

ated symptoms. It is a type of injury which would repay further exploration by this method. All these men were returned to duty.

It will have been noted that a great number of these so-called war neuroses when subjected to narco-analysis revealed hitherto unsuspected data. In many of them the hidden worries brought to light had nothing whatever to do with the war, the trauma experienced in fighting being only the precipitating factor in predisposed subjects. Patients are often more ready to talk of their war experiences than they are to confide their personal and domestic worries. But it is usually the revelation of the things they least want to talk about that brings relief of neurotic symptoms. The clinical study of these soldiers suffering from neuroses has exemplified that the factors underlying both war and civilian neuroses are similar. But the war has precipitated these neuroses, and we are faced with the problem of having to deal with great numbers of psychoneuroses in the Army, in which saving of time in treatment is very important.

All sufferers from neuroses find it difficult to confide entirely in their doctors. For those in civil life who can choose their own doctor this difficulty may be somewhat diminished, but for the hospital out-patient and the soldier faced with a medical officer in uniform there is virtually no choice, and thus treatment in the ordinary way tends to be either prolonged or ineffectual. The progress made in the Services towards perfecting the technique of narco-analysis during the war will be invaluable when tackling the problem of civilian neuroses in the period of post-war reconstruction.

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## POSTURING IN BRONCHOGRAPHY

BY

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In a study of the literature on bronchography one is struck by two things: first that methods of introduction of lipiodol into the bronchial tract are discussed at great length though little detail is given of posturing the patient to fill different areas of the lung; secondly, that the radiographs illustrated often show large areas unfilled. If one is demonstrating a basal bronchiectasis it is essential to exclude the same disease elsewhere if operation is contemplated. The right, middle, or left lingular lobe is also frequently unfilled, and, though all zones appear on rapid inspection of an A.-P. film to be filled, closer inspection will show that the middle-lobe bronchi are empty of oil, a fact brought out readily in a lateral view. As bronchography is primarily an investigation to locate lesions and to define their extent exactly, it is as important to know what areas are normal as to know what areas are abnormal. To outline the bronchial tree completely on one side of the chest is therefore essential, and to do this with certainty proper posturing is required as described by Erwin (1936).

### Technique

It was found best to adopt a standard technique and vary it hardly at all. Assistant and radiographer should be well acquainted with the different stages so that the investigation can be performed without any waiting periods. The patient

should be prepared by posturing and/or premedication if necessary, and should have been tested for iodine and cocaine sensitivity.

### The Two-stage Method

By this method only one side of the chest is outlined at one sitting. The patient lies on the x-ray couch, with head and shoulders raised approximately 30 degrees on several pillows, the chin elevated, and the head thrown back. A bleb of 2% procaine is produced in the skin over the crico-thyroid membrane: only a few minims (6 to 12) of local anaesthetic are required, as more tends to cause haematoma formation. If cocaine is necessary some 5 minims of 5% cocaine hydrochloride is injected rapidly into the trachea, the needle being rapidly withdrawn. The patient sits up, coughs several times, then returns to exactly the same position as before. He is cautioned not to swallow or cough from this time until the radiographs have been seen and approved. The iodized oil—lipiodol (Lafay) or neohydriol (May and Baker)—is then injected through the anaesthetized area after heating it to just above blood heat in a water bath, the patient being rotated so that the opposite shoulder is raised several inches. This prevents the oil from running into the opposite main bronchus. After some 8 to 10 c.cm. has been injected the patient places his two hands on the investigator's shoulders, lifts himself to a sitting position, still leaning over to the affected side, and leans forwards and sideways so that his body is almost parallel with the floor. The investigator is now kneeling by the side of the couch, the patient's hands on his shoulders, the patient's face looking down into his. In this position 6 to 8 c.cm. of oil is run into the middle lobe. After 1 to 2 minutes the rest of the oil (6 to 8 c.cm.) is injected. The needle withdrawn, the patient quickly lies on the affected side, and the foot of the table is rapidly elevated. As his head sinks below his heels he moves half over on to his face, still lying on the affected side.

In this way the lung has been filled in all its zones, the bronchi of the "four fundamental lobes"—dorsal, middle, upper, and lower—being outlined on the affected side. If successfully done no oil has spilled over on to the opposite side and none has regurgitated into the mouth (though this cannot be prevented in all cases). Radiographs, A.-P. and lateral, are now taken. If the upper zone is mainly under suspicion the patient is kept in this position, with the head low, and radiographed. If the middle lobes are suspected particularly, the foot of the table is depressed so that the feet are a little lower than the head. A lateral picture is taken in this position, the patient lying on the affected side, and a P.-A. film with the patient on his face. If it is required to outline the basal bronchi particularly, lateral and A.-P. pictures are taken with the patient erect. In all cases he is kept in the same position until the films have been seen and passed, further views being taken as found necessary. Screening is then performed with the patient in the erect position. The opposite side of the chest is filled in the same manner some 7 to 10 days later.

### One-stage Methods

If it is required to outline both sides at one session one of the following methods may be adopted.

1. Technique as above, using rather less oil; so that instead of a total of 20 to 25 c.cm. only some 14 c.cm. is introduced into the side under suspicion. Films are taken in the required position as described above. The remaining 8 to 12 c.cm. of oil is then introduced into the opposite lung with identical posturing, A.-P. and oblique views being taken. The disadvantage here lies in the reintroduction of the needle into the neck.

2. Technique as above, one side being completely filled and films taken A.-P. and lateral in the required position. If the patient has had the left side filled he turns on to the right, and the head of the couch is lowered for one or two minutes. The oil now runs from the left base into the right upper lobe bronchus. The couch is returned to its first horizontal position and the patient leans over the right side of the couch, with his body almost parallel with the floor, to fill the middle-lobe bronchus as described previously. In so doing some oil runs also into the lower-lobe bronchus. He then sits upright again, leaning slightly over to the right side, and more oil runs down into the basal bronchi. Screening is now performed, erect or prone, and if sufficient oil has not passed over into the second

side the posturing is repeated. It is necessary, however, to perform the whole manoeuvre with as little delay as possible, as the oil becomes rather more viscid as it cools. Alternatively, the oil may be rendered thinner by the addition of olive oil (4 to 6 c.cm. of olive oil to 20 c.cm. of neohydriol or lipiodol), it being introduced without any preliminary heating. This, however, does not always give satisfactory results, as the thinner oil runs in the smaller bronchi and is there retained. By this posturing the patient is spared reintroduction of the needle into the neck, and excellent pictures can be obtained (Figs. 1 and 2)—A.-P. and lateral of the side first filled, A.-P. and oblique after filling of the second side.

Subsequently, whatever method is used, the patient is told to expectorate as much as possible and not to swallow any sputum. If necessary he should posture to get rid of iodized oil from any cavities where it may have lodged. Oil seen on screening in an iodine-sensitive patient's stomach should be removed by stomach wash-out or administration of emetics. A patient who has received cocaine should be warned not to eat or drink for three hours subsequently.

### Discussion

The crico-thyroid route has been used merely because I get the best results with it, and because cocainization can be cut down to a minimum in all patients and omitted in many. Sensitivity below the vocal cords to injections seems to vary greatly, and many patients can control their cough reflex without cocaine anaesthetization (Jewesbury, 1939). Be that as it may, transnasal, translingual, or other routes may be used if preferred. The importance is stressed not of the site of introduction of the oil but of the areas reached after introduction. A lateral view of the affected side is essential, and, if posturing be faulty, oil on the opposite side will render this view confused, one bronchial tree being superimposed on the other in the film. To fill the middle lobe properly is also essential,

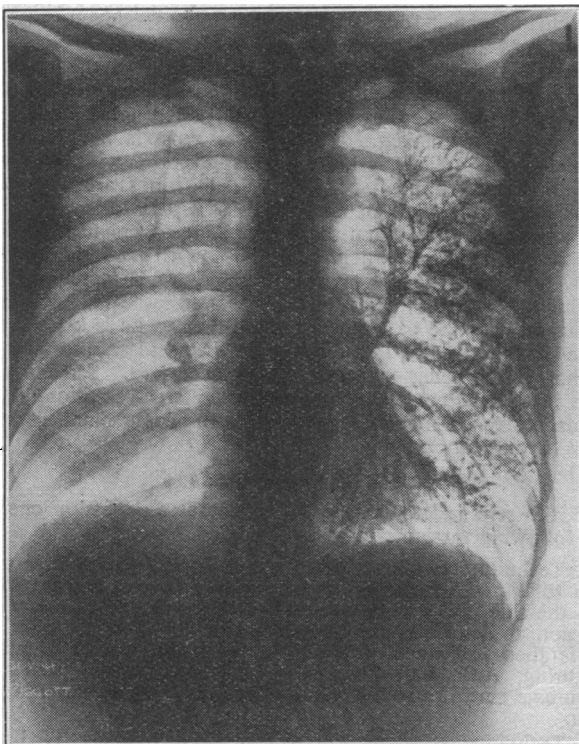


FIG. 1.—Radiograph showing outlines of the left side of chest.

and lateral views are again necessary. The hard-pressed radiologist should be spared the pain of reporting yet again: "Those few basal bronchi outlined are normal."

### Summary

The importance of adequate posturing on bronchography is stressed, and a standard technique is described which allows delineation of all parts of the bronchial tree. Without such

technique, imperfect filling of the bronchial tree will be the rule instead of the exception.

My thanks are due to Drs. W. E. Lloyd and W. H. Coldwell for their kindness and help, and to the Sister and staff of the x-ray department, Westminster Hospital.

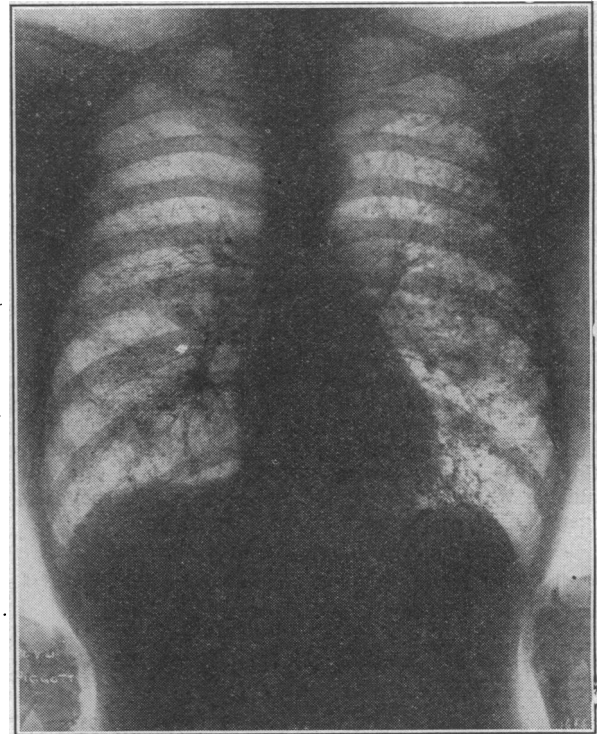


FIG. 2.—Right side outlined by posturing the patient. The oil from the left side has been made to run over and outline the right.

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## THE EFFECT OF BLEEDING ON THE BLOOD-SUGAR LEVEL IN BLOOD DONORS\*

BY

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The object of the present investigation was to determine whether the level of the blood sugar is related to the incidence of "fainting" in blood donors. The clinical characteristics of such faints have been previously described by Brown and McCormack (1942). Certain factors responsible have been analysed by a statistical survey (Greenbury, 1942). In the latter it was suggested that lack of food might be a predisposing cause. If a constant low blood-sugar level occurred in donors who fainted, as opposed to those who did not, it would favour such a hypothesis.

### Method

In a series of 50 unselected donors blood-sugar estimations were made upon samples of capillary blood obtained from the ear immediately before and immediately after the withdrawal of between 400 and 450 c.cm. of blood by the Medical Research Council technique (Brown and McCormack, 1942). In a second series of 46 unselected donors blood-sugar estimations were made upon venous blood taken at the end of a routine bleeding from the antecubital vein. In these cases a pressure of between

\* A report to the Medical Research Council from the N.W. London Blood Supply Depot.