safety to himself and the public been diminished by his consumption of alcohol? The decision rested with the court, and it was unnecessary for the medical witness to formulate a definition of drunkenness. It was well known that certain people were affected by quite small quantities of alcohol, and there was no single clinical sign which was characteristic and which could not be simulated by disease. Each individual sign might be easily demolished during cross-examination. The medical examiner should be able to present a complete picture which would convince the judge or jury that the condition of the accused was due to indulgence in alcohol. It was necessary to eliminate symptoms due to disease, shock, or excitement. In Dr. Allison's experience the shock of an accident or arrest was often sufficient to steady the person, at least temporarily. A symptom to which he attached considerable importance was the readiness with which a person who had over-indulged in alcohol fell asleep soon after being placed in the cell. To find a man sleeping heavily ten minutes after the cell door had closed on him was a contraindication of his having suffered from shock or nervousness, and was confirmatory of signs of drunkenness found during the previous examination. It was also helpful in those cases where the man had succeeded temporarily in pulling himself together when first brought to the police station. His practice was to explain the position to the accused and obtain his consent before putting him through any tests for drunkenness. He was also informed of his right to an independent examination by a doctor of his choice. Chemical tests might give useful confirmation, but would never altogether replace clinical evidence.

The CHAIRMAN (Lord Russell) considered the question more from the legal point of view, and discussed the punishment for drunkenness. In a recent debate the motion was passed that the driver's licence should be suspended for twelve months; this was later modified, and the driver was allowed to appeal for the suspension to be removed after three months. With regard to tests for drunkenness, whatever evidence could be produced as to the alcoholic contents of the urine, or any other tests, the general appearance of the accused must also be taken into consideration. He thought the accused should be given an opportunity of having a medical man of his own choice, but that it was not necessary to warn him of the object of the examination.

Professor J. E. W. MACFALL (Liverpool) agreed that Dr. Carter's paper was a valuable scientific contribution, but thought it hardly practicable from a police surgeon's standpoint; he doubted whether the excretions of an accused person could be tested without his full knowledge and consent. As a police surgeon he knew the difficulty of certifying borderline cases. He found that each examiner had his own tests and was able to interpret the results of his tests and form an opinion as to whether the inco-ordination of thought and action as the result of drinking alcohol interfered with the proper performance of the act involved to such an extent as to produce a condition diagnosable as "drunk." One complication was that the state of the accused was often partly due to alcohol and partly due to excitement. He emphasized the importance of time. On two occasions when examining accused persons and deciding to certify them as "not drunk" he found that after some time both became distinctly incapable of driving efficiently. In one case a man changed from having complete control of himself and became an uproarious inebriate. Of the many tests for muscular co-ordination he found the most delicate was to mount a staircase, when the least want of control was indicated by swaying. Perhaps the best test would be for the examiner to be driven by the accused person.

Dr. CARTER, in reply, said that a man knew why he was arrested and did not need to be warned of the object of the examination, but he agreed that he should be allowed to send for his own doctor. He was glad to know that Dr. Bogen's conclusions tallied with those formed in this country.

RADIOLOGY AND DIAGNOSIS OF INTRA-THORACIC TUBERCULOSIS.

THE IMPORTANCE OF RADIOLOGY IN THE DIAGNOSIS OF PULMONARY TUBERCULOSIS.*

BY

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THE title which has been given me to open this discussion contains two subjects: (1) the importance of radiology in the diagnosis of pulmonary tuberculosis, (2) the importance of this as it affects the specialist and general practitioner. Clearly the first of them has to be dealt with before the second can be considered.

Now the diagnosis of pulmonary tuberculosis is not merely a matter of recognizing the presence of the disease, though the recognition of it and the differential diagnosis are of prime importance, and are often matters of great difficulty. Diagnosis must necessarily include, in addition to the type of disease, the character of it; whether, that is to say, it is acute miliary, acute pneumonic, acute ulcerative, or chronic, and to what extent the changes due to the tubercle bacilli predominate, or are complicated by or overshadowed by those due to the secondary organisms; further, what part is played by the mechanical changes. Thirdly, it is imperative, especially if surgical treatment comes into consideration, to know the anatomical extent of the lesions.

While pulmonary tuberculosis may present itself with all the textbook symptoms and signs, in many cases there are problems as to the extent of the activity, the anatomical areas involved, the character of the secondary changes, and the share they take in the picture, which are extremely difficult to solve. The symptoms and signs vary in every case: the clinical and the radiological picture of any patient are as individualistic as are the whorls, loops, and composites on the thumb which are used for identification purposes. There may be but one symptom, such as lassitude or haemorrhage; there may be no sign other than harsh breath sounds. Symptoms such as cough and sputum may be absent from the picture for years. Pyrexia may be an early or late manifestation. While the symptoms are easy to ascertain but sometimes difficult to interpret, the signs may be difficult in both respects. Some patients seem incapable of using their chest or diaphragm so as to make even the normal breath sounds audible through the stethoscope. When it is remembered, further, that there is practically no symptom and practically no sign that cannot be produced at one time or another by every intrathoracic disease, and that, for example, breath sounds can be heard through even a considerable layer of liquid, it is clear that there must be many cases in which it is essential that every means of ascertaining the trouble must be utilized, and that it is most important in all cases to check, control, and correct the clinical findings by the radiological ones.

Of all methods of investigation the clinical examination is unquestionably the most important, but it does not reveal the whole truth, and for much that is hidden we must turn to radioscopy and radiography. There are some few cases even—and they are chiefly those in which the pleural cavity is the seat of the lesion, or is involved secondarily to the disease in the lung—in which one has to rely on radiology for the main part of the evidence.

Radiology has taught us a very great deal about pulmonary tuberculosis. It has corrected the one-time impression that tuberculosis starts most commonly in the apex of the lung—an impression erroneously formed owing to the conduction of the sounds to this region. It has taught us about the limitations of the movements of the

* A paper read in opening a discussion in the Section of Tuberculosis at the Annual Meeting of the British Medical Association, Edinburgh, 1927. Dr. S. Vere Pearson, President of the Section, was in the chair.

domes of the diaphragm. It has shown us how frequently the disease is more extensive than the clinical findings suggest, and, conversely, how occasionally the disease is much more limited than is suspected, owing to the widespread changes in the physical signs caused by local changes in the larger bronchi. It has also, however, helped for the time to confuse us by showing us the shadows known as "pleural rings," and those changes at the root of the lung which have given birth to the nomenclature of "hilum tuberculosis." It must be remembered that the science of radiology is still young, and that time is needed to interpret all the mysteries which the *x* rays have revealed, and that it is bound to take a long while before the significance of the various shadows can be correlated with the *post-mortem* findings.

The first thing to consider is the importance of radiology in diagnosis and differential diagnosis. The cases that come before us belong to two groups: the one with few symptoms, in which the existence of pulmonary disease has to be determined, and the group with well marked symptoms and signs, in which the character of the disease must be diagnosed. The great majority of the first group consist of children and young adults, and the commonest symptoms are cough, which has persisted since a cold or an acute specific (especially measles and whooping-cough), some lassitude, poor development and dyspnoea; occasionally in the more advanced cases there is cyanosis. The physical signs are usually impaired resistance and resonance, often more on the right than on the left, deficient air entry, and some moist sounds. Quite a number of these cases are labelled hilum (or pulmonary) tuberculosis, some are treated as such, and bear the stigma for the rest of their lives. It is here that radiology has helped at first to confuse us, but will unquestionably, with increasing knowledge, prove of immense benefit.

The great difficulty lies in the inability to establish just when the hilum shadow ceases to be normal, and what are the characteristics of early disease as opposed to chronic irritation. We know that impure atmospheres lead to increase in density of shadows, that chronic irritation causes enlargement of glandular nodes and increased striation, and that in some cases, especially after bronchopneumonia, bronchitis, and also in connexion with chronically enlarged tonsils, these changes may be very striking. Among the considerable number of apparently healthy students I *x*-rayed at University College Hospital sixteen years ago two things struck me in particular—one was the enormous variations that occurred in the so-called normal subject (one only of these has since developed tubercle, and his original radiogram showed nothing striking); the other was that the traction of the heart to the left with a normal-looking lung and pleura was invariably due to a basal pneumonia in the past.

In a recent paper Agassiz draws attention to the clinical picture and the radiological findings in children and young people which are the result of a non-tuberculous fibrosis of the lungs following bronchopneumonia and bronchitis, measles, and whooping-cough. He deprecates, and in my opinion rightly, the readiness with which young people with increase of root shadows and radiations therefrom are labelled "hilum tuberculosis." This term has unfortunately come into general use in much the same way as the words "influenza," "gout," and "rheumatism." It is a label attached indiscriminately, and occasionally correctly. It satisfies the public because it is a definite term which can be repeated to friends and relations; it conceals the need of further investigations, ending often in uncertainty and in vague nomenclature; and it gives a sense of security, as it is as hard to disprove as to confirm. It is a label that once affixed is hard to remove. It is a term which, having been accepted and put into general use, is hard to abolish. Agassiz states that the *x*-ray examination "is of the utmost importance in differentiating fibrosis from other affections of the lung." The following is his description of the *x*-ray findings.

"It is to the shadows at the root and radiating from it that I would direct attention. These may be slightly increased with striations towards the base, or they may be dense, massive shadows extending from the level of the third to the sixth or seventh rib in front with dense striations radiating to the base

in particular, and possibly blurring or obscuring the cardio-phrenic angle or angles and accompanied in some cases by some increase of striation towards the upper lobe. All variations between these two extremes may occur. In other cases the normal reticular formation of the lung may be more evident than normal. In others again the shadows, more particularly round the hilum or upper lobe, have a honeycomb appearance, and in yet others star-shaped shadows occur.

"The diaphragmatic outline is frequently irregular, the irregularity taking the form either of undulations or, more often, of peaking. I believe that these irregularities of the diaphragm are due to other causes than that commonly assigned to them, viz., adhesions."

In the majority of the adult cases the patient comes with symptoms of a more pronounced character, and the presence or absence of disease is less likely to be the stumbling-block, but the character of the disease may be. My experience is doubtless not different from that of others. I have had many cases sent to me as suffering from pulmonary tuberculosis who were suffering from some other disease. By far the commonest mistake is bronchiectasis. Some of these patients have gone about for years, despite the persistence of a negative sputum, labelled as pulmonary tuberculosis. In many the clinical diagnosis is easy, but in some it is extremely difficult until it comes to the radiological examination. This in the majority of the cases will settle the diagnosis, but there are some very old-standing cases where the secondary bronchiectatic changes associated with chronic tuberculosis are so predominant that it is hard to differentiate between them and a non-tuberculous bronchiectasis. Less frequent types of mistake have been the labelling of cases of malignant disease and of syphilis as suffering from tuberculosis. One striking feature of these mistakes is that the cases had not been *x*-rayed, and, in most instances, had they been, the error would not have occurred. In this connexion three striking cases may be mentioned, even though tuberculosis did not necessarily enter into the differential diagnosis; in each case the diagnosis was made by the *x* rays only. One was a case of bronchitis and emphysema in which the *x* rays revealed a primary carcinoma of the lung; even when found it was impossible to detect it clinically. Another was a case of diaphragmatic hernia treated in hospitals for thirty years; the nearest guess made was "basal pneumothorax," until radiology cleared up the diagnosis. The third case was an elderly woman with acute pulmonary symptoms, of whose history forty years previously, when she had acute pleurisy and nearly died, I knew nothing. Not until the acute symptoms had subsided and she could be moved for *x*-ray examination did I realize that the lung was shrunken to about one-quarter its original size, and was separated from the shrunken chest wall by inspissated pus.

When we turn to the pleural and mediastinal cases the importance of radiology becomes even greater. We may suspect an interlobar effusion, but it is rarely more than a guess until confirmed by the *x* rays; even greater is the difficulty in cases of mediastinal effusion.

In the diagnosis of activity of a tuberculous lesion it is the clinical signs and not radiology which must be relied on, though unquestionably information can be obtained from the latter source also. The snow-flake fluffy shadow of an acute lesion is in striking contrast to the denser, sharply defined outline of the fibrotic lesion. At times there is a great temptation to diagnose on clinical examination the presence of a cavity when the radiogram shows that the signs are due to a dense area of fibrosis juxtaposed to a large bronchus. Occasionally the radiogram will reveal a cavity in the centre of a densely fibrotic area which is unsuspected from clinical examination; the *x* rays will, moreover, reveal in a large cavity the efficiency or otherwise of drainage of such a cavity, and the retained secretions when present.

When the case under investigation is one with an effusion, or pneumothorax, or a combination of the two, it may be impossible to obtain by clinical examination any idea of the extent of the collapse or the character of the collapsed part of the lung. If on examination a patient is found to have a pleural effusion, it is not sufficient to be content with that as a diagnosis; it is necessary to know the cause of such effusion. It may be failing heart or kidney, trauma, suppuration above or below the diaphragm, an infection, or granuloma inside the pleural

cavity or in the lung. It may be secondary to an inflammatory lesion such as pneumonia, or to carcinoma. It may be primary tuberculosis of the pleura, or secondary to pulmonary tuberculosis. The diagnosis can be easy or extremely difficult, especially if the primary lesion is in a collapsed lung surrounded by liquid. But if the liquid is replaced by air, and the collapsed lung is partially re-expanded, then it becomes possible, not by clinical examination but by radiology, to see the character of the lesion which is primarily responsible.

Information as to the presence of very small effusions; of interlobar effusions; of adhesions, their directions, size, and number; of the nature of the lung in the region of their attachment to it, and of the mediastinal pleural sac cannot be obtained by clinical examination, but is revealed in part or in whole by the x rays. Take, for example, the case of a basal pneumonia with imperfect resolution, a pleural effusion, partly absorbed, thickening of the pleura, retraction of the heart, dragging up of the dome of the diaphragm and sinking in of the chest wall—a tuberculous lesion may or may not be present. This complex but common type of case can be diagnosed clinically, but as a general picture only; it is the x rays which must contribute the detail and show the relative extent of the various changes. There are two points I would like to call attention to here. I am very sceptical as to the possibility of diagnosing adhesions which exist between an expanded lung and the chest wall; some there are who claim to do this, but I have not as yet had a convincing demonstration. Adhesions between the base of the lung and the diaphragm can, I maintain, be diagnosed if the dome of the muscle is drawn up and distorted; a shrinking lung does not distort the muscle unless adherent to it. This, however, also is a controversial matter. The second point is that thickened parietal pleura is much more easily recognized by clinical examination; in exceptional cases, and naturally when the seat of calcareous deposits, a definite shadow is obtained due to increased opacity to the x rays. As a general rule a density of shadow attributed to thickened pleura can be proved to be due to a thin layer of liquid. The thickened pleura on the lateral surface of a partially collapsed lung can, however, be clearly demonstrated.

Finally, in considering diagnosis, there is the extent of the lesion. It is usually more than is suspected by clinical examination. This is partly due to the fact that while some patients breathe in such a way as to bring the signs into prominence, with others all the sounds are damped and muffled. Moreover, an x-ray film shows deep-seated lesions as clearly as superficial ones, and all the shadows are on the one plane.

Two types of case, difficult at times to distinguish clinically, are clearly differentiated with the x rays: I refer to patients with deficient expansion, increased resistance, poor air entry, harsh breath sounds, and some prolongation of expiration, with possibly a few moist sounds. This picture may be due to involvement of the larger bronchi at the root, or to scattered small areas of fibrosis throughout the lung substance. I must mention also a particularly interesting case of a patient sent to me with acute laryngeal tuberculosis and the report that both lungs were free of disease. I, too, could find no clinical evidence of any disease, but the x rays revealed acute miliary tuberculosis of all five lobes. During the next ten weeks I could detect no signs of the disease which I knew to be there.

Occasionally the clinical and radiological evidence as to dilatation of bronchi and of cavities is inadequate. This is particularly the case in bronchiectasis, and especially for lesions of the left base which are obscured by the cardiac shadow. In these cases the injection of lipiodol into the trachea, and so into the bronchi and bronchioles, may add a wealth of valuable information.

Precision in diagnosis is essential for determining prognosis and treatment; it is absolutely imperative before any surgical treatment can be considered. To attempt treatment of a case of pulmonary tuberculosis by operative intervention without the most thorough radiological (when such is, by any means available) as well as clinical examination is to make the patient run serious and unjustifiable risks. In these cases it is not so much the precise

condition of the more affected side, but the character and extent of the lesion in the sound lung which is so important. In my examinations I rely entirely on the clinical examination to determine the presence or absence of active disease in the less affected lung, but I turn to radiology for my evidence as to the anatomical extent of the lesion.

The value of a radiogram lies in its clarity and in our power to interpret it. An indifferent radiogram may be not only worthless but a source of danger, as we may fail to detect the existence of lesions of importance, and act on the erroneous idea that they are not present. The radiogram taken with the film on the front of the chest is the most useful standard viewpoint, but it may be advisable to take one with the film on the back, or with the patient in the half-lateral position. In some cases, as in mediastinal effusions, the film must be taken from the front whilst the patient assumes the orthopnoeic position.

I would urge that during the exposure of the film the patient be in the upright rather than the recumbent position. The former is essential when liquid is present. I would also put in a plea that the patient be screened and x-rayed sitting down, as standing may prove very exhausting to one who is seedy, and is at the same time possibly undergoing a new experience, and therefore an ordeal.

A patient should be examined with the screen, as this gives a general impression of the lesion, and information as to the lighting up of the various parts of the lungs, and as to the movements of the domes of the diaphragm, and possibly as to the movements of shadows inside the lung. Also a rough idea can be obtained of the relatively anterior or posterior situation of a particular shadow. Screen examinations, unless one waits in the darkened room for about half an hour beforehand, fail to give detail, and it is for this reason, as well as because they afford a permanent record, that radiograms should be taken.

The interpretation of the film brings us to one of the difficult problems. The radiologist who handles hundreds of films and is presumably well up in the literature can detect abnormalities and describe the shadows far better than the average medical man. Unfortunately his opportunities for studying the radiogram and the clinical picture side by side and following the development of the case are limited. The physician who specializes in pleuropulmonary diseases has very great experience, but it is possibly somewhat less than that of the radiologist. He is also less aware of the allowance to be made for imperfect exposure or development, but has the advantage of his knowledge of the clinical side. The general practitioner, with the wide range of knowledge required of him, cannot be expected to have an extensive grasp of the various subtle and complex guises in which pulmonary tuberculosis may manifest itself, nor a thorough understanding for interpretation of radiograms.

He should, therefore, in all obscure cases and in all those in which tuberculosis is suspected, or might be by the patient and relatives, recognize that the first consideration is the welfare of the patient, and that to call in a specialist or consultant and a radiologist is not likely to impair his medical prestige, nor cause the patient to withdraw his confidence. It is possibly partly for fear of this, or of the exposure of his lack of knowledge for the interpretation of radiograms, partly also on account of the expense to the patient, that many general practitioners do not make greater use of the specialists and of radiology on behalf of their patients. Consequently in many cases, because of the indefiniteness of the physical signs or of the difficulty in interpreting them, together with the fear of alarming the patients, the general practitioner prevaricates until the progress of the disease puts all doubt out of court; such delay is, however, a most serious matter, as it increases to a grave degree the time required for treatment, and diminishes greatly the chances of arresting the disease.

It is much to be deplored that many patients apply for sanatorium treatment for the first time only when the disease is so advanced that it is extremely difficult, if possible, to counteract the spread caused during the delay. Frequently the chance of arresting the disease by medical

or surgical means, which possibly did exist six or twelve months previously, has by the time they present themselves been irretrievably lost. The chief causes of delay are:

1. Postponement of treatment by the patient on account of work, finance, or aversion to the idea of entering a sanatorium.

2. Non-realization of the seriousness of the condition due (a) to the doctor's opinion (a mistaken one to my way of thinking) that the patient is not equal to facing the situation; (b) to the doctor himself not realizing the extent or the seriousness of the disease. In such cases a radiogram with a report on the findings would frequently alter his conception of the case. A true realization of the state of affairs might then save the precious time and money so often wasted through the advice of "a month or two at the seaside," or "a trip to the South of France." The patient starts off without proper knowledge or guidance how he should live, and recuperates sufficiently to drag through an extra few months of work before he is once more laid low by further extension and activity of the disease.

3. Wrong diagnosis owing to an erroneous interpretation of the physical signs. If an invariable rule was made, that when there had been persistence for more than three months of symptoms which might be due to tuberculosis, the sputum (if any) was examined and a radiogram taken, many doctors would find that they retained the confidence of those patients who owing to the lack of these precautions are doomed to a lingering illness, and are often without mercy in their denunciations of the want of thoroughness in the investigation of their case.

REFERENCE.

¹ The Differential Diagnosis of Non-tubercular Fibrosis of the Lungs in Children, *Tubercle*, May, 1927.

DISCUSSION.

Dr. E. RIST (Paris) emphasized the importance of radiological examinations in correcting the clinical findings; he hoped that the time was at hand when a line would no longer be drawn between the physical signs *par excellence* and the radiological findings. X rays were invaluable in cases with deep-seated cavity near the hilus, where often no definite focus was discoverable by percussion and auscultation; even quite superficial cavities might be overlooked by relying on ordinary physical signs, and their discovery made an enormous difference to prognosis and treatment. Only by x-ray examination had it been established that there could be transmission of abnormal sounds from the diseased to the sound lung, and it alone had given a safe method for deciding on the induction of artificial pneumothorax. In his opinion fluoroscopy was most valuable; it showed, for example, impaired movements, the inspiratory attraction of the whole mediastinum by the fibrotic lung, and the inspiratory distension of the heart shadow in bilateral fibrosis. It should always precede filming, and should be a guide to it as showing the position best adapted to display the particular feature it was desired to study in detail. This would render possible the real use of the film in indicating the minute details in morbid structure, and in obtaining a permanent and indisputable record of the condition at a given date. He pleaded for a further use of the fluoroscope in order to attain correct interpretation of x-ray findings; it ought not to be confined to the exceptional and obscure case. The clinician and the x-ray specialist ought not to communicate by written reports only; they ought to sit side by side before the fluoroscope, or, better still, the two functions should be combined in the same person. The practitioner should have freer access to the x-ray room.

Dr. J. L. STEWART (Manchester) said it could not be too strongly stated that the x-ray examination was one item in the clinical examination and did not supersede any part of it. The clinician, not the radiologist, made the diagnosis. He had found radiology of great value in diagnosis, especially in examining contacts, where the earliest definite cases were found, and where very often long-standing quiescent disease was detected by this means in older relatives of active adolescent and juvenile patients. He thought the term "hilum tuberculosis" should be given up. If the disease had reached the lung tissue the case

should be classed as pulmonary tuberculosis; if it was confined to the bronchial glands or interlobar pleura, the patients should be labelled accordingly. He believed that with extended experience, basing the diagnosis on clinical and x-ray evidence, such classification of cases would be possible. The distinction was of great importance from the point of view of prognosis; thus, it did not follow when the glands or pleura were involved, even extensively, that the prognosis was bad, and careful collection of x-ray evidence might aid in revealing the ultimate prospects in such cases. The full value of x-ray examination could be appreciated only if it was used as a routine method.

Dr. J. M. WOODBURN MORISON (Edinburgh) said that radiology was only an extension of one of the methods of examination—that of inspection; he should like to see it included under that heading in all textbooks on diagnosis. No physical examination was complete without x-ray examination; on the other hand, a radiological diagnosis should never be demanded. The radiologist was seldom a skilled physician, and the clinician rarely had an expert knowledge of radiology; only by the close co-operation of the physician and the radiologist could the full benefit of the x-ray examination be obtained. Every young medical practitioner entering the public health service and specializing in tuberculosis should have a full course of instruction in radiology. The speaker then showed some very interesting lantern slides to illustrate the usefulness and limitations of radiology.

Dr. C. P. LAPAGE (Manchester) described an investigation that he and Dr. Bythell had carried out at the Manchester Children's Hospital on hilus tuberculosis. Excluding cases with definite physical signs, he found that the distinction between the catarrhal child and the child with early hilus tuberculosis was very difficult; a septic focus in the tonsils or nose gave toxic symptoms like those of early tuberculosis. He classified cases where possible as catarrhotoxic and tuberculotoxic. Aids in diagnosis were the history of infection, the rate of improvement, temperature and pulse tests, and the tone of the skin—especially that between the scapulae. For the treatment of tuberculotoxic cases he advocated the extension of a convalescent school system. The teaching of such patients was important, both mentally and in its effect on the physical well-being. Patients with hilus shadows who showed also symptoms such as headache, rise of temperature, frequent catarrhal infection, and general loss of tone were, if not actually tuberculous, at least potentially tuberculous. The tubercle bacillus, however it obtained entry, was always at hand to infect the area of chronic inflammation in a debilitated child, whether in a cervical gland or a hilus fibrosis.

Dr. L. D. PARSONS (Ceylon) pleaded for the further use of test doses of old tuberculin as an aid in difficult diagnosis.

Dr. MORRISTON DAVIES said he would add a final word on the difficulties ahead of those who would overstress the radiological examination as compared with the clinical side.

THE INTERRELATION OF PHYSICIAN AND SURGEON IN REGARD TO NON-PULMONARY TUBERCULOSIS.*

BY

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IN these days, when our therapeutics is dominated by the surgical treatment of pulmonary tuberculosis and the conservative treatment of non-pulmonary tuberculosis, the demarcation between the respective spheres of the physician and surgeon seems practically obliterated, and any discussion of their interrelation, therefore, an anachronism,

* A paper introducing a discussion on this subject in the Section of Tuberculosis at the Annual Meeting of the British Medical Association, Edinburgh, 1927.