Society of Medical Hydrology in order to realize that advance is being made over a wide front, and that in research this country is by no means behind. But this applies chiefly to the larger and more important spas. One of the difficulties is that in the smaller ones it is often not generally realized that the waters have valuable properties. For instance, it has been pointed out that the Pittville Spring in Cheltenham has practically the same composition as some of the Vichy springs. It would be expected that in a country like England, where all but a few geological formations are well represented, a great variety of waters would be encountered. There are, no doubt, more in existence than are used; but it must be admitted that this country is rather poorly supplied with thermal waters, Bath and Buxton being brilliant exceptions, and there is no water containing carbon dioxide.

Turning to the subject of muds, or peloids, as they are called in the new classification, there is plenty of peat and alluvial mud available, but there is no hot volcanic mud such as is found on the Continent. Another difficulty that the British spas have to contend with is that they are mostly residential towns, and the interests of the residents and of the medical men and hotel proprietors tend to be opposed. To have an up-to-date hydrological institution with medical baths it is necessary to spend money and so to increase the rates. This appeals to one section, but is not unnaturally opposed by the other.

Post-Graduate Teaching in Hydrology

Perhaps the main difficulty in the more widespread use of our natural resources at the seaside and inland lies in the lack of knowledge on the part of the average medical man in the locality as to what is possible with these newer methods of treatment and how to apply them. It should be the object of the Section in future years to remedy this deficiency. It would clearly be wrong to try and insert any teaching or examination on the special subject of medical hydrology into the undergraduate's medical curriculum. Already the latter is too full, and with the advance of general medical knowledge it is likely to become still more so. The best way would be to institute post-graduate teaching in this subject with a diploma at the end of the course. Many of the more specialized branches of medicine—for example, radiology—are served in this manner. Now would be a suitable time to introduce such a scheme, since the University of London, with the assistance of the Government and the London County Council, is about to open a new post-graduate college. These authorities should be urged to add a voluntary course of instruction in climatology and medical hydrology to the curriculum.

The Year Book of the Royal Society of Tropical Medicine and Hygiene contains the twenty-seventh annual report of the council, in which it is mentioned that the forthcoming volume of the *Transactions* will be seventy pages larger than its predecessor. An affiliation has been arranged with the Fellowship of Medicine whereby Fellows of the society are enabled to claim a useful reduction of fees for any of the Fellowship's post-graduate lectures and demonstrations. It is expected that this will prove useful to any Fellows of the society who are home from abroad on leave, and to any others who are visitors to London and desirous of bringing up to date their knowledge of some branch of medicine or surgery. The debt on Manson House is being decreased slowly. The Year Book also contains lists of Fellows alphabetically and geographically arranged, the accounts for the year, lists of papers and short communications published in the *Transactions*, and a directory of officers of the society, including local secretaries throughout the world.

MEDIASTINAL AND APICAL EMPYEMA

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(With Special Plate)

The combination of two encysted purulent effusions within one pleural sac is sufficiently rare to be worthy of record. In the case now to be reported two loculated empyemata occurred in the right chest, one in the right posterior sub-apical region, the other between the right side of the pericardium and the pericardial aspect of the right lung. The condition gave rise to considerable difficulty in diagnosis, even after an *x*-ray examination of the chest. The course of the case, which was stormy, is detailed below, but the patient eventually made a complete recovery. A series of antero-posterior radiograms illustrates the progress of the condition.

Case Report

H. D., male, aged 45. The patient had been vaguely unwell for some two or three weeks, but able to continue work. His present illness commenced suddenly, and appeared to be a typical right-sided lobar pneumonia with physical signs in the right chest; the temperature fell by lysis on the seventh and eighth days. Further elevations of temperature were then observed by his doctor, and he was first seen by one of us (S. J. H.) on the eighth day. The patient was ill and toxic. He had a temperature of 102° F. and a pulse rate of 120; there was dullness under the right scapula extending upwards towards the apex, while anteriorly dullness extended from the sternum outwards to the right for some 3½ inches. The chest was explored posteriorly, and green pneumococcal pus was removed. A radiogram (Fig. 1 on Plate) showed two shadows in the right chest: the first, a subapical shadow, was considered to be a loculated empyema, but there was some doubt as to the nature of a second semicircular shadow extending outwards from the right mediastinum. The density of the second shadow was slightly greater than that of the apical collection; the three facts, that there was no cardiac displacement, that the shadow was not in contact with the diaphragm, and that there was no corresponding convexity of the left side of the pericardium, suggested that the shadow was that of a mediastinal collection of pus.

The subapical empyema was drained by the open method at the lowest point by resecting two inches of the fifth rib at the inner border of the scapula (L. N. P.). Only about 3 oz. of pus were evacuated, but a further quantity drained in the succeeding twenty-four hours. A tube was inserted. It was decided not to operate upon the mediastinal empyema at this stage, but to await events: the condition of the patient did not at once warrant a further operation, especially as the procedure might not prove to be very simple.

The patient continued with a leucocytosis of 18,000 to 20,000, and a temperature above 100°. On the seventh day after operation his temperature was 101°, and he was very restless. Quite suddenly the cough became more productive and purulent; during the next night the patient expectorated at least ¾ pint of non-fetid yellow pus, and during the following day a rather smaller quantity, about ¼ pint being expectorated in a sudden paroxysm. A second radiogram was now taken (Fig. 2). The apical collection was shown to be draining satisfactorily, and the semicircular mediastinal shadow was considerably smaller and less dense. The zone of aerated lung between the two loculi was broader. These appearances confirmed us in our opinion that the mediastinal shadow was pus and not growth.

For the next five days the temperature ranged from 99° to 101°, but on the fifth day it fell to normal. On each of these days an occasional paroxysm of coughing occurred, with the production of profuse yellowish sputum. The general condition of the patient improved, and his mentality became clearer. During these five days he was given breathing exercises and inhalations of oxygen containing 5 per cent. carbon dioxide, while postural assistance was attempted at the onset of each paroxysm. Pus continued to drain in small quantities through the tube. At the end of this period the leucocytosis was reduced to 16,000, the patient was much better, and his nights were less disturbed. He continued to have, approximately every other day, a paroxysm of coughing, which on three occasions resulted in the production of about a third of a pint of pus; after this the sputum became much less, and the leucocytosis on the twenty-second day after operation was 9,800. A third radiogram was taken on the twenty-eighth day (Fig. 3), and it showed that the apical loculus was almost completely drained and that the mediastinal shadow had shrunk to a narrow, almost invisible, strip.

Discussion

In the general textbooks the possibility of multiple loculi of pus in one pleural cavity is rarely mentioned, and even in textbooks devoted to thoracic diseases it receives scant notice. Simultaneous empyema on both sides of the chest is, of course, within the experience of most practising surgeons and physicians. We have not attempted a thorough search of the literature, but we may mention two recorded cases. Mackey (1925) reported an instance of a patient who had a large empyema in the left chest and two smaller empyemata in the right chest, one being on the anterior surface and one at the base; recovery followed drainage of the left and the right basal empyema and aspiration of the anterior right empyema. Van Allen (1929) published a case in which there were three loculi in the right chest—namely, at the apex, in the axillary region, and at the base, together with an *empyema necessitatis* pointing between the vertebral column and the vertebral border of the right scapula; the three separate cavities and the subcutaneous collection were all drained through separate incisions and the patient recovered.

In the case now reported the bacteriological examination of the pus removed by aspiration showed a pneumococcal infection, and according to the clinical course and physical signs it was of lobar type. The left lung never appeared to be affected by any pneumonic process. It may therefore be assumed that the two empyema foci originated independently from separate extensions of the pneumonia to the convex subapical pleural surface and to the inner mediastinal pleural surface, the walling off of the two loculi being accomplished by the fibrinous pneumonic reaction. The alternative pathology—that the empyema developed in relation to two peripheral lung abscesses—appears unlikely. The rarity of mediastinal empyema is largely due to the fixed state of the mediastinal surfaces of the lungs resulting from the entry of the various structures composing their roots. The absence of cardiac displacement is interesting in view of the different theories held as to the cause of cardiac displacement in pulmonary diseases. Although no lateral x-ray of the chest was taken it is probable that in this case the collection lay in the anterior mediastinum between the cardiac impression and the right surface of the pericardium, and therefore related only to the upper and middle lobes of the right lung.

The shadow of the mediastinal empyema had a sharp crescentic outline, and although its density was greater than that of the apical collection, yet it was possible to see the outline of the ribs through it, especially at its most peripheral part. The possibility that the shadow

represented a pericardial collection of fluid was definitely eliminated by the absence of general pericardial enlargement and by the existence of a zone of clear lung tissue between the inferior margin of the crescentic shadow and the right dome of the diaphragm. The question of mediastinal growth and of latent massive growth of the lung was considered. The regular sharp outline of the mediastinal shadow and its semi-translucent outer half were the points against growth, but until the second radiogram showed a diminution of the shadow we felt we could not definitely eliminate growth on purely radiological grounds. For clinical reasons we felt more certain, as the presence of typical lobar pneumonia led us to believe that the shadow must be that of pus and not of growth. Other possible diagnoses which were considered for the mediastinal shadow were dermoid cyst and the uncommon aneurysm of the descending thoracic aorta.

The treatment of the mediastinal collection gave rise to much anxiety. The patient was too ill for drainage of both collections of pus to be attempted at the same time. The decision to wait several days before contemplating a second operation was based upon two considerations.

First, the mediastinal abscess might increase in extent towards the anterior or posterior ends of the ribs, and in this position an operation for drainage would be easier. Secondly, the abscess might rupture into a bronchus and be followed by spontaneous recovery. The latter alternative was quite possible in view of the fairly close relation of the larger bronchi to the mediastinal surface of the lung. There was a definite risk of rupture of the abscess into the pericardium, with a sudden fatal catastrophe, but it was hoped that the successful open drainage of the subapical collection would relieve acute tension within the thorax and prevent such a rupture.

Summary

A case of double pneumococcal empyema, right sub-apical and mediastinal, is reported, with serial antero-posterior radiograms showing the progress of the case to recovery.

We desire to acknowledge our indebtedness to Dr. L. A. Rowden for the radiograms in this case.

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The following international post-graduate courses have been arranged for 1935 by the Berlin Academy for Medical Post-Graduate Training: internal medicine, with special regard to gastro-intestinal ailments, March 4th to 9th—fee, RM. 40; disturbances of metabolism and of the glands of internal secretion, March 11th to 16th—fee, RM. 40, or, if taken with the earlier course, RM. 60; practical progress of x-ray diagnosis and therapy, particularly for internal ailments, March 18th to 24th—fee, RM. 70; special course in urology, March 25th to 30th—fee, RM. 70; occupation and sickness, with special consideration of expert opinion, April 1st to 8th—fee, RM. 40; special course for surgeons, April 29th to May 4th—fee, RM. 70; special courses in all branches of medicine, with bedside and laboratory practice, are held every month—fee, RM. 50 to 80 for eight lessons of two hours each. Programmes and further particulars are obtainable from the Academy, Berlin, N.W.7, Robert-Koch-Platz 7 (Kaiserin Friedrich-Haus). Foreign doctors receive a 25 per cent. reduction of fare on the German railways (Reichsbahn). By using "registered marks" they can reduce the cost of sojourn, but for this purpose their home bank should be consulted before departing for the trip.

STANLEY J. HARTFALL AND LESLIE N. PYRAH: MEDIASTINAL AND APICAL EMPYEMA

FIG. 1.—Radiogram showing subapical and mediastinal shadows, taken on eighth day.

FIG. 2.—Six days later, showing satisfactory drainage, apical shadow and reduction in size of mediastinal shadow.

FIG. 3.—Thirteen days later, showing apical loculus almost drained and mediastinal shadow shrunk to a narrow strip.

J. S. MANSON: HEREDITARY SYNDACTYLISM AND POLYDACTYLISM

FIG. 1.—Showing digital abnormalities of mother and three children.

FIG. 2.—Radiogram of "W.'s" hands, showing webbing of third, fourth, and fifth digits, and fusion of third and fourth metacarpal bones.