restored arterial supply and absence of imported waste, the tissues are enabled to withstand even the combined assault of septic and tuberculous organisms. Every hoarding announces the recognition by the masses of our population of the need for improved development and increased vitality. "Frame food," "Force" food, "Phospherine," and countless other forms of profitable philanthropy in the shape of food and drugs are painfully obtrusive. What care we try to take, and very rightly, to prevent the admission of poison to the alimentary canal! How almost laughably anxious are many of us on the question of diet. The law very properly steps in to prevent the adulteration of our food and drink. Analysis fairly runs riot on behalf of our stomachs. But who cares for the purity of the air we breathe unless we happen to be tuberculous?

It is not many years since the House of Commons was gravely informed "against the stomach of its sense" that its air *must* be wholesome since but few pathogenic organisms could be found in it. We flood our rivers and pollute the sands of our health resorts with sewage. Patients not unfrequently tell us that seaside air is "too strong" for them. We ventilate our sewers into narrow streets, courts, and alleys at the road level, regardless of the close-set crowded dwellings so near at hand. As to our living- and sleeping-rooms we most of us ventilate them not at all in the sense of clearing out waste products. One is tempted to wonder if the ills usually ascribed to the high pressure of modern civilisation may not be more justly attributed to the high potentiality of the toxins given off by our crowded populations. This question must from its very nature be either utterly fatuous or of truly vital importance. If a negative cannot be returned to it without a shade of hesitation its discussion is obviously most urgently needed. Discussion, experiment, and research must come sooner or later. We may then get an answer to the query, Can the respirable products of human waste hinder development and lower vitality?

Darlington.

ICHTHYOL IN THE TREATMENT OF PULMONARY DISEASE.¹

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EVER since I became acquainted with ichthyol this substance has had a special interest for me. The more I study it the more distinctly do I understand its therapeutic value and its indications in the treatment of disease. My earliest use of it was in gynaecological cases in the form of tampons, and the success achieved in this connexion encouraged me to make a thorough investigation into its composition. The result was that I turned my attention almost entirely to the internal administration of ichthyol, and more particularly I made a study of its use in affections of the respiratory tract. During the past two years I have devoted much time and attention to the subject and I shall now endeavour to place before you as clearly as I can the results of my observations.

It may be well at the outset to describe very briefly the substance under consideration, and I trust you will not consider me too pedantic in doing so. Ichthyol or ammonium ichthyolate, as it is more correctly termed, is a definite chemical compound. It is obtained by acting upon a crude mineral oil derived from a special variety of bituminous quartz² by destructive distillation. This oil is treated with strong sulphuric acid, the product thus obtained being ichthyo-sulphuric or sulpho-ichthyolic acid, a dibasic acid. This acid is in turn neutralised by ammonium and ichthyolate of ammonium or ichthyol is the result. Ichthyol itself is a thick liquid substance of dark brown colour. It has a characteristic taste and odour, the latter being due to the presence of a volatile oil. Ichthyol is readily soluble in water. The crude oil before being acted on by sulphuric acid has the following composition: carbon, 77.25 per cent.; sulphur, 10.72 per cent.; hydrogen, 10.72 per cent.; and nitrogen, 1.10 per cent. Ichthyol

itself is usually stated to contain from 15 to 16 per cent. of sulphur.

So far as I have been able to gather, the first mention of ichthyol as a therapeutic agent was by Unna who described its action in certain skin conditions as far back as 1883. It certainly became known to the profession from its use in dermatological and in gynaecological affections. Its internal employment came later and was for some time much praised. At present it is held in high esteem as an external medication, but I fear that its internal administration is not regarded very favourably by the majority of practitioners. I cannot help thinking that the cause of this is not far to seek. It has very often been given in altogether unsuitable cases and for too short a period, so that with but few exceptions those who have tried it as an internal remedy have failed to derive good results and hence they have unjustly condemned it. I hope to be able to show you that ichthyol is of much service in the treatment of suitable cases of pulmonary disease. I shall first of all present you with a statement of the nature of the cases in which I employed it, together with some account of the results obtained, and then I shall refer at some length to the *rationale* of its action when given internally.

The majority of cases in which I used ichthyol internally were those of pulmonary tuberculosis and consequently my remarks will have very special reference to its employment in this disease. At the same time I have had definite results from its use in two cases of bronchiectasis and also in some cases of bronchitis, acute as well as chronic. Much benefit has also resulted from its use in cases of pulmonary fibrosis of pure type, apart, that is, from secondary tuberculous infection. All my cases of pulmonary tuberculosis were of the ordinary slow, progressive, and chronic type. They were in number 13 and varied in age from 18 to 39 years. As regards sex, four were females, the rest being males. At the commencement of treatment the tubercle bacillus was present in the sputum of each and in some cases was very abundantly present. No other drug save ichthyol was prescribed in any of the cases and the hygienic environment was not always the best possible. All the patients were under my personal observation for at least six months, some of them even for a longer period, so that a definite statement can readily be given as to the benefits derived from this form of treatment. Of the 13 cases referred to 11 were distinctly improved. Only two failed, after prolonged treatment, to show any beneficial results. The two latter were both very advanced cases and in one both lungs were extensively involved. In the remarks that follow I shall therefore confine my attention entirely to the results obtained in the 11 successful cases and shall disregard the other two entirely. A summary of the results obtained at the end of each month may be put down as follows. At the end of the first month of treatment I found that in six of the cases the cough was less harassing, while the other five showed no marked improvement. At the end of the second month every one showed distinct improvement as regards cough, while in eight the expectoration was either appreciably less in amount or both less in amount and easier of expulsion. Only one of the cases showed absence of night-sweating, all the others still complained of it to a greater or less extent. By the end of the third month seven of the patients were so far improved that no night-sweating was to be noticed. At the end of the fourth month of treatment night-sweating was entirely absent in every case, while only a slight cough remained. The expectoration had now become very scanty in amount and that chiefly in the mornings. Its expulsion was now quite easy and caused no distress as it formerly had done. Towards the end of the fifth month all my cases showed a continued improvement and on auscultation I noted especially the absence of moist sounds, though on percussion dulness was still in evidence, but in some cases was not so extensive as it had been at the start. By the end of the sixth month every one had gained in weight to the extent of from three to seven pounds. Speaking generally, the younger the patient the greater was the gain in weight. The average increase in weight was 4.9 pounds, or somewhat less than one pound per month.

It is important to observe the sequence of events in the history of the patients' progress towards recovery as indicated in the foregoing statement. The first sign of improvement was in respect to the cough, always a troublesome symptom in these cases. In the majority marked improvement, so far as cough was concerned, showed itself by the

¹ A paper read before the Therapeutical Society of London on Feb. 17th, 1903.

² A deposit of fossil fish found in the Tyrol Mountains.

end of the first month of treatment, while in every case before the end of the second month it was distinctly less harassing and troublesome. Whereas previously the patient had been kept awake from this cause, this disturbing element was entirely eliminated, and in consequence undisturbed sleep was obtained. With lessening of the cough came improvement in the expectoration, and that in two very definite directions. It became less in amount and also became less viscid and consequently easier of expulsion. In all my cases this was observed by the end of the third month, while in many a great improvement in the amount and nature of the expectoration was noted as early as the second month of treatment. No night-sweating was ever seen in any of the cases after the end of the fourth month and in some instances it was entirely absent before the end of the third month. Gain in weight was not, as a rule, observed until the patient had been under treatment for a considerable period, though two of the cases began to show an increase in weight about the end of the tenth week. At any rate, in six months' time all had gained in weight and put on flesh: In every case there was marked nutritional improvement and food was taken with greater relish than hitherto. Any gastric discomfort that had been present when the patients first came under treatment had entirely gone and altogether there was marked improvement in their general condition as well as in the pulmonary phenomena. Apart from gain in weight I cannot say that in my experience the younger the patient the earlier did improvement commence to show itself, nor, indeed, was the ultimate benefit greater in proportion to the youth of the patient. Age did not seem to count for much so far as treatment by ichthyol was concerned. More depended, I think, on the severity and extent of the pulmonary lesion and on the loss of nutrition that existed when the patient came under treatment. The graver the lesion and the greater the lack of nutrition the longer did ichthyol take to exert its beneficial influence.

Now I would not have any of you infer from my remarks that I claim to have cured any of my cases by administering ichthyol. Far from it, for no drug will, in my opinion, cure pulmonary tuberculosis. All that drugs can do in such cases is to arrest the disease, not to eradicate it. This I feel certain that ichthyol can and will do if properly administered. More must never be expected of it. I firmly believe that open-air treatment is the one and only hopeful mode of dealing with pulmonary tuberculosis, still I would have you bear in mind that at the present moment not all such cases can be sent straightway to a sanatorium. And this for two very cogent reasons: (1) because there are no immediate vacancies in many instances; and (2) because at the time the patients are probably not in a satisfactory condition to benefit by such treatment. With the first of these reasons we have nothing for the present to do. We certainly are in urgent need of more accommodation, but we can remedy the second defect. By placing such patients under a regimen of rest with, if practicable, daily massage and by administering ichthyol we may render them suitable for admission to a sanatorium.

But I now pass on to the consideration of two cases of bronchiectasis which I beneficially treated by means of ichthyol. In both cases the condition followed on chronic bronchitis. The most prominent symptoms were paroxysmal cough, with very abundant, foetid expectoration. In one of the cases a history of slight hæmoptysis was obtained. When they came under treatment both patients showed considerable loss of flesh and had a remittent form of temperature. On percussion distinct dulness was obtained, with distant tubular breath sounds on auscultation, showing that the tubes were full of secretion; after a paroxysm of coughing and free expectoration the resonance became almost tympanitic, while the breathing was more markedly tubular and accompanied by coarse metallic râles. In cases of bronchiectasis I think one of the first essentials in the treatment is to obtain a regular expulsion of the foetid material blocking up the tubes and poisoning the patient's blood. This I found ichthyol to accomplish in a very satisfactory manner. After a month's treatment the paroxysmal nature of the cough became less marked, while the percussion dulness grew less distinct. In three months the cough and expectoration were less troublesome, and the extremely foetid character of the latter was scarcely noticeable. The patients were now gaining weight and were taking more nourishment. The temperature had also ceased to show its original remittent character. Dr. W. Ewart of St. George's

Hospital has recorded³ two interesting cases of bronchiectasis treated by postural exercises and ichthyol. The patients gained considerably in strength and in weight under this combined method of treatment. These, taken in connexion with the two cases which were under my care, go to prove the value of ichthyol in this very troublesome disease.

I should also like to refer to the use of ichthyol in the treatment of chronic pulmonary fibrosis as seen in stone-masons (i.e., stone-hewers). In such cases the chief symptoms are dyspnoea, cough with expectoration which is specially troublesome in the mornings, and gradual loss of nutrition. As a rule, so far as my experience goes, the tubercle bacillus sooner or later finds an entrance to the weakened pulmonary tissue, so that patients of this class seldom attain the age of 45 years. I have treated several of these cases for a time with ichthyol. In every case I found that the cough became less troublesome and the expectoration easier and less in amount. The general nutrition of the patients was improved and appetite, which was very poor in every case, gradually returned. Unfortunately, none of my cases admitted of careful and systematic treatment being carried out, as they could not be made to realise the importance of continuing the medicine. Still, from the experience I have had of these cases I feel bound to say that ichthyol is a most suitable remedy. Ichthyol has likewise proved itself of value in one or two cases of chronic bronchitis in which I have tried it, while in acute cases where the cough and expectoration were causing trouble ichthyol has stopped the paroxysms and caused the expectoration to become less difficult to expel. In pneumonia the cough is always more or less paroxysmal in character, while the expectoration at the height of the disease is very tenacious and viscid. Here, then, one would naturally find in ichthyol a suitable therapeutic agent, but it would be impossible, for various reasons, to administer a sufficient quantity even in capsule form to patients so acutely ill. Hence I have contented myself with studying its action during the resolution stage of this disease. I think I am right in stating that ichthyol is of value if administered after the temperature has been reduced, as it then seems to hasten resolution and to bring about a return of the lung to normal.

It may now be advantageous to say a few words regarding the dosage and mode of administration of ichthyol. Generally speaking, the amount given varied from eight to 20 grains four times per day. I always gave it in capsule form, each capsule containing four grains of ichthyol. As a rule, in every case I started with two capsules four times a day and then gradually increased the amount until five capsules were taken four times daily, this being the maximum limit. In other words, each patient got from 32 to 80 grains per day. This may seem a somewhat large amount, but it was tolerated in most cases when the drug was administered in the form of capsules. To some patients I found that the appearance of the capsule was somewhat repugnant, and after swallowing one they had considerable difficulty in taking a second, as the mere act of placing it in the mouth seemed reflexly to produce nausea. Apart from this I have never observed any nausea or sickness produced after ichthyol capsules were taken into the stomach, although some of the opponents of the drug state definitely that ichthyol is not tolerated by the stomach.

Dr. Heinrich Fraenkel in his treatment of pulmonary tuberculosis by means of ichthyol (of which a full account is published in the *American Journal of the Medical Sciences* for September, 1897) employed a solution containing equal parts of ichthyol and distilled water flavoured with oil of peppermint. He found that the odour and taste of this mixture caused nausea and even vomiting in sensitive individuals but never produced any true gastric irritation. If, however, gelatin capsules are prescribed, then, as already pointed out, no such phenomena are observed. Certainly, in my opinion, ichthyol does not in the slightest degree cause any irritation of the gastric mucous membrane, or if in a few anomalous cases it does produce slight inconvenience it is not nearly so great as that induced by creasote. I think anyone who has had any experience with both ichthyol and creasote will at once admit the truth of this assertion. I can quite readily understand trouble arising if ichthyol be given in solution and hence I would insist that in all cases the administration by means of capsules be selected. Sodium ichthyol may be substituted

³ THE LANCET, July 13th, 1901, p. 70.

for ammonium ichthyol if thought desirable, but in my experience it is not nearly so active. It is more suited for gastric cases with fermentation than for patients suffering from pulmonary disease.

I now hurry on to consider the mode of action of ichthyol when given internally. How is it that ichthyol exerts a beneficial influence when administered to patients suffering from pulmonary disease? I shall endeavour to answer this question as clearly as I can and in as simple a manner as possible. I stated at the very outset of this paper that in some quarters the internal administration of ichthyol had fallen into disrepute. It has done so partly because it was given indiscriminately and in too small doses, but more especially, I think, because erroneous ideas have hitherto existed as to its mode of action. Thus Professor Amory Hare of Philadelphia states that it is largely upon the amount of sulphur it contains that the therapeutic action of ichthyol depends and he states the dose as being from one to ten grains in pill form. I hope to show you that this is by no means the whole truth regarding its mode of action. I conceive that it is possible for ichthyol to act in three distinct ways: (1) it may act as an antiseptic agent on the tubercle bacilli or other organisms that may be present in the diseased parts; (2) it may act upon the general nutrition of the body; and (3) it may act on the local lesion itself. Let us consider each in turn and see how far ichthyol asserts its influence in each of these specific directions.

1. *How far does it act as an antiseptic?*—I am afraid we must admit that its action in this direction is extremely feeble, if, indeed, it is at all in evidence. So far, I have been unable to obtain satisfactory proof that it does. I have found tubercle bacilli in the sputum of patients six months after they commenced taking ichthyol and who were still under treatment at the time of examination. In my opinion it is hopeless to attempt to ameliorate cases of pulmonary disease by giving drugs with a view to destroying the organisms present. Up to the present no proof has been brought forward in support of the contention that any known antiseptic has this power. So it is with regard to ichthyol. Taking tuberculous disease alone we must admit the truth of Dr. Kingston Fowler's statement that "the evidence at present available tends to show that no antiseptic agent can be administered internally in sufficient doses to kill the tubercle bacilli in the lungs." Hence I think it is absolutely absurd to place credence in statements that have been, and are still being, made to the effect that the organisms within the diseased area have been entirely destroyed by means of creasote or some of its preparations. I am aware that it has been wrongly claimed for ichthyol that it acts in this way. I do not for a moment believe that it does; or if it does act in this way careful personal observation has failed to detect any antiseptic effect. I for one certainly maintain that we must look for the real action of ichthyol in quite another direction.

2. *How far does it act upon the general nutrition?*—If gain in weight is taken as evidence of increased nutrition then we may say, with a feeling of confidence, that ichthyol beneficially influences the nutrition of the body. Appetite also improves during its administration. How, then, does nutrition come to be affected by ichthyol? Is this part of its action due to the amount of sulphur it contains? I answer "Yes" to a small extent, but not altogether. Ichthyol is more than sulphur. It is, as already pointed out, a definite chemical compound—a fact which seems to be quite lost sight of by Hare and others in considering its therapeutic action. It would require a very clever biological chemist, and one with very intimate knowledge of the chemico-physiological processes of the human organism, to say how it is that ichthyol comes to act upon nutrition. But the fact that it does so act is evident. I would say again that this action is not due to the sulphur present but simply to the sum total of the elements which go to make it up. It is highly probable, therefore, that ichthyol is of service in pulmonary disease by raising the nutritive force, and so increasing the resisting power of the tissues against the action of the specific toxins present; or, at all events, it may so modify them that they become less active and virulent. Now it is well known that sulphur exerts but little physiological influence over the general system. It certainly modifies nutrition in some way or other, but is mainly an alterative, whatever be the meaning attached to this vague and unscientific term.

3. *The contention that its chief mode of action is its specific action on the local lesion itself.*—Ichthyol acts as

a vaso-constrictor, and relieves and removes congestion and inflammation. This I maintain is its true mode of action when given internally in pulmonary disease. Most of you, I know, will readily allow that ichthyol is of service in reducing the local inflammation in cases of acute rheumatism and of erysipelas. In chronic skin affections it is also beneficial. So, too, in pelvic and peri-uterine exudations and inflammations much good results from its employment. How does it act in these cases? Simply by constricting the blood-vessels and reducing the inflammation and removing any exudation that may be present. So, too, in cases of pulmonary disease, it acts locally upon the inflamed and ulcerated surfaces and so produces very beneficial results. In pulmonary tuberculosis we find a process of inflammation going on. Ichthyol has the power of modifying this, and by virtue of its action as a vaso-constrictor further exudation and inflammation are prevented. Once we grasp the idea that ichthyol acts as a vaso-constrictor (and already it is granted that it acts thus when applied externally) the prejudice against its internal use will vanish. Allan Jamieson, referring to ichthyol at the dermatological section of the British Medical Association in 1898, quoting Leistikow, stated that in erysipelas ichthyol acted by initiating a process of contraction and as a reducing agent, so that "an agreeable feeling of coolness is at once experienced, the further progress is arrested, and simultaneously the fever and other disturbances abate. The treatment of erysipelas by strong ichthyol ointments affords one of the best examples of medicinal rest to an inflamed skin that can be cited." In gynaecological conditions, likewise, ichthyol is serviceable only in those cases where an inflammatory condition exists. In the *Edinburgh Medical Journal* for April, 1896, Dr. Robert Bell, physician to the Glasgow Hospital for Women, in writing on the subject of ichthyol in gynaecology sums up his remarks by saying: "We have a most reliable and almost uniformly potent therapeutic agent in ichthyol where inflammatory conditions of the uterine appendages exist."

From what I have already said you will not be surprised that I should differ from those who attribute the beneficial effects of ichthyol solely to the percentage of sulphur it contains and likewise from those who maintain that its action is largely an antiseptic one. My firm conviction is that it is distinctly an anti-inflammatory agent. Besides this action, however, I found that it is to some extent an antispasmodic and so relieves cough. This part of its action may be due to the contained sulphur, as the latter has the power "in cases of excessive bronchial secretion of ridding the lungs of mucus and relieving cough" (Hare). When sulphur is taken internally we know that it is eliminated from the pulmonary vessels, and so it must exert a certain amount of influence. But though ichthyol does contain sulphur I do not think we are warranted in attributing its beneficial effects in pulmonary disease merely to the presence of that element in its composition.

Although in the course of my remarks on the mode of action of ichthyol I have chiefly confined my attention to pulmonary tuberculosis I would ask you to remember that in bronchitis, bronchiectasis, and in fibroid disease inflammation is present to a greater or less degree. Ichthyol, therefore, is indicated in such conditions, and in these cases does good by reducing inflammation and by aiding in the removal of inflammatory products. The chief interest, however, centres round its internal administration in pulmonary tuberculosis. Whereas creasote, guaiacol carbonate, and other creasote preparations, when given in large doses, often produce gastric distress and frequently nausea and vomiting, ichthyol, when given in capsule form, never does so. Ichthyol is absolutely devoid of irritating properties so far as the gastric mucous membrane is concerned. In fact, I have often found it soothing rather than otherwise. In one of my cases creasote had previously been given with the result that the digestion was entirely upset and the appetite gone. When, however, ichthyol was substituted the stomach became less irritable and the patient's appetite gradually returned. Doubtless open-air treatment is the ideal to be aimed at in pulmonary tuberculosis, still, as already hinted at, there are many cases in which we can only, for a time at least, have recourse to drugs. In such cases ichthyol should be given a fair trial. To succeed we must give it in fairly large doses and we must persevere in its administration. Some authorities consider 12 months as the shortest limit of administration. My own experience goes to prove that definite results can usually be obtained after six months' persistent and careful treatment. Not infrequently cases fail to improve for

the reason that too small doses are given, or because the treatment is not carried out faithfully and systematically. Then, again, it is essential that we should select only such cases as are likely to benefit. One can hardly expect good results to follow the administration of ichthyol in cases where both lungs are riddled with tuberculous cavities. Here exhaustion and emaciation are so extreme that nothing can stay the onward and steady progress to death. To say that ichthyol is valueless because it has failed in such cases is to display our own ignorance in looking for success in such hopeless circumstances. Ichthyol is not a curative substance; it is a palliative agent. It acts by direct local influence on the areas involved, reducing inflammation and getting rid of the foreign matter present. It does not kill the organisms but it renders their toxins much less active and virulent.

I trust that these imperfect remarks will stimulate those of you who may not have given ichthyol a fair trial in pulmonary disease to investigate it more closely, and even if you see fit to differ from me in regard to its mode of action still I shall not feel that the time spent in coming here this evening has been spent in vain.

Edinburgh.

A Mirror OF HOSPITAL PRACTICE, BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv., Prooemium.

MOUNT VERNON HOSPITAL FOR CONSUMPTION, HAMPSTEAD.

A CASE OF HYDATID DISEASE OF THE LUNG;
SPONTANEOUS RECOVERY.

(Under the care of Dr. J. EDWARD SQUIRE.)

FOR the notes of the case we are indebted to Mr. Sydney R. Williams, senior resident medical officer and registrar.

The patient, a well-nourished single woman, aged 22 years, was admitted to the Mount Vernon Hospital, Hampstead, on Feb. 11th, 1903. On Feb. 9th, whilst teaching in school, she had a severe fit of coughing which lasted for about 20 minutes and brought up a piece of membrane of about the "size of the palm of the hand" which at once relieved the cough and the choking sensation which accompanied it. The previous history was that she was quite strong until the early part of 1901 when she was operated on for tuberculous disease of the ankle-joint. A little later in the year whilst singing she "felt something give way in her chest" and on the next morning she began to cough and brought up about three ounces of bright-red blood and afterwards some blood-stained froth. In November, 1901, she had influenza with pneumonia and pleurisy and was ill for six weeks and again brought up bright-coloured blood several times. She resumed work after Easter, 1902, feeling quite strong. She occasionally expectorated blood-stained phlegm and in December, 1902, again brought up some pure blood and was sent to see Dr. J. E. Squire. She continued at work until Feb. 9th when after a severe fit of coughing she brought up a large piece of membrane.

On admission to hospital she was still coughing up shreds of membrane. She had never been out of England and careful inquiry failed to elicit evidence of any fluid ever having been expectorated or vomited. On examination deficient movement and expansion were noticed on the right side. There was dulness on percussion above the right clavicle extending down to the upper border of the second rib and in the supraspinous fossa. Over this area the breath sounds were bronchial in character and vocal resonance was increased, but there were no adventitious sounds heard. At the right base there was dulness, commencing above at the sixth rib in the line of the angle of the scapula and extending down to the lower border of the ninth rib. This patch of dulness extended to within two inches of the spine and outwards as far as the posterior

axillary line. Vocal fremitus was absent over it, except over a spot of the size of a crown-piece immediately below the angle of the scapula in the eighth intercostal space. In this small area the breath sounds were distinctly tubular, vocal resonance was bronchophonic, and whispering pectoriloquy was present. Over the rest of the dull area the breath sounds were absent as well as vocal fremitus and vocal resonance. Examination with the fluorescent screen showed a deep shadow in the position of the dull area with a lighter spot at its lower part corresponding with the

Posterior view. *a*, Dulness in supra-spinous fossa. *b*, Upper level of dulness at base. *c*, Area of bronchophony and pectoriloquy.

small area over which the breath sounds were tubular. The patient continued to cough up shreds of membrane for a week after admission, until Feb. 18th. On one occasion a piece about two square inches in size was coughed up and this was distinctly laminated in structure. In no instance were any daughter cysts or hooklets discovered, though careful search was repeatedly made. On March 3rd the breath sounds were more tubular and much louder, pectoriloquy was more marked below the angle of the scapula, and the area of dulness had considerably diminished. The patient remained in the hospital until March 24th but no shreds of membrane were coughed up after Feb. 18th.

Remarks by Dr. SQUIRE.—The patient was sent to me on Dec. 24th, 1902, by Mr. E. Waggett because she had for some time occasionally expectorated blood-stained frothy mucus and bright blood. On physical examination the right shoulder was found to be lower than the left, due to the manner of standing. There was diminished respiration movement, with dulness and absence of breath sounds, vocal fremitus and vocal resonance at the right base both front and back. The heart sounds were conducted round the base. Below the right clavicle the breath sounds were tubular in character and the expiratory sound was prolonged. There were no râles. The signs at the base indicating fluid, with a history of previous pleurisy, I naturally concluded that there was some unabsorbed pleural effusion and the conduction of the heart sounds suggested thickened pleura. With a tuberculous history and some tubular breathing at the apex I suspected a tuberculous pleurisy and advised that no attempt should be made to remove the fluid by aspiration. I also asked the patient to take her temperature regularly morning and evening and to bring the chart to me in a month's time. A somewhat irregular chart lent support to the diagnosis of tuberculosis. On Feb. 10th Mr. Waggett sent me some pieces of thick laminated membrane which the patient had coughed up on the previous day and which were apparently portions of the wall of a hydatid cyst. The nature of the case was now clear and as the patient was in some danger of suffocation if any pieces of membrane became fixed in the trachea or the larynx, I had her admitted to the hospital as an emergency case. Her history whilst in the hospital is detailed above by Mr. Williams and I saw her again on April 18th when she expressed herself as feeling perfectly well and certainly looked the picture of health.

Hydatid disease is comparatively rare in this country and a record of any case would be justified by this circumstance alone. There are, however, some special points of interest