

column, and it may be small, dense, and unstratified. If there be old pleuritic adhesions the lung may not be compressed against the vertebral column, but irregularly compressed, being held against the chest wall by the adhesions. The mediastinum and the pericardium are displaced, being drawn over to the opposite side, and the liver or spleen may be displaced downward. If there be a pyopneumothorax, or an hydropneumothorax, there is in addition fluid in the pleural cavity, purulent or serous, and the pleura is inflamed.

Symptoms.—In the tuberculous cases we have first the ordinary history of tuberculosis of the lungs, then during some severe muscular exertion, or during a paroxysm of coughing, the rupture of the pleura suddenly takes place and the patient experiences a severe pain in the chest accompanied by intense dyspnoea and a feeling of weakness or faintness. He may even become completely unconscious, and he may die without recovering consciousness. If he does not die at once he rallies from the shock caused by the rupture of the lung, but he is much sicker than he was before. He has constant and very severe dyspnoea, and he is usually confined to his bed. He may remain in this condition for two or three weeks and then die, either with or without, though more commonly with, the development of pyopneumothorax, or he may grow stronger and be able to get out of bed and go about a little, but if pyopneumothorax has not already developed it usually supervenes. Then the symptoms of pyopneumothorax are developed, which are, of course, simply an intensification of the symptoms of tuberculosis of the lung with mixed infection. The patient loses flesh rapidly, he has a high fever at night, he sweats profusely, and he may expectorate a great deal of foul-smelling material—the pus from the pleural cavity. He finally dies of exhaustion. It must be remembered, however, that there may be no urgent symptoms of pneumothorax in cases of long-standing tuberculosis of the lungs. There has been found post mortem a pneumothorax which was unsuspected during life. West states that even in healthy adults this latent pneumothorax may occasionally occur.

The diagnosis of pneumothorax is usually made with ease by the physical signs. The rule is that the affected side is larger than the other, and it moves but little with respiration. The heart is displaced, and the liver or spleen, or both, may be displaced downward. The vocal fremitus is usually absent.

Percussion gives tympanic resonance or exaggerated resonance, or amphoric resonance. Auscultation gives amphoric breathing or absence of breathing. Auscultation of the voice gives amphoric whisper or very feeble voice.

If the lung be adherent to the chest wall, there may be pleuritic adhesion râles. There may be the metallic tinkle, even though no fluid be present.

The coin sound, Trousseau's "bruit d'airain," is characteristic. To obtain this sound the auscultator should put one ear on the back of the chest while an assistant taps one coin on another placed on the front of the chest. The metallic-echoing sound which is produced in this way is one of the most constant and characteristic signs of pneumothorax.

Certain exceptions to these physical signs must be noted:

1. There may be but little displacement of the viscera.
2. Vocal fremitus may persist.
3. Percussion may give nearly normal resonance, or flatness, or dullness, signs which may very well deceive us greatly.

4. The breathing may be normal over most of the chest, or it may be bronchial.

The physical signs of pyopneumothorax or hydropneumothorax are usually those of pneumothorax above the level of the fluid, and of pleurisy with effusion below the level of the fluid, to which is added the characteristic sign of air and fluid in the pleural cavity, viz., the Hippocratic succussion. This sign is obtained by placing the auscultator's ear upon the chest, and then shaking

the patient's body. A splashing sound is produced which may be audible even at a distance. The patient can often feel and hear this fluid splashing in his chest.

Pneumothorax must be differentiated from large phthysical cavities; from total excavation of one lung; from diaphragmatic hernia following a crush or other accident; from pleurisy with effusion. In most cases the differential diagnosis does not present serious difficulties. The total excavation of one lung in which only a thin shred of lung tissue remains attached to the chest wall presents the physical condition which exactly resembles a pneumothorax and therefore presents unusual difficulties in diagnosis. This is, however, a very rare condition, and the patient does not develop a pyopneumothorax.

The prognosis is usually bad. According to West, the mortality is seventy per cent. The tuberculous cases usually end fatally within a few weeks. According to West, of thirty-nine patients, twenty-nine died within a fortnight, ten died on the first day, and two of these within twenty and thirty minutes, respectively, of the attack.

Pneumothorax developing in a healthy individual, it is said, often ends in recovery. There are tuberculous cases in which the pneumothorax, if occurring early, seems to arrest the progress of the tuberculosis.

The question of treatment is a difficult one to decide. As a rule, little can be done for the unfortunate victim. An operation for empyema does little good, since we have in the advanced tuberculosis of the lung the main cause of the inflammation of the pleura. In cases which develop early the fluid may, of course, be removed by aspiration, if serous, or a rib may be excised and permanent drainage obtained if the fluid be purulent. If the patient suffers from dyspnoea due to the pressure of the air, this may be relieved by the insertion of a fine trocar and allowing the air to escape. The aspirator should not be used.

Frank W. Jackson.

PLEURISY ROOT.—*Asclepias* (U. S. P.). *Butterfly Weed*. "The root of *Asclepias tuberosa* L. (fam. *Asclepiadaceae*)" (U. S. P.).

Asclepias L. is a genus of some sixty species, occurring chiefly in North America, a few in Central and South America, and in the tropics of the Old World. A number of these have been found to possess the composition and properties of the official one, and it is probable that the same properties are general in the genus.

The species in question is very abundant in sandy soil from New England southward and southwestward. It is a perennial, hairy herb, sending up a cluster of erect or ascending stems a foot or two long, as thick as a goose-quill, densely leafy, and bearing at the summit several branches terminating in handsome large umbels of orange-colored flowers. It is the only species of the northeastern United States with orange-colored flowers. The commercial root is irregularly or interruptedly fusiform, 10-20 cm. (4-8 in.) long, 1-5 cm. (1/2-2 in.), rarely more, in thickness, usually cut transversely or longitudinally into irregular pieces; externally light orange-brown, becoming gray on keeping, coarsely annular at the crown, bearing numerous fine longitudinal and transverse furrows, imparting a finely tuberculate appearance and feeling; fracture tough, uneven, granular, whitish, the thin bark yellowish in the outer layer, the wood bundles pale yellow; almost inodorous, taste bitterish, slightly acrid and nauseous.

Besides two resins, gum, and a large amount of starch, pleurisy root contains the bitter glucoside asclepiadin, to which its properties are chiefly due. Asclepiadin is a yellow amorphous substance, soluble in alcohol, ether, and hot water, becoming of a deeper yellow, then green, with concentrated sulphuric acid.

Pleurisy root is diaphoretic and expectorant, and in domestic and country practice it has been used extensively in lung affections and catarrh of the air passages. In large doses it is emetico-cathartic. If desired, it can be given in decoction. Dose from 1-3 gm. (gr. xv. to xlv.). The fluid extract is official.

Henry H. Rusby.

PLOMBIÈRES.—Plombières has been called, not without reason, "the Queen of Watering-places of the Vosges." It is charmingly situated, and its surroundings are so attractive that it is a favorite summer resort with many who have not been ordered there for a course of the waters. The little town has only about two thousand inhabitants. It is situated in a narrow valley, with mountains rising steeply up on either side. The climate is invigorating, and, while the days in summer are often hot, the nights are invariably cool.

ANALYSIS.—One thousand parts of the water contain in parts:

	Source Vauquelin.	Source No. 1, Du Thalweg.	Source Des Dames.	Source Du Crucifix.	Source No. 5, Savonneuse.
Temperature	158° F.	137° F.	124° F.	115° F.	68° F.
Carbonic acid (free)	0.00638	0.00879	0.1287	0.00825	0.00909
Silicic acid	.02155	.07331	.07311	.00739	.04589
Sulphate of soda	.13564	.07334	.09274	.10070	.04685
Sulphate of ammonia	traces.	traces.	traces.	traces.	traces.
Arsenate of soda	traces.	traces.	traces.	traces.	traces.
Silicate of soda	.12862	.07343	.05788	.10611	.04209
Silicate of lithia	traces.	traces.	traces.	traces.	traces.
Silicate of alumina	traces.	traces.	traces.	traces.	traces.
Bicarbonate of soda	.02288	.01426	.01133	.02062	.00818
Bicarbonate of potash	.01673	.0125	.00133	.00234	.04451
Bicarbonate of lime	.02773	.04965	.02868	.06639	.0455
Bicarbonate of magnesia	traces.	notable	.00670	traces.	.01253
Chloride of sodium	traces.	traces.	traces.	traces.	traces.
Fluoride of calcium	.01044	.00734	.00927	.01005	.00651
Oxide of iron and manganese	traces.	traces.	traces.	traces.	traces.
Organic and azotized products	indications.	indications.	indications.	indications.	indications.
Total	0.37053	0.62295	0.25821	0.29823	0.19065

A special feature at Plombières is the long time (from half an hour to an hour and a half) during which patients remain in the water. Mr. Wolf ("The Watering-Places of the Vosges") says that only four springs out of the twenty-seven which are now in use at Plombières are drunk at all. The first is the chalybeate, which is very mild, and is employed mainly as a table water and as an adjunct to bathing in cases of anemia and chlorosis. Another spring used for drinking, and also for bathing, the "Source Savonneuse," is mildly laxative. Besides these, the "Source des Dames" and the "Source du Crucifix" are employed for what little drinking there is. Apart from the chalybeate and the Savonneuse, the Plombières waters all belong to one category. Dr. Constantin James calls them alkaline; Dr. Bottentuit, "arséniateés sodiques, sulfatées et silicatées sodiques"; M. Jaquet, "bicarbonatées sodiques silicatées"; and Dr. Macpherson, "indifferent." The latter designation is most in keeping with their slight degree of mineralization.

The same author states that, "in addition to the baths, a very effective remedy in some cases applied at Plombières are the *étuves*, also called *étuves de l'Enfer*. These are hot vapor baths, for which the heat and vapor are supplied by the running springs. There are two such establishments, both of course underground, and both, at their hottest points, very hot indeed. But for people who cannot stand excessive heat, there is the convenient institution of *étuves en boîte*, which are taken in a closed box, with a hole left in the top for the head." Energetic massage is also much employed at this spa; so that the patient's time, what with drinking, bathing, walking, douching, massaging, and dieting, is quite fully occupied. Most of the visitors are women, although it is by no means an exclusively "female watering-place."

The place is rich in mineral springs, but the proportion of solids in the waters is rather insignificant. Over twenty-five springs are used at Plombières, and the water of most of them is collected into a single conduit and conveyed to the different thermal establishments. Only three of the latter are perfectly modern and satisfactory, viz., the *Nouveaux Thermes*, the *Bain Romain*, and the *Bain*

Stanislas. Although so slightly mineralized, the varying temperature of the baths (65° to 160° F.) admits of a certain amount of variety in treatment. The waters are easily borne when taken internally, and do not produce any constitutional disturbance.

A course of Plombières is useful in many nervous states, especially those associated with hyperæsthesia, as well as in those depending upon lithæmia. Many symptomatic neuralgias and parietic conditions derive benefit from a course of treatment at Plombières. Stiff joints may be limbered up, lumbago cured, gouty manifestations alleviated, diseases of women improved. The place also has quite a reputation for the cure of sterility, though on what grounds does not specifically appear. The waters are also applicable to cases of gastralgia, dyspepsia, catarrhal conditions of the bowels, especially when accompanied by chronic diarrhoea. Some skin diseases, such as eczema and psoriasis, are likewise said to be greatly benefited by these waters. The chalybeate springs are, of course, useful in anemia and chlorosis. In phthisis the place is said to be contraindicated.

Plombières is a decidedly international watering-place, although English and Americans form but a small contingent of the six thousand annual visitors of the spa. With reference to accommodation, Mr. Wolf is authority for the following: "The better hotels and villa-pensions seem intended for people altogether of the better classes. They are good, but dear. Of course, there are less pretentious ones, down to the lowest point of the scale; for the spa is much visited. The following are among the best: The Grands Hôtels, Hôtel de la Paix, Hôtel Stanislas, Villa Mocquard, Le Chalet Rose, and Maison Rossignol. There are as many as about a hundred private hotels, many of them with a regular table-d'hôte." Altogether, it is quite true that Plombières should be better known in our country than is now the case, especially as it is more convenient of access than Wildbad Gastein, Teplitz, and the other spas of that order, which Americans are wont to visit.

Edmund C. Wendt.

PLYMOUTH ROCK MINERAL WELL.—Wayne County, Michigan. POST-OFFICE.—Plymouth.

Plymouth is a handsome village of about eighteen hundred inhabitants, twenty-three miles west of Detroit, from whence it is reached by both the Flint and Père Marquette and the Grand Rapids and Western railroads. The well is situated in a picturesque spot on the farm of Dr. M. V. B. Saunders. It was bored several years since, and the following analysis was made by Prof. John E. Clark, of Detroit, in 1893:

One United States gallon contains: Sodium chloride, gr. 14.38; sodium sulphate, gr. 0.37; sodium bicarbonate, gr. 5.27; potassium bicarbonate, gr. 1.73; calcium bicarbonate, gr. 5.47; magnesium carbonate, gr. 2.90; alumina and iron carbonate, gr. 1.73; silica, gr. 0.50; organic and volatile matter, gr. 1.29. Total, 33.64 grains. Lithium carbonate and carbonic-acid gas not estimated.

No accommodations have so far been prepared for visitors, but the water is widely sold. It is a good example of the alkaline saline carbonated variety of water, and is useful in conditions to which this class is applicable. Its best effects have been observed in disordered states of the stomach, especially when accompanied by hyperacidity. It is also highly recommended in irritable states of the bladder and kidneys as a diuretic and diluent of the urine. It is said to have produced excellent results in gout, rheumatism, gravel, and other affections.

James K. Crook.

PNEUMATIC CABINET, THE.—The pneumatic cabinet, as distinguished from the pneumatic chamber of European countries, is an air-tight box of sufficient size to contain only a single patient.

By means of an attached bellows the contained air may be rarefied or compressed, and by means of a tube and stopcock in one wall of the cabinet the patient's lungs may be instantly connected with, or cut off from, the out-

side air. The cabinet is designed for the application of differential atmospheric pressures, the differentiation being between the cutaneous and pulmonary circulations. Coincidentally it may be advantageously employed in the administration of the various inhalations. It has no relation to, and is in no way comparable with altitude, but is properly classed with apparatus for the use of compressed and rarefied air. It differs, however, from all other apparatus of this class in that the differential pressure is applied to the systemic as well as the pulmonary circulation. As this differentiation is always negative, the effects upon vascular tension and blood flow are directly the opposite of those from compressed and rarefied air.

Physics.—The available variations of atmospheric pressure to which the patient may be subjected and under which respiration may take place are:

1. Diminished pressure on both cutaneous and pulmonary surfaces, the patient being in and breathing the rarefied air of the cabinet, called negative pressure.
2. Increased pressure on both surfaces, called positive pressure (rarely if ever used).
3. Barometric pressure on the pulmonary, with diminished pressure on the cutaneous surface, the patient being in rarefied air while breathing from without, called negative differentiation.
4. Barometric pressure on the pulmonary, with increased pressure on the cutaneous surface, called positive differentiation.

Respiration may be continuous under either of the above conditions or the differentiation may be shifted between inspiration and expiration, giving the following combinations:

COMBINATIONS.		
Inspiration.	Combined with expiration.	Called.
Under No. 3.....	Under No. 1.....	Forced inspiration.
Under No. 3.....	Under No. 4.....	Forced respiration.
Under No. 2.....	Under No. 4.....	Forced expiration.
Under No. 4.....	Under No. 3.....	Obstructed respiration.

Clinical experience has shown that negative differentiation, and its combination with negative pressure in the form of forced inspiration, are the most effective and, essentially, the only desirable methods of application. The physical demonstration is, therefore, limited to these two motions.

Negative Differentiation.—In this motion respiration is carried on under a constant differential pressure, that upon the pulmonary circulation being barometric, and that upon the cutaneous and abdominal circulations being less by the amount of rarefaction in the cabinet. The mechanical effects are identical with those from compressed air aside from the circulation; but as they can be obtained in larger degree by forced inspiration with an increased instead of retarded circulation, this motion is never employed for the purpose of expanding and clearing the lung. Because the respiratory effort is shifted from inspiration to expiration, respiration under these conditions has been thought to be of benefit as a form of pulmonary gymnastics, and in developing the expiratory muscles. But the results are of little clinical value as it is the voluntary muscles which are increased, not the normal expiratory forces of pulmonary and thoracic elasticity.

The value of this form of pneumatic differentiation depends solely upon its action on the circulation. Respiration under negative differentiation results in:

1. Reduction of vascular tension in both the systemic and the pulmonary circulations.
 2. Depletion of the pulmonary vessels with venous hyperemia of the systemic circulation.
 3. Slowing of the entire circulation, both systemic and pulmonary.
 4. Mild anemia of the cerebro-spinal vessels.
- The manner in which these conditions are developed is

obvious. While the barometric pressure of the respired air offers no increased resistance to the pulmonary circulation, and hence no impediment to right heart action, the lower pressure on the cutaneous surface becomes essentially a suction force influencing all the systemic circulation, save that of the brain and cord, which are protected by their bony envelope. As the result all the systemic vessels, and particularly the capillaries, are dilated, vascular tension is lowered, and for a moment the circulation is hastened as the blood is drawn from the lung. But with the continuance of the differentiation the contracting arteries gradually force a relative excess of blood into the veins, from whence it passes more slowly to the pulmonary vessels which are under the higher barometric pressure. The coincident slowing of circulation and pulmonary anemia are such that a strong man can hardly breathe five minutes under a negative differentiation of one inch of mercury without marked dyspnea. Clinically, therefore, this motion must be alternated with negative pressure, which increases the pulmonary circulation.

The pathic conditions to which negative differentiation is applicable are: (a) pulmonary hemorrhage. There is no measure at our command which so quickly arrests bronchial hemorrhages. It is an almost universal impression that pneumatic differentiation of necessity causes abnormal expansion of the lung, and is therefore dangerous in all cases of hemorrhage, or where there is softening of pulmonary tissue. Such is not the case, and negative differentiation may be applied with even less than normal expansion of the chest. It is, therefore, of value (b) in all forms of acute inflammatory hyperemia of the lung or pleura. It affords immediate relief in (c) pulmonary congestion from any form of cardiac disease, except mitral obstruction, and is the proper motion with which to begin the treatment of any organic cardiac or arterial disease, with the above exception. In all of the above conditions after the acute processes have been relieved, negative differentiation should be supplemented or replaced by forced inspiration.

Forced Inspiration.—The effects of this motion are of two distinct forms, mechanical and circulatory. The pulmonary expansion, the opening and clearing of collapsed and plugged alveoli, and the stretching of pulmonary and pleuritic fibres attained by means of the pneumatic cabinet do not differ in themselves from the corresponding effects of compressed air. The clinical results, however, are very greatly superior by reason of the coincident effect of the cabinet upon the attendant pathic processes through its control of the circulation. In this motion, during inspiration, which takes place under negative differentiation, the action upon the circulation is the same as with negative differentiation alone. It is greater in degree since a higher differentiation can be employed when the patient is to expire into rarefied air. With the decrease in cutaneous pressure the vessels are dilated and the blood is drawn from the lungs through the heart and arteries into the veins with a quickened flow and lowered tension. Before this action reaches the point of slowed circulation inspiration is ended and the differentiation instantly changed to negative pressure, under which, although the absolute pressure on the cutaneous and pulmonary circulations is the same, there is, nevertheless, a relative negative differentiation in favor of the pulmonary vessels due to their weaker anatomical protection and support. A pulmonary suction is thus developed which draws the blood from the hyperemic veins into the depleted pulmonary vessels, again with quickened flow and under lowered tension. Thus during each respiratory cycle a double negative differentiation is developed alternately in favor of the systemic and the pulmonary circulations.

Continuance of this process results in increase of both circulations with all which that implies of increased absorption and improved nutrition, and this, too, under decreased vascular strain.

It is this power of the cabinet to hasten circulation and diminish arterial strain which distinguishes it from all

other forms of apparatus for the use of pneumatic differentiation, and which renders it the most potential measure for the relief of very varied conditions. All the mechanical effects of compressed air may be attained by forced inspiration, with the addition of improved tissue nutrition. This motion is valuable in all forms of inflammatory pulmonary disease after the acute stage. All pulmonary and pleuritic fibres are loosened and absorbed much more quickly than by any other means. The effect of forced inspiration upon all forms of organic heart disease, with the exception noted under negative differentiation, is more immediate, satisfactory, and prolonged than that from any other method of treatment. Cardiac angina and dyspnea are speedily relieved, often within a few minutes, and in young subjects this relief often becomes permanent after a few treatments. Cases of aortic regurgitation give especially brilliant results.

In all conditions producing high arterial tension also, this measure affords very marked relief, the extent and duration of which depend, of course, upon the nature and continuance of the primary cause. The treatment does not cure Bright's disease, but it does relieve and delay the secondary arterial and tissue changes.

Charles E. Quimby.

PNEUMOGASTRIC NERVE, RESPIRATORY FUNCTION OF. See *Respiration*.

PNEUMONIA, BRONCHIAL.—(Synonyms: Bronchopneumonia, catarrhal pneumonia, lobular pneumonia, capillary bronchitis, etc.) The name bronchopneumonia is growing in favor, especially in this country, and is preferable. The condition is marked by the presence of bronchitis with areas of pneumonia. The latter are as a rule peribronchial, being confined to the immediate vicinity of the small bronchi, the bronchioles and their atria, the cells adjacent to which are filled with exudate.

ETIOLOGY.—The disease is most common in the extremes of life, that is, in the aged and in children under five years old. Of the cases occurring in children, about one-third are primary, the others being secondary most often to the diseases of childhood. Of these, measles is most frequently complicated by bronchopneumonia, and after this come pertussis, diphtheria, scarlet fever, influenza, and chickenpox. It will be noticed that these are diseases in which bronchitis is regularly present, or in which the upper air passages are involved in the morbid process. In older children and adults the disease may occur as a complication of any long-continued, severe illness, especially in those cases in which the mucous membrane of the mouth and pharynx becomes foul and the laryngeal reflexes are less effective than normally.

The predisposing causes in primary cases are old age or infancy, bad hygienic surroundings, the impure air of overcrowded, poorly ventilated rooms, bad feeding, and institutional life. We must also include among the predisposing causes the frequent presence of the diplococcus pneumoniae and other pathogenic micro-organisms in the healthy air passages.

The exciting causes are sometimes difficult to discover. Exposure to cold and wet is one cause, and this accounts for the greater frequency of the disease in the cold months. The predisposing causes of secondary bronchopneumonia are the same as those of the primary form of the disease, plus dorsal decubitus and the weakened condition due to the original disease. The exciting causes are again hard to determine. Exposure is one, but there is a something in addition which favors the growth and multiplication of the micro-organisms usually present, even in health. In cases of deglutition-pneumonia the exciting cause is manifest.

The development of bronchopneumonia in old people is favored by the diminished powers of resistance and the less perfect expectoration.

BACTERIOLOGY.—In studying the flora of bronchopneumonia we have again to distinguish between primary and secondary cases. The micro-organisms most commonly found are the diplococcus pneumoniae, streptococcus,

staphylococcus aureus and albus, Friedländer's bacillus, and Loeffler's bacillus.

In nearly all of the primary cases the diplococcus pneumoniae is present, and in about half of these it exists alone. When not alone, it is most often associated with the streptococcus and much less frequently with the staphylococcus and the other organisms just mentioned. Infrequently the streptococcus is found alone.

In secondary cases it is the rule to find a mixed infection. The diplococcus pneumoniae appears in about seventy-five per cent. of the cases, but seems less potent in giving character to the disease than the streptococcus. The diplococcus pneumoniae, the streptococcus, the staphylococcus, and Friedländer's bacillus may each be present alone, unassociated with other bacteria, but in the case of Friedländer's bacillus, at least, this happens only rarely. Although, generally speaking, the streptococcus plays the most important part in bronchopneumonia complicating measles, it is precisely in this form that the diplococcus pneumoniae is more often found in pure culture than in other secondary cases.

Holt reports six tuberculous cases which were studied by Wollstein, and in all of which the diplococcus pneumoniae was also found; indeed, this organism gave the character to the disease in these cases, as clinically they were indistinguishable from those of an ordinary bronchopneumonia, the post-mortem examination alone revealing their tuberculous nature.

Bronchopneumonia has in rare instances been found to be due to forms of streptothrix, and French investigators have reported the finding of the colon bacillus.

In deglutition-pneumonia the streptococcus and staphylococcus are most commonly found, and then, as a rule, in virulent form.

PATHOLOGICAL ANATOMY.—In about eighty per cent. of the cases coming to autopsy, lesions have been found in both lungs. These lesions consist essentially of those of bronchitis and of pneumonia.

When the chest is opened the pleural cavities are seen usually to contain little or no excess of fluid. The parietal and pulmonary pleural surfaces may be normal or the seat of a fibrinous pleurisy. The lesions of the latter consist of patches of fibrin which vary considerably both in extent and in character. At times they are almost invisible lustreless spots, and then again they may be quite large and thick (as much as half a centimetre thick) and more or less discolored. Such patches correspond closely to areas of superficial pulmonary consolidation.

The lungs do not collapse as completely as they normally should, though crepitation is found quite generally when the lungs are handled in the search for nodules of consolidation. The latter are most often found in the lower lobes posteriorly. There may be found collapsed

areas, bluish or bluish-brown in color, set in a lighter background. These are areas of simple atelectasis, and will yield to gentle inflation through a tube inserted in a bronchus. The bronchial nodes are invariably congested and enlarged. The heart—the right side more commonly—may be dilated.

On section, the pneumonic areas stand out a little, are of a dark mahogany color, or more or less marbled with gray, smooth or finely granular, and moderately wet; only a small amount of dark blood escapes from the

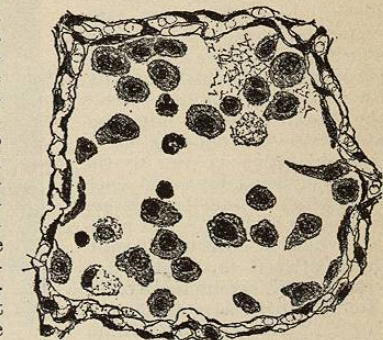


FIG. 3326.—Bronchopneumonia. Exudate in an air cell, consisting of exfoliated epithelium, a few pus cells, and a little fibrin. (From Delafield and Prudden.)