subcutaneous abscesses, as a rule, do not occur. It should not be forgotten that disastrous sloughing has been known to follow the hypodermic administration of these agents.

A procedure known as nerve-stretching has been resorted to. The scientific way in which to stretch a nerve is to cut down upon it, pass a hook around it, and give it a good pull. This nearly always gives relief, but does not always cure. Another way is to place the patient upon his back and flex the limb strongly until it touches his head. This is very painful, and may sometimes have to be done under the influence of an anæsthetic. In ordinary cases, by attention to the general health, by giving alteratives, iodides, salicylates, antiperiodics, etc., we can usually succeed after a while in curing our patients, and in many cases we can have the good fortune to cure them in a short time. It is a very common disease, one which you will frequently be called upon to treat, and one during which your patience will be sorely tried. Finally, let me caution you to be very careful in your administration of opiates in this affection. The practice has often proved the introduction to the morphine habit.

ACUTE CROUPOUS PNEUMONIA; RHEUMATISM WITH CARDIAC SEQUELÆ.

CLINICAL LECTURE DELIVERED AT THE BUFFALO GENERAL HOSPITAL.

BY CHARLES CARY, M.D.,

Professor of Materia Medica and Therapeutics and of Clinical Medicine, University of Buffalo.

GENTLEMEN,—I present to you this morning a case of lobar, croupous, or acute pneumonia. This man entered the hospital day before yesterday with the same countenance which he presents to-day, and which is quite typical of the disease. There is intense coloring of the lips and a good deal of flushing of the cheeks, but it is not a healthy color; it borders a little on the mahogany. His breathing, you will notice, is exceedingly rapid, entirely out of keeping with the rate of his pulse, which is at present not far from eighty. He says his breathing is not painful. He is restless, and his manner is that of one in delirium. He has just expressed the desire to be suspended from this gas-fixture rather than to lie on the table, and he is constantly chatting in a way that while delirious is not entirely devoid of reason. Here is a collection of muco-purulent expectoration with a rusty color, due to staining with blood, and, as I pour it from the cup into the basin, you notice its remarkable tenacity. This sputum (about fifty cubic centimetres) has been raised since last night. Generally the sputum is more scanty than this, and you can invert the basin without its falling out.

On raising the patient into a sitting posture, which he says is more comfortable than the recumbent, and percussing over the back, you notice that there is much less resonance on the left side than on the right, although the right is not entirely normal. Notice the man's robust build and apparent vigor. His hands show that he has recently been working. I want you to observe the size of his chest and to mark the kind of man that can be affected with this disease.

The duration of the disease will be so short that after to-day not many of the characteristic signs will be demonstrable. The meagre

history obtained is that the patient, a man of about twenty-six, has had a cough for some time, and on Monday night he had a hard chill and an increase in the cough and considerable shortness of breath. On Wednesday he entered the hospital with this flush, to which I have referred as being typical of, although it is not confined to, this disease. Sometimes it is unilateral, and then it occurs on the side in which the pulmonary disease exists. At the time of his entrance there was heard at the base of the left chest very loud tubular breathing. Upon percussion there was great dulness, and vocal transmission was much intensified, almost as if somebody were speaking into the end of the stethoscope. Vocal fremitus on palpation was also greatly increased. Dulness amounting almost to flatness at the lower part of the lung, increased vocal fremitus, increased vocal transmission upon auscultation, loud tubular breathing, are all evidences of one physical state, consolidation of the lung.

His temperature on admission was 102°, rising later to 103.2°, his breathing was nearly forty, and his pulse eighty. There are very few forms of disease in which we get that peculiar relation between the respiration and the cardiac pulsation. It is not so in phthisis, for in that disease the pulse is also rapid. In severe cases of pneumonia sometimes the patient will breathe sixty or eighty times to the minute, the respiration keeping pace with the heart-beat. What is the nature of this kind of consolidation? This we have to determine entirely by post-mortem examination, and when those anatomical lesions are witnessed they are unique. There is in the early stage of the disease harsh breathing over the entire chest, harsher breathing over the lower part of the affected lung, which is usually the right, and accompanying the breathing a very fine crackling sound, which is called the crepitant râle. It is heard generally at the completion of inspiration. It is sometimes not heard unless you invite the patient to take a prolonged forced inspiration. It is not a pathognomonic sign of the disease, although it has been so booked in the past. The crepitation is likened to the sound elicited by rubbing hair between the fingers near the ear, although the comparison is not very good. The crepitant râle is due to the forcing apart of the air-cells by inspiration. An absolute infiltration of the walls of the air-vesicles occurs, and there is in the vesicles a slight exudate, which, being sticky, causes a little sound when the vesicle walls are drawn apart by inspiration. As the exudation increases, however, all breathing ceases. You simply get transmitted sounds from regions where breathing is going on, as, for example, the larynx and the larger patulous bronchial tubes. As the

air blows over the end of a bronchus it produces a hollow, tubular sound, in character not unlike that which I get from blowing across the end of an uncorked bottle. The peculiar exudate in the air-cells is such as to give the disease the name of *croupous* pneumonia. Other forms of pneumonia may be set up by traumatism to the lung or by simple inflammation, but croupous pneumonia is caused only by infection. The material in the lung is just like that which you saw on the patient's tongue, and microscopically I do not believe you could distinguish them. The disease is due to a special micro-organism, the pneumococcus. The disease seems to be a local manifestation of a general infection, just as diphtheria or scarlet fever is a general disease with local manifestations in the throat and skin respectively.

As soon as the bloody exudate has been poured out into the air-vesicles to any extent, the lung becomes heavy, sinking in water, and is as solid as liver and is called hepatized. During this stage of the disease the patient is, as a rule, more comfortable than in the earlier stage, for the disease is, so to speak, satisfied. This stage may last a few hours or a few days. Then one of two things occurs,—either a very rapid absorption, or a tendency to breaking down, which is called gray softening. When gray softening occurs, we find on pressure oozing from the lung of blood-corpuscles, which seem to have undergone a whitish softening, and the blood comes out grayish and a little like pus, and it is asserted that an absolute purulent change occurs. It seems to be, at all events, a degeneration of the primary products of exudation. After purulent softening has occurred, the patient will never regain a perfect lung. If resolution occurs before this change sets in, the lung is not damaged. In spite of the fact that this material is purulent in its appearance even when resolution takes place, abscess rarely occurs in this form of pneumonia. Absorption is quite rapid, or else the sinking of the patient is quite rapid, so that the patient usually either recovers entirely or dies. If gray softening once sets in, you may expect that the patient will be taken from you. The disease seems to terminate by resolution in a crisis, and after a duration of from two to six days suddenly there is an improvement. Tubular breathing disappears, and the so-called crepitant râle redux occurs. This râle is coarser and moister than the first râle heard, and is formed in the smaller bronchial tubes, not in the vesicles. In two or three days normal breathing is restored in the lung, and recovery has virtually occurred. Sometimes, however, there is a stationary period, dulness continues, tubular breathing ceases, expectoration stops. This means that the bronchus has become filled up so that there is no orifice for the air entering the other lung to blow over,

and hence the tubular breathing disappears. You will get increased vocal fremitus just as before, and probably the vocal transmission is greater than normal, but not as great as when the bronchus is open, since the bronchus itself is the medium in which vibrations occur before they are brought to the consolidated lung.

The cerebral symptoms which this man presents are not uncommon. Meningitis may occur with pneumonia, although it is rare. This general disease seems to attack fibrous structures, and hence it involves occasionally the meninges and the pericardium as well as the pleura, which is typically inflamed at the same time as the lung. As in any disease of an infectious character and general nature, not infrequently we find evidences of irritation of the kidneys during pneumonia. There may be albuminuria, and the urine is almost always scanty and high-colored.

The difference between lobar or croupous and lobular or catarrhal pneumonia, aside from the pathological and anatomical differences indicated by their names, is that a catarrhal pneumonia is always secondary to a catarrhal inflammation of the bronchial tubes, whereas a croupous pneumonia is primary. Last winter, on account of the presence of the grippe, we had a good many cases of pneumonia, but they were mostly of the catarrhal type.

I do not think we can describe any routine treatment of croupous pneumonia. In many cases there is an extremely high arterial pressure, with hard, bounding pulse, and in such cases blood-letting would do good. I have never practised this, however, believing that the same result can be obtained by reducing the volume of blood through purgation. Along towards the close of the disease the patient seems to die of absolute heart-failure, and on that account I should recommend expectant rather than radical treatment. In any disease in which there is blood-poisoning, including infectious colds or influenzas, I call on the bowels to remove the poison whenever I can. In pneumonia there is a certain amount of pleurisy, causing a stitchy pain. The use of opium for this as well as to slow down the breathing is of the utmost importance. Poulticing the chest also detracts from the blood in the pleura and relieves the pain. This man has had no opium, however. I put him upon ammonium carbonate, repeated every three hours. The antipyretic plan of treatment has not been indicated. The Germans in following out this plan of treatment even go so far as to plunge pneumonia patients into ice-cold water; but I consider such treatment dangerous. If antipyretic treatment is needed, acetanilide, antipyrin, etc., are to be preferred to the cold-water treatment. I have every expectation that this man will recover.

Case II.—This is a case of rheumatism occurring in a boy of sixteen. The disease is now rather subacute, but it has left behind grave cardiac lesions, whose evidences you see in the pallor of the lad's countenance and in his general malnutrition. This knee has had quite a synovial effusion, but the only relic which you see of it now is the slight amount of fluid, which becomes noticeable when I force the fluid from one side of the patella to the other, or as I press the patella downward, causing the fluid to appear at either side.

With my fingers over his left clavicle I can distinctly feel a murmur or a thrill, and yet the boy is not conscious of his heart. When I place the finger in the fifth interspace outside the nipple-line, I find the apex, and the beat is so forcible that my hand rises and falls with the cardiac impulse. The apex is at least two inches downward and outward from its normal position. On percussion I find that the area of dulness is considerably enlarged outward. Considering the amount of back pressure and extra strain thrown upon the heart by the valvular lesion, which is a mitral regurgitation, the heart is doing its work quite well. We cannot treat the heart directly for the organic valvular lesion, that being something which lies outside the domain of medicine, nor does the heart need tonic treatment. Do not think that digitalis and heart disease are so intimately associated that the presence of the latter is a uniform indication for the administration of the former. Digitalis and other heart tonics of similar action are not specifics for heart disease in general, but are called for only when the circulation of the blood is imperfect and when the heart needs something to spur it on to greater activity. The boy needs general treatment, however, which will tend to enrich his blood. An altered and thinned state of the blood may cause valvular leakage, and by improving the condition of the blood the valvular leakage may be lessened, and the nourishment of the heart will thus be improved. I propose to keep the boy in bed so as to enable the heart to contract and lose whatever element of dilatation there may be in its condition. The balance whose turning in cases of heart-disease tends to make the patient grow worse or better is usually very even, and I think that in this case it is turning downward. If I can throw the balance the other way but a trifle by resting and improving the nutrition of the heart, I may set the vital process going towards improvement. In this way we may improve his condition so much that he will be able to have some mild sort of occupation. He has been a bell-boy in a cheap hotel, and I scarcely know any business that would be more contra-indicated in such a case.