possible. If anæmic, *ferrum* and *arsenicum*. If rheumatic, *alkalies*. If syphilitic or the result of metallic poisons, *potassii iodidum*. If malarial, *quinina*.

For an attack *morphina* and *atropina*, hypodermatically, afford the most prompt and ready relief.

In *sciatica* prompt relief follows the *deep injection of chloroform*. *Locally*, *blisters* along the course of the nerve, or a lotion of *chloral*, *camphor*, *morphina* and *chloroform* combined, in solution.

Facial Paralysis.

Facial Palsy due to an affection of the superficial distribution of the is generally met with as the result of exposure to cold.

It caused by an affection of the Portio Dura in its passage thro' the Temporal bone, due to Scrofula, glandular enlargement, caries of T. bone.

Lesion in facial palsy may exist at the cerebral origin of the seventh pair of nerve; other things follow this Loss, deafness, strabismus, ptosis &c.

Lesions.

Lesion of Corpus Striatum produces the common form of hemiplegia.

over

disease of the Thalamus Opticus produces hemiplegia which in regard of the motor symptoms is very like that produced by disease of the Corpus Striatum, and there is also lack of sensation on whole half of Pons Varolii. Hemorrhage may be limited to one lateral half or it may occupy both sides of the Pons. In former case there is Hemiplegia, in latter double Hem. —

— Paraplegia —

Common Paraplegia is more or less marked of the lower extremities and the nutrition and irritability of the paralyzed parts is impaired — not so in Locomotor Ataxy.

In Com. Paraplegia. — paralysis extends to the bladder and sphincter ani and the sexual power is greatly weakened, or altogether lost: not so in Locomotor Ataxy

In Com. Paraplegia the neuralgic pains of L. A. are wanting and numbness is nothing like so prominent a symptom as in the ataxic disorder.

In Com. Paraplegia. when walking is possible, the gait instead of being precipitate and staggering, the legs starting with and shuttering in a disorderl manner & the feet coming down with a stamp at each stamp as in L. Ataxy) is hampered and slow, each leg being brought forward with evident difficulty even with the help of an upward hitch of the body on the same side and the part of the foot being the toes, not the heel coming in contact with the ground.- In Common Paraplegia, impairment of sight

or hearing or strabismus or ptosis, injection of conjunctivae or contraction of the pupils. Frequent if not constant symptoms in L.A. form no part of history of Common Paraplegia.

Facial neuralgia is often wonderfully benefited by the internal administration of *ext gelsemii fld.*, gtt. iij–v, every three or four hours, until its physiological effects are produced. All forms of neuralgia are more or less benefited by—

℞. Quininæ sulph..... gr. iij
Ferri redact..... gr. j
Acid arsenious..... gr. $\frac{1}{20}$
Aconitiæ..... gr. $\frac{1}{120}$. M.

In pill every four or five hours.

CHOREA.

Synonyms. St. Vitus' dance; insanity of the muscles.

Definition. A functional (?) disorder of the nervous system; characterized by irregular spasmodic movements of groups of muscles, with muscular weakness, more or less approaching a paralysis of the affected parts.

Causes. Essentially a disease of childhood; hereditary; reflex from dentition, worms, masturbation or fright; probably the result of rheumatism in many cases.

Pathological Anatomy. As yet there has been no constant anatomical lesion discovered, the theory of emboli having, however, many advocates.

Symptoms. The onset is usually gradual, the child seemingly grimacing or jerking the arm or hand, as if in imitation, followed by decided, *irregular jactitations* of the muscles of the face (histrionic spasm), of the eyelids (blepharospasm), eyeballs (nystagmus), and the shoulder, arm and hand, finally extending to the lower extremities, interfering with *motility;* in severe cases, inability of self feeding or holding anything in the hands. The *speech* is often unintelligible, the tongue constantly moving in an irregular manner.

The *heart's* action is tumultuous and irregular, associated with a soft, blowing, systolic murmur, most distinct at the base. The muscles are usually quiet during sleep, although this is not always the case. The mind is somewhat blunted, the temper irritable, the memory impaired. If the irregular muscular movements are confined to one side of the body it is termed *hemi-chorea.*

Prognosis. The vast majority of cases recover, but relapses are very common.

Diagnosis. Chorea was confounded with epilepsy until the points of distinction were pointed out by Sydenham.

Paralysis agitans has general muscular tremor, beginning in one limb, gradually progressing, uninfluenced by treatment; a disease of the elderly.

Post-hemiplegic chorea is the choreic movement of a paralyzed limb.

Treatment. Remove the cause, if possible. Easily assimilated diet. Many cases improve rapidly by confinement to bed in a darkened room. If the muscular movements interfere with sleep, morphina or chloral are indicated. Regulate the secretions.

Arsenicum is the most reliable remedy yet introduced for the treatment of chorea. It should be pushed to its first physiological effects, then gradually reducing the dose until all symptoms disappear. The form of the remedy best adapted is *liq. potassii arsenitis*, gtt. v, increased to x or even xv, three times a day. If anæmia be present combine or alternate the arsenicum with *ferrum*.

EPILEPSY.

Definition. A chronic disease, of which the characteristic symptoms are a sudden loss of consciousness attended with more or less general convulsions.

Causes. Heredity; rarely, worry, anxiety, depression or fright. Pressure from a tumor at the periphery, or thickening of the membranes of the brain, causing pressure; dyspepsia; syphilis; uterine diseases.

Pathological Anatomy. There are no constant anatomical lesions as yet associated with epilepsy.

Varieties. I. *Epilepsia gravior*, le grand mal; II. *Epilepsia mitior*, le petit mal.

Symptoms. *Le grand mal* is preceded by a more or less pronounced and curious sensation, the so-called *aura epileptica*.

The *attack* proper is *sudden*, the subject *suddenly falling*, with a *peculiar* cry, *loss of consciousness*, *pallor of the face*, the body assuming a position of *tetanic rigidity*, succeeded after a few moments by more or less pronounced *clonic convulsions*, followed by *coma* of several hours' duration. The subject awakens with a confused or sheepish expression, with no knowledge of what has occurred, unless he has injured himself during the attack, either by the fall, or, what is common, has *bitten his tongue* during the convulsions.

Le petit mal is manifested either by attacks of *vertigo*, the consciousness being preserved, or by a *passing absent-mindedness*, either form being asso-

ciated with *slight convulsive* phenomena, followed by *coma* of short duration.

The mental functions are not, as a rule, injured by attacks of epilepsy unless they come very frequently. Indeed, when at wide intervals the subject seems relieved by them, "the sudden, excessive and rapid discharge of gray matter of some part of the brain on the muscles," the so-called "electrical storm," having cleared the cerebral atmosphere.

Prognosis. The vast majority of cases will not recover under treatment, but have the frequency and severity of attacks greatly ameliorated, but sooner or later returning with their former severity. Cases the result of the various reflex causes usually recover when the cause is removed.

Diagnosis. *Uræmic convulsions* closely resemble an epileptic attack, but the dropsy or general œdema and albuminous urine of the former should guard against error.

Feigned epilepsy often misleads the most practical expert.

Treatment. To avert an impending attack, inhalations of *amyl nitris*, gtt. iij–v, a few whiffs of *chloroform*, or the hypodermatic injection of *morphina*.

To prevent the return of attacks, remove the cause, if possible; attention to the secretions, and the internal administration of *potassii bromidum* in doses sufficient to abolish the faucial reflex and produce the symptoms of bromism, has great power in diminishing the severity and frequency of the attacks; better results are sometimes obtained by the combination of the various bromides. Cases in which the bromides are not serviceable are sometimes benefited by *argenti nitras*, *belladonna* or *cannabis indica*. Weak and anæmic subjects usually do better with *strychnina* in full doses than with potassii bromidum. If a history of syphilis can be obtained, the combination of *potassii iodidum* and *potassii bromidum* will effect a cure.

Whichever of the above remedies are beneficial in any particular case the permanency of the relief can only be maintained by the continuation of the drug for at least two years after the last attack.

DISEASES OF THE BLOOD.

ANÆMIA.

Definition. A deficiency of red corpuscles and albuminoid compounds in the blood; characterized by pallor and general weakness.

Causes. Predisposing and exciting.

Predisposing. Sex; female, pregnancy and menopause; heredity.

Exciting. Deficient food, air or sunshine; excessive work; mental worry; prolonged and frequent nocturnal emissions; excessive nursing; chronic intestinal catarrh; Bright's disease; malaria.

Pathological Anatomy. *Post-mortem*, the tissues are thin and shrunken, and bloodless. If the anæmia has been of long duration, patches of fatty change are seen in the various organs. The blood has a brighter color, the result of diminution in the number of red corpuscles and the quantity of the hæmoglobin; it is thinner than normal, and coagulates slowly and imperfectly, from diminution of the fibrino-plastic constituent.

Symptoms. *Pallor*, gums, tongue, ear and conjunctiva pale. *Muscular weakness*, inability for exertion. *Deficient appetite* and *impaired digestion*, attacks of *vomiting*, result of anæmia of the medulla oblongata. *Quickened respiration, irritable temper, vertigo* in the erect position, attacks of *swooning*, and rarely *epilepsy*. *Irritable heart*, with soft *systolic basic murmurs*, attacks of hysteria. Nocturnal emissions in male and deficient menses in female. *Marasmus* in children. More or less general *œdema* of eyelids, ankles, etc. Long continued symptoms of fatty changes of various organs, or gastric ulcer, result.

Prognosis. Favorable if treated early. If protracted, results in more or less general symptoms of fatty degenerations or ulcer of the stomach.

Diagnosis. The symptoms of anæmia are so characteristic that an error is impossible; the cause of it, however, may be hidden.

Treatment. Remove the cause. Easily assimilated, blood-producing diet. Fresh *air*, *sunlight*, and *exercise* short of fatigue. Purgatives with stomachic tonics, to promote digestion.

For the anæmia proper, *ferrum* in some form is the most valuable remedy, but remembering that it is not assimilated if the intestines and liver are torpid.

SCORBUTUS.

Synonym. Scurvy.

Definition. A peculiar condition of malnutrition gradually developing upon a dietary deficient in fresh vegetable material; characterized by decided anæmia, debility, mental lethargy, petechiæ and a swollen and spongy state of the gums, with a tendency to bleed upon the slightest irritation.

Causes. This disease only occurs when fresh vegetable nutriment or some appropriate substitute has been for a time partially or completely withheld.

Pathological Anatomy. An undetermined derangement in the composition of the blood, with diminished proportion of the potash salts. Spleen enlarged. The tissues are wasted and present extravasations, due to either one of or the combined presence of the following conditions, viz: liquid condition of the blood, allowing its escape from the vessels, alterations in the walls of the vessels, or a vaso-motor paralysis.

Symptoms. General weakness, lassitude, indisposition to either mental or physical exertion. Pallor and loss of appetite. *Swelling* and *sponginess* of the *gums*, with great tendency to bleed. *Looseness of the teeth*, *hemorrhages* from mucous surfaces, and *extravasations of blood* within and beneath the skin. The *lips are pale*, which is in striking contrast to the *redness of the gums*.

Hemorrhages occur from the nostrils, mouth, bronchial tubes, intestinal canal and vagina. The skin is dry and rough, resembling that of a plucked fowl. Œdema of face and ankles not infrequent.

Depression of the spirits is characteristic. Palpitation and dyspnœa on exertion. Urine high colored, speedily becoming fetid.

The patient usually longs for *fresh vegetables* and *fruits*.

Complications. Dysentery is very common, *scorbutic dysentery*. It may co-exist with typhoid and typhus fever.

Prognosis. Favorable, if early and properly treated.

Treatment. The chief indication is the assimilation of the alimentary principles needed for the healthy constitution of the blood and the invigoration of the system.

The juice of lemon, oranges and other fruits. Antiscorbutic vegetables, viz: raw cabbage, cresses and raw potatoes, in conjunction with meats, milk and farinaceous food.

Improve the appetite and digestion by the use of *strychnina*, *quinina*, *mineral acids* and bitter *infusions*.

Improve the general nutrition with *tinct. ferri chlor.* and *arsenicum.*

Locally, for the gums, *astringent* washes, viz: *acidum gallicum* or *tannicum*, with *glycerinum* and *aqua.*

LEUCOCYTHEMIA.

Synonym. Leucæmia; white-cell-blood; white blood.

Definition. An enormous increase in the white blood corpuscles, accompanied by enlargement of the spleen and lymphatic glands, and alterations in the marrow of the bones; characterized by symptoms of anæmia.

Causes. Unknown.

Pathological Anatomy. The *spleen* is increased in size, density and firmness; the *lymphatic glands* all over the body also enlarge, but are soft to the touch, often fluctuating; the *marrow of the bones* changes from its normal rose color to that of a greenish-yellow; the *liver* also enlarges enormously. The *blood* is paler than normal, its specific gravity reduced from 1.055 to 1.040 or lower, and the *white corpuscles* increased in number, often exceeding the red.

Symptoms. Those of profound *anæmia* associated with *enlargement* of the *lymphatic glands* all over the body or scattered irregularly. Special tendency to *hemorrhages* from the *bowels* and *lungs.* General *œdema*, first seen in eyelids and ankles. *Tenderness* over bones, especially the sternum. The abdomen is enlarged. The sp. gr. of the urine reaches 1.020 to 1.030.

Prognosis. Unfavorable. Average duration two years, if the tendency to hemorrhages does not occur.

Diagnosis. In early stages cannot be discriminated from ordinary anæmia, but as spleen and glands enlarge the diagnosis becomes evident, and is confirmed if we "puncture the finger of the patient, and receive the blood on a piece of white linen or a lawn handkerchief, and put by the side of it a similar stain of blood from a healthy subject."

Treatment. No specific. Symptomatic. Early, *ferrum* in full doses, regulated nutritious diet, with digestive tonics, may be of service; also *ergota* in large doses. Dr. Bartholow suggests the following pill—

℞. Quininæ sulph..... gr. v.
Ergotin (aq. ext.)..... gr. ij
Ferri redact..... gr. j. M.

Three times a day.

"*Arsenicum* has been administered hypodermically, and injected directly into the substance of the enlarged spleen, with asserted advantage."

HÆMOPHILIA.

Synonym. "Bleeder's" disease.

Definition. A congenital condition characterized by the habitual occurrence of hemorrhages.

Cause. Hereditary.

Symptoms. The *bleeding* appears about the period of first dentition, and consists in spontaneous *hemorrhages* from the mucous membrane of the nose, mouth, lungs, stomach, intestines, or genito-urinary passages, or in *perfect cases*, hemorrhages occur directly from the fingers, toes, lobes of the ears, back of the hands or arms, without any apparent change in the skin, and continue, in spite of the most powerful means, for days or weeks. *Traumatic hemorrhages* occur if an injury of any kind is sustained about the period of the development of the bleeding.

Epistaxis is the most common form of all those named.

As result of the great loss of blood, the subject suffers from all the symptoms of profound anæmia.

Prognosis. Death is the usual termination within a few weeks from the time of its development.

Diagnosis. It is impossible to confound the "bleeder's disease" with any other affection.

Treatment. Entirely symptomatic.

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