TYPE IV.

The patient is sent to the x-ray department for examination of the chest for a suspected tuberculous lesion at one apex. The radiograph on the suspected side shows a cervical rib of the type which as a rule joins the first true rib near its sternal end, but the lung itself gives no suggestion of tuberculous disease. One case will illustrate this type.

CASE VII.

A female, aged 25, was sent for radiological examination of the chest with the diagnosis "phthisis right apex." She complained of pain in the right side of the chest, loss of weight, slight cough and expectoration, following influenza eighteen months before. The sputum was negative.

The radiograph (Fig. E) showed the presence of a cervical rib on the right side which almost joins the first true rib in front. There was no suggestion radiologically of tuberculous disease of the lungs.

In this type of case the cervical rib, the presence of which is unsuspected, gives rise to some lagging at the apex, slight dullness on percussion, and rather distant breath sounds, thus simulating an apical tuberculous lesion.

TYPE V.

A chest in which there is a marked degree of scoliosis combined with kyphosis gives rise to considerable difficulty to the physician, especially when he is required to make a negative diagnosis of tuberculous disease.

CASE VIII.

A female, aged 20, was sent to the x-ray department for examination for suspected tuberculous disease of the lungs. She complained of a troublesome cough, slight loss of weight, shortness of breath, and pains in the back. The sputum was negative.

The radiograph (Fig. F) shows a marked degree of scoliosis combined with kyphosis; there is no suggestion of phthisis.

In this type, therefore, the radiographic examination is of supreme value whether negative or positive.

CONCLUSION.

I would emphasize the following points:

I. The importance of the co-ordination of the clinical with the x-ray findings, for in many cases it is by this means alone that we can arrive at a definite and reliable diagnosis and prognosis.

II. The radiological examination should preferably be carried out by a trained radiologist, and it is essential that the x-ray findings and report should be made by him. Only too frequently one finds that in the smaller hospitals, and especially in tuberculosis centres, the x-ray department is left in charge of the house-surgeon or tuberculosis officer, with no training in radiology; they tend to rely on the screen examination or on indifferent radiographs and to make the x-ray appearances coincide with their clinical findings.

III. I would lay stress on the importance of taking a "diagnostic" radiograph in addition to carrying out the routine screen examination, for the sensitive x-ray film will show details which even the practised eye, under the most favourable conditions, fails to detect on the screen. Further, one has a permanent record of the condition, so that if, at any future date, the patient returns for another examination the previous radiograph can be produced and the two compared.

REFERENCE.

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THE INDICATIONS AND CONTRAINDICATIONS
FOR ARTIFICIAL PNEUMOTHORAX.

BY

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THERE has recently appeared an article¹ on artificial pneumothorax in which the writer advocates the treatment for cases of early pulmonary tuberculosis, and in which the following sentence occurs:

"I now come to my great point, and it is this, that I think in the future we shall not postpone the induction of artificial pneumothorax until other methods have been given a trial, but we shall carry it out at the earliest possible moment after the discovery, even of early consumption. If the patient refuses the treatment and prefers to try the effect of sanatorium methods or high altitudes first, that must be his affair. As doctors, I think we should advocate the induction of artificial pneumothorax on the affected lung at once, and then encourage the patient to stay in a sanatorium or at a high altitude if there is any suspicion that the other lung is affected."

This opinion raises a highly controversial issue and demands, in my opinion, a challenge.

Dr. Clive Riviere,² who was a pioneer in this subject in this country, and one of its strongest advocates when the treatment was looked upon with indifference or mild amusement, writes as follows:

"A disqualification, even more important in the writer's opinion than that afforded by bilateral disease, exists in the instance of

early phthisis. The application of pneumothorax treatment to these cases can be shown on many grounds to be contraindicated. In the first place it is unnecessary, since early phthisis is a disease readily curable by other methods; in the second place it is inexpedient, since it brings with it risks and the chance of serious complications out of all proportion to the benefits it can confer. Pleural shock and gas embolism are, perhaps, but infinitesimal risks where modern methods are properly applied, but they cannot be altogether eliminated. . . . Furthermore, pleural effusion and the deformities which may follow it are complications which cannot in any way be avoided. Such effusions occur altogether in nearly 50 per cent. of cases, and though the shorter treatment required for slight disease would reduce this percentage, yet effusions must occur in many, and lung expansion fail or be incomplete in a few. Moreover, on re-expansion the pleural layers may become adherent, and the patient be thereby deprived of this treatment at a later stage when it may be truly indicated. In some cases, perhaps, the production of a pneumothorax at an

unusually early stage may be justified on economic grounds, where the cure must be shortened in the case of a patient who is obliged to return to his occupation."

Fishberg³ of New York, in his classic work on pulmonary tuberculosis, writes thus:

"There are some who believe that even incipient cases ought to be treated with pneumothorax. Among these may be mentioned Murphy, Lemke, Bullock and Twitchell, Gray,

Forlanini, von Adelung, Piéry, and some others. Murphy and Kreuscher say: 'Is it well to wait until the outlook is so desolate? Is the lung collapse such a desperate operation as to be used only as a last resort?' With this I am not in agreement. If the treatment lasted only a certain and limited time, the patient could be informed of the details and given the choice. But, inasmuch as we are not in a position to give the patient definite information as to the probable duration of the treatment, and a large proportion of these cases recover under the old and tried methods, we should not subject mild incipient cases to the dangers, complications, and duration of pneumothorax."

FIG. 1.—Before treatment by artificial pneumothorax.

FIG. 2.—After pneumothorax well established.

This, I must confess, is my own faith, and I know that if I had an early tuberculous lesion in the lung I should not have an artificial pneumothorax performed upon myself, but I would have treatment on strict sanatorium lines; whereas if I had a progressive lesion I should, without hesitation, accept pneumothorax treatment.

There is little doubt that the immense value of artificial pneumothorax in selected cases lacks appreciation in this country, but its cause is not likely to be furthered by exuberant advocacy. So many cases of early phthisis show a tendency to spontaneous cure, so many cases of a fibrotic type of pulmonary tuberculosis display such chronicity and detract so comparatively little from the general health and activity of the individual, that many a false remedy gains a reputation for healing in this disease. Artificial pneumothorax has not hitherto been employed in such cases to any extent in this country; the test has therefore been severe; it has stood the test, and all those experienced in this treatment are convinced of its value.

As an example of what artificial pneumothorax can do in phthisis, and of what I consider an ideal case from the point of view of suitability, response to treatment, result, and convincingness, I will quote the following:

A woman, aged 29, was admitted to Victoria Park Chest Hospital on May 25th, 1923, complaining of cough, expectoration, loss of weight, and night sweats. She had had so-called "influenza" at Christmas, 1921, and had not been well since, suffering from cough, weakness, palpitation, and expectoration. A few months before admission tubercle bacilli had been found in the sputum. On admission she was wasted, with high fever and night sweats. The physical signs of disease were very marked on the left side and the heart was considerably displaced to the left. The accompanying radiograph shows the extent of the disease, the temperature chart the degree of its activity.

Artificial pneumothorax treatment was begun on June 21st. It might be thought from the displacement of the heart and the apparent fibrosis that collapse of the lung would be unlikely. Excellent, though not absolutely complete, collapse, however, came about without any difficulty. There can be little doubt that without the treatment the patient would have gone steadily downhill.

From the chart it can be seen that the temperature soon fell, the sweats ceased, the sputum became negligible, then absent, tubercle bacilli disappeared, and soon the patient was able to get up. She is now doing her household duties and is a cheerful and comparatively healthy woman. She has kept a temperature chart regularly ever since, and there has never been a rise of temperature. She comes up for refills once a month.

I am well aware that one case proves nothing, but this is only one of many similar cases. Many a patient with a fibrotic type of the disease may present physical signs as extensive and give an x-ray picture as bad as that shown here, and yet have few symptoms of active tuberculosis and live a fairly unrestricted life for many years. But this case, though indeed fibrotic, evidence of which can be seen by the displacement of the heart to the left, leaving the intervertebral discs uncovered, showed every sign of marked activity and downward progression. She was cyanosed and wasted, breathless and toxic; there were sweats almost nightly and high fever.

In such a case, I take it, there can be no two questions about the desirability of treatment by artificial pneumothorax.

Indications.

In my opinion the following are the indications for this treatment. First, pulmonary tuberculosis if of the following types:

1. The disease has been recognized, let us say, fairly early after the onset of definite symptoms. There are physical signs on one side. The patient is given absolute rest under good conditions, but the disease spreads. The temperature will not become normal, or rises immediately any exertion is made; the sputum perhaps does not decrease, nor does it become free from tubercle bacilli.

Such a case would cause great anxiety. The physical signs seem to be confined entirely to one side. Two or three months have passed by and still there is activity, which implies spread of the disease. It is now that artificial pneumothorax should be thought of, and the chest should be x-rayed to exclude as far as possible unexpected or deep-seated disease on the other side. This radiographic examination is essential. Without it we cannot form an opinion of value. Without it we are only justified in embarking on artificial pneumothorax treatment in exceptional circumstances. There may be much deep-seated disease, which is not and cannot be detected by physical signs. I am not referring to the hilum shadows and striation so often stigmatized as tuberculous by the radiologists, but definite stippling, mottling, and opaque shadows away from the hilum, which are undoubtedly pathological. If after this examination the lung which appeared sound by clinical observation appears sound or nearly so by x-ray examination then artificial pneumothorax treatment can be started.

2. The second type is a case where the diagnosis has been missed, or the patient has ignored his symptoms and has not sought medical advice. The disease is advanced. There is cough and much expectoration, wasting, and weakness, perhaps an occasional slight haemoptysis or a night sweat. There are marked physical signs, but almost entirely on one side, perhaps one or more cavities can be detected. In such a case, if there were not marked and definite improvement after a month's complete rest, artificial pneumothorax would be indicated.

3. For the third type I would instance a more chronic case. There may be cavities or much fibrosis, but the disease is still practically unilateral; of this the case described above is an example. If after rest there are still symptoms—fever, sputum, haemoptysis—or the patient can live only a hopelessly restricted life, then artificial pneumothorax is indicated.

Other indications are, in my opinion, as I have expressed elsewhere,⁴ the following:

- (a) In a case of pleural effusion, if there is evidence of active tuberculosis in the lung of the same side, such as the presence of tubercle bacilli in the sputum or a history of haemoptysis, etc., and the other lung is clear or fairly clear, in such a case I should first replace the fluid by oxygen

or air, and then maintain the pneumothorax.

- (b) Recurrent chronic pleural effusion.

- (c) Certain cases of bronchiectasis.

- (d) Cases of foreign body in the bronchus that cannot be

removed through the bronchoscope; in this case I feel that it is the only possible treatment that can give relief, short of a very grave surgical operation.

- (e) Certain cases of foreign body in the lung.
- (f) For diagnostic purposes for revealing tumours and their attachments by radioscopy and thoracoscopy.
- (g) In certain cases of abscess of the lung.
- (h) As a preliminary to operation in certain cases.
- (i) To control haemoptysis.

Contraindications.

The following contraindicate resort to the production of artificial pneumothorax:

1. Active disease in both lungs. This rule, however, must not be applied too rigidly, for many cases have been successful in which there was some disease on the other side.
2. Early phthisis which is becoming arrested by strict treatment on ordinary lines. Far greater efforts must be made generally towards diagnosing the disease when it is really early. Many cases called early are in reality advanced.
3. Emphysema or asthma are said to be contraindications, and if severe would obviously be so, but I have induced a pneumothorax in an asthmatical subject with no apparent ill effects.
4. Extensive tuberculous disease elsewhere.
5. Reluctance, undue timidity, lack of patience or of confidence on the part of the patient.

In writing thus I have intended to express an opinion, not to lay down the law. It would be beyond the intended scope of this paper to discuss what is early pulmonary tuberculosis, and yet it is a question intimately associated with the problems of pneumothorax treatment.

I take it that all will agree that, given symptoms of toxæmia (lassitude, evening fever, loss of weight) and tubercle bacilli in the sputum, with no physical signs either clinical or radiographical, or only slight signs, the case may be regarded as one of early phthisis, whereas if the signs indicate the involvement of an appreciable amount of lung tissue it can no longer be so regarded.

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LARGE ABSCESS OF LUNG: DRAINAGE BY POSTURE: RECOVERY WITHOUT OPERATION.

BY

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THE following case is interesting because it shows that a large abscess of the lung may disappear completely and fairly rapidly when the patient can discover a posture which enables him to cough up its contents.

A. B., a carter, aged 36, consulted Dr. Fraser of Chasetown in September, 1923, on account of epilepsy, from which he had suffered for many years. Dr. Fraser on that occasion remarked on the extremely septic and offensive state of the patient's teeth, and pointed out the necessity of having them extracted.

Before the man could make any arrangements to follow this advice he was taken suddenly ill, and Dr. Fraser found him suffering from a very acute and extensive pneumonia. On September 24th, the fourth day of the illness, the sputum became dark brown, copious, and very offensive.

On September 27th I saw him in consultation with Dr. Fraser, and agreed that the physical signs pointed to pneumonic consolidation of the right lung complicated by gangrene or abscess. I was unable to strike pus with an exploring needle. The patient's general condition was so

bad that I felt there was little hope of recovery. The slightest movement caused great distress and cyanosis, and to move him from his humble home to hospital was out of the question.

I made an autogenous vaccine from pneumococci and streptococci from his sputum; he was given a dose the following day and afterwards at intervals of five days. For the next five weeks he continued to expectorate a quantity

FIG. 1.—On admission to hospital, showing abscess cavity half full of pus.

of putrid purulent sputum; the temperature, which was irregular, seldom exceeded 103° F. He became pale and emaciated, and the fingers became slightly clubbed; on the whole, however, he seemed to have developed some immunity, and the signs of consolidation gradually cleared from the upper lobe; so that on November 7th, seven weeks after the commencement of his illness, he for the first time was considered fit to be moved, and was transferred to Queen's Hospital for x-ray examination and possibly operation.

The radiograph (Fig. 1) taken on November 8th showed a cavity half full of pus in the lower half of the right lung. The sputum was offensive but not very abundant.

FIG. 2.—Showing the posture which produced the maximum expectoration.

The patient's condition was so poor that I hesitated to submit him to an operation, especially as a needle failed to locate pus near the surface.

I ascertained that in a certain position (Fig. 2) he expectorated more freely, and I hoped to drain his abscess more efficiently by making him assume that position frequently. He was also given a preparation of garlic every four hours and the vaccine was continued.

Thereafter his progress was most satisfactory; the sputum lost its foul odour and became rapidly less in quantity, the pyrexia ceased completely, his appetite improved, and he gained a stone in weight during the next month. Gradually his extremely bad teeth were removed.