also like to express my gratitude for grants which I received from the Research Foundation of the College of General Practitioners and from the Ministry of Health. The diagrams were prepared by the Department of Medical Photography and Illustration, Westminster Hospital.

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RADIOLOGICAL ASSESSMENT OF EARLY BRONCHITIS

Dr D. H. Trapnell, M.D., M.R.C.P., F.F.R. (*Consulting Radiologist, Westminster Hospital*)

Two speakers today already have reminded us that a patient may die of chronic bronchitis and yet have a normal chest radiograph. I think you will agree, therefore, that my subject, the radiological assessment of early chronic bronchitis, poses some obvious problems. It may be that there are some here who would question the right of a radiologist to attend and speak at a symposium on a subject such as this. They would say, and with very good reason, that the radiologist should really play no part in the management or diagnosis of early chronic bronchitis.

I should like to make three propositions for your consideration. Because radiographs do not normally show bronchi, the chest radiographs of patients with uncomplicated or early chronic bronchitis are normal. Obviously, if abnormalities such as emphysema,

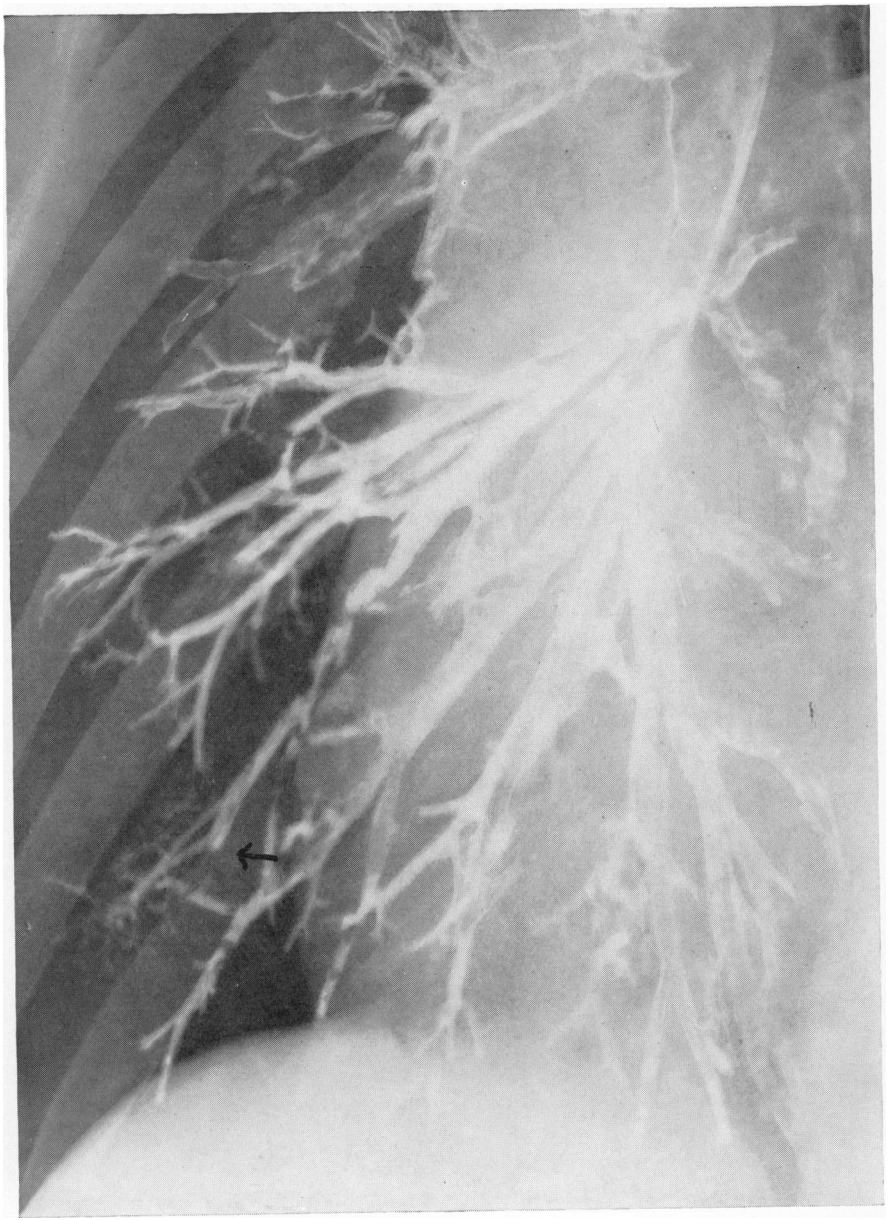

Figure 36.

This bronchogram might be regarded as normal. In fact there is practically no filling of the peripheral bronchi, indicating obstruction of the small bronchi. The arrow points to an occluded medium-sized bronchus. Just proximal to the block a small bronchus is shown with normal filling of its branches. All the other bronchi shown lack the normal fine branches even though plenty of contrast medium is present.

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pulmonary infection or pulmonary hypertension, have developed, there may well be evidence to reveal them. But my first proposition is that ordinary chest radiographs make no contribution towards the diagnosis of early chronic bronchitis. It follows from this that the only radiological technique which might help in diagnosis is one that shows the bronchi—namely bronchography.

My second proposition is derived from the first. If the radiologist normally plays no positive part in the diagnosis of early bronchitis, he cannot, and certainly should not, make conclusions about the bronchi he cannot see.

The third proposition is, none the less, that the radiologist should be a member of any team investigating chronic bronchitis. Equally, he should be one to whom the family doctor can refer his cases.

There are also three ways in which radiology can help. The first is to determine or exclude the presence of other diseases, such as tuberculosis; secondly, to detect the presence of the complications of chronic bronchitis, and thus to distinguish between the patients who have permanent structural change and those with early bronchitis; and, thirdly, to prove a diagnosis of early chronic bronchitis in specially selected cases by means of bronchography. My present view is that this should rarely be necessary, but our experience shows that it may help a patient to give up smoking if he can see what is happening in his lung. There was a time when a bronchogram meant methods and materials which combined to make it a very unpleasant procedure. Now I am absolutely persuaded that it need be neither unpleasant nor unsafe.

This brings me to talk about the patients whom Dr Gregg and I have studied. Some were cases of early chronic bronchitis found in his practice. In addition to clinical and physiological studies, they kindly agreed to having a bronchogram. Others were having a bronchogram for some other reason, and were found to have radiological evidence of chronic bronchitis. Our purpose was to discover, if we could, whether radiological changes were present which could be said to be those of early and reversible chronic bronchitis.

Bronchographic changes in the late stages have been well demonstrated, but their detection is of little value so far as the treatment is concerned because they indicate irreversible damage. All patients having a bronchogram were asked to complete the shorter Medical Research Council bronchitis research form in order that their symptoms could be assessed. Any case showing any evidence of other lung disease was excluded from the series, even if changes of chronic bronchitis were present. We did this so that the physiological tests might be regarded as being a measure, even if approximate, of the state of all parts of the lungs. Thus, out of 75 patients

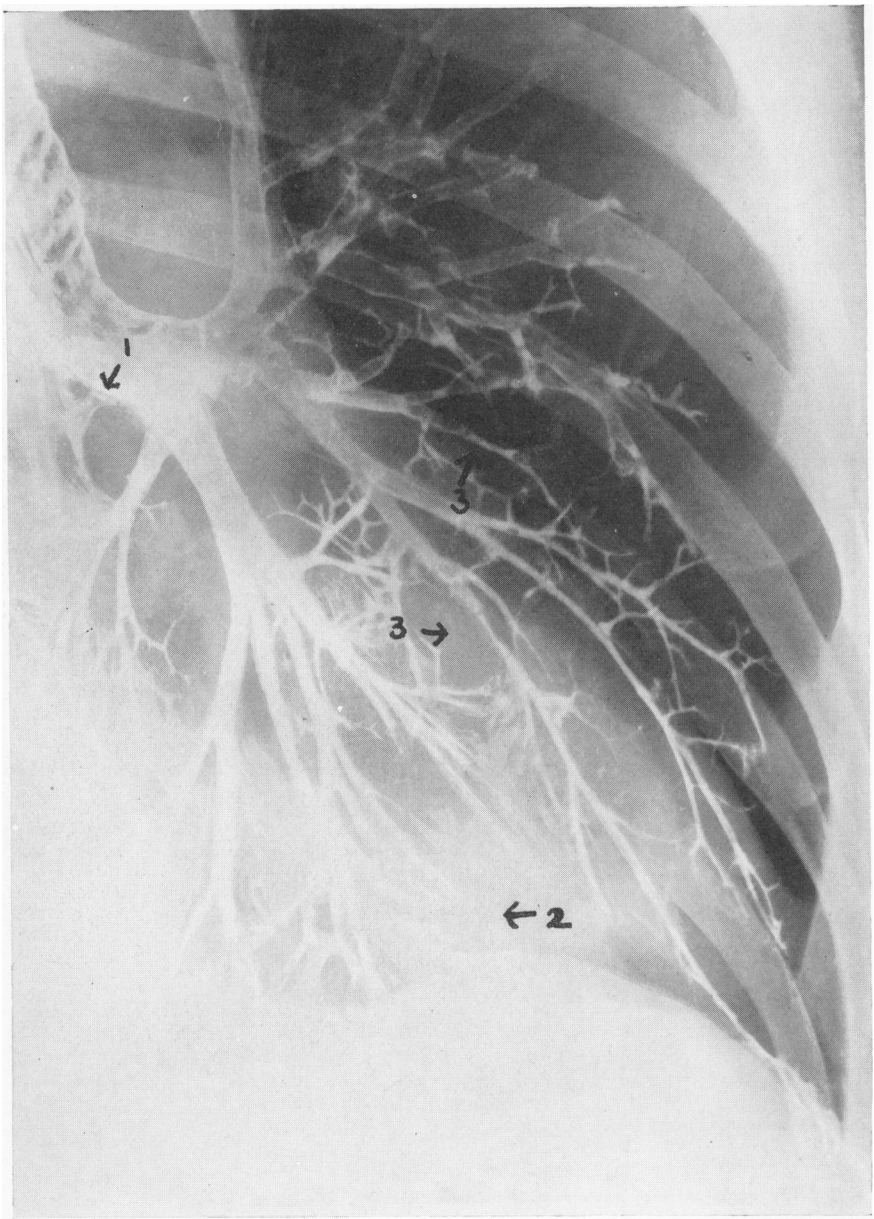

Figure 37.

Typical early chronic bronchitis. Arrow 1 indicates numerous small dilated mucous ducts. Arrow 2 shows blocked medium sized bronchi. Arrows numbered 3 point to typical loss of parallelism in bronchi. There is practically no filling of the small peripheral bronchi.

Figure 38.
Marked mucous duct distension producing a beaded profile in the bronchi.

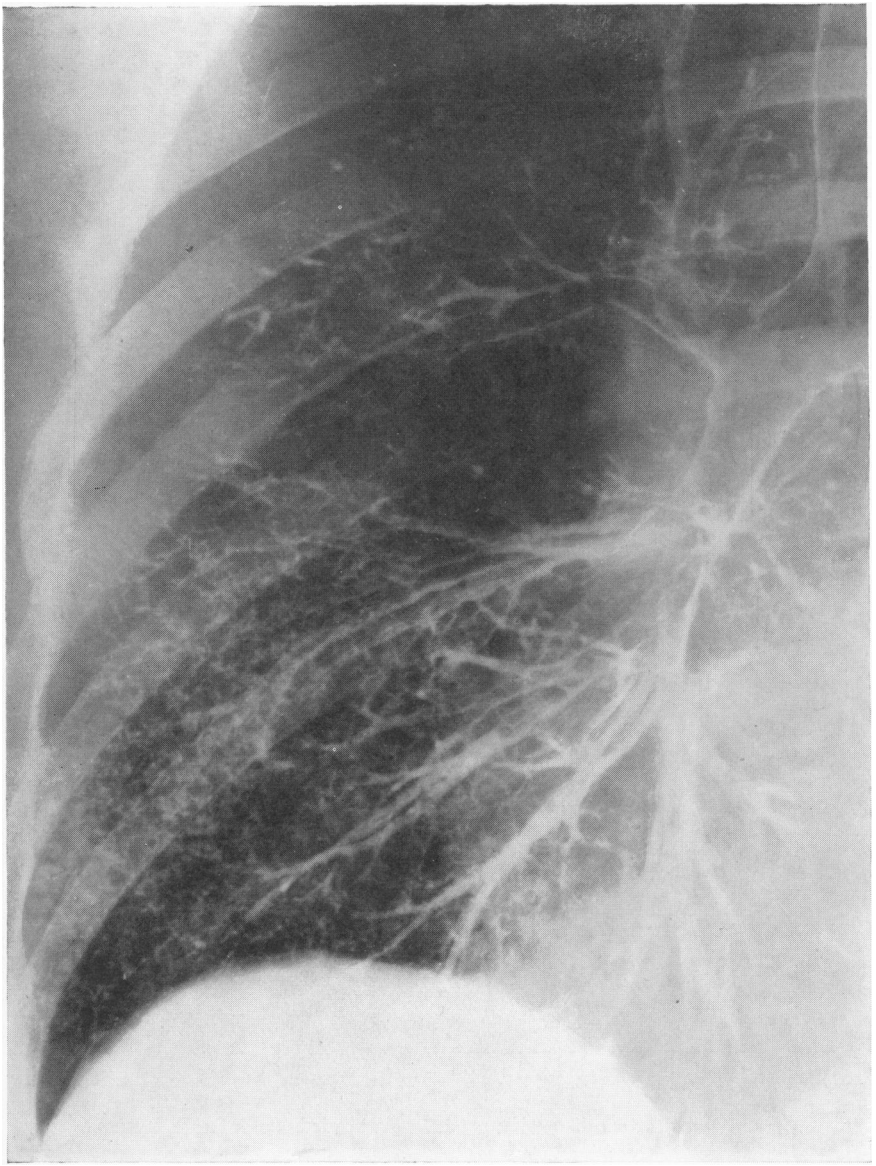

Figure 39.

Normal bronchogram. (Dr Ian Gregg). Note the good filling of the very small bronchi in the periphery of the lung. All parts are well filled. The bronchi are of even calibre.

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who had bronchograms, 34 formed the series; some of these had bilateral bronchograms, and the remainder had only one lung examined.

Figures 36, 37, 38 and 39 illustrate the bronchographic changes in early chronic bronchitis which are:

1. Distension of mucus ducts.
2. Loss of parallelism of bronchi.
3. Poor peripheral filling.

In conclusion, may I say that I hope I have convinced you of the truth of my three propositions: that the plain chest radiograph is of no value from the point of view of diagnosis of early bronchitis; that the radiologist plays no part in the routine diagnosis of early chronic bronchitis; but that he can make a contribution in the exclussion of other disease and, in selected cases, in the demonstration or the proof of diagnosis of early bronchitis at a stage when it is possible that it is reversible.

PREVENTION OF BRONCHITIS

Dr J. R. May (*Senior lecturer in bacteriology, Institue of Diseases of Chest, Brompton Hospital*)

As regards the title of this talk, I must point out that almost all that we know about the situation relates to the *established* bronchitic. We really know nothing about the part played by bacteria in the earliest stages of the disease, nor about the value of antibacterial prophylaxis in their prevention. The aspects about which we do know something are the possibility of control of the chronic infections that may contribute to the progressive deterioration of bronchitics, and also, of course, the prophylaxis against acute exacerbations of the condition. As I hope you will have gathered from the film, these aspects have one common fundamental factor, namely the underlying importance of *Haemophilus influenzae*. This is a very persistent organism, which is difficult to eradicate from the respiratory tract. Indeed, it is highly probable that many patients harbour the same strain for years in spite of treatment.

I should like to talk, then, not so much about the prophylaxis of