honeycomb, but by degrees these become broken up by absorption, and then the remnants of the normal hepatic tissue appear as islands on the cut surface of the liver.

The microscopic characters of the cysts when examined in the early stages prove that they arise in the bile canals, but no investigator has succeeded in ascertaining the cause of this disease, or in associating it with obstruction to the escape of bile. The most remarkable circumstance connected with general cystic disease of the liver is its occasional association with general cystic (congenital) disease of the kidneys, a condition due to ectasia of the uriniferous tubules. The cause of this cystic disease in the liver is even more uncertain than that in the kidneys.

This general cystic disease of the liver causes great enlargement of the organ, but is painless, causes no jaundice, presents no diagnostic features, and comes invariably as a *post-mortem* surprise. On the other hand, it will be seen that the solitary cyst, though obvious during life, has so far been a clinical puzzle.

2. SOLITARY CYST OF THE LIVER.

All writers are unanimous that a solitary non-parasitic cyst of the liver is rare; nevertheless it occurs, and causes, when large, great perplexity in diagnosis.

The best example which has come under my notice occurred in a lady, aged 75 years, who was placed under my care by Mr. Charles J. W. Pinching of Gravesend. It had been noticed five years, and appeared in the epigastrium as a swelling about the size of an apple. This lump grew slowly and painlessly until it attained the dimensions of a man's head and became troublesome. Clinically it resembled a tumour, or cyst, growing between the layers of the mesentery, and was regarded by one physician who saw the patient as an ovarian cyst. When exposed by a free incision in the middle line of the abdomen it appeared as an extremely thin-walled translucent cyst growing out from the lower border of the left lobe of the liver, and without any communication with the gall bladder, which was normal. The peritoneal investment and the capsule of the liver were continuous with the cyst wall. The cyst contained 2 pints of brownish neutral fluid, specific gravity 1007, containing a small quantity of blood, scanty solid matter with negative characters, and free from sugar. By incising the capsule at its junction with the liver, I succeeded in completely enucleating the cyst. The bleeding vessels in the raw surface of the liver were easily controlled by ligatures of thin silk. The flaps consisting of liver tissue were carefully brought together by means of silk sutures, and the apposition of the flaps was made more complete by a continuous suture along the free edge of the liver. A thin gauze drain was introduced, and the incision closed with a single layer of silk sutures. The patient quickly recovered. The microscopic examination of the cyst wall, which was made by Mr. Cuthbert Locker, furnished the following facts: Sections taken from the cyst wall where it joined the liver exhibited small loculi invested with epithelium. Many biliary ducts were also detected lined with cubical cells. The main cyst-wall consisted of fibrous tissue, and its inner surface presented spaces covered with flattened epithelium. In some parts of the cyst-wall liver substance could be distinguished.

This large cyst in all probability arose from the dilatation and fusion of bile ducts. In general characters, and especially in its relation to the free border of the liver, the cyst corresponded exactly with that represented in Fig. 2. In this excellent example the capsule of the liver passes over the cyst, the wall of which is composed of fibrous tissue lined with a regular layer of flat epithelial cells. The fluid in this cyst was clear, alkaline, straw-coloured, specific gravity 1008, and contained much albumen and chlorides, but not a trace of bile.

The literature of solitary non-parasitic cysts of the liver is very scanty, and the few records have been collected by Doran, who has also described an example under his own care which he treated by incision and drainage. He was not able to obtain any portion of the cyst wall for histological examination, and as far as my reading goes the specimen which forms the subject of this communication is the first which has been examined in this way by a competent pathologist. It is difficult to explain the origin of the solitary hepatic cyst, but attention may be drawn to the following points: The six examples of which we possess records occurred in adult women. It is noteworthy that the liver of many women presents along its free border a variable strip of thin atrophied tissue which looks almost white in contrast with the dark hue of the normal liver. Many observers, myself

among them, attribute this atrophy of the free border of the liver to the pressure of stays; whether this be true or not, it is in this pale thin strip of liver that the solitary non-parasitic cyst arose in my patient, and it is due to the dilatation of the bile ducts in this tissue; the dilated ducts subsequently fused to form larger spaces, much in the same way that cystic spaces arise in a cavernous naevus from the fusion of adjacent blood vessels composing the primary naevus.

Fig. 2—A cyst (non-parasitic) growing from the free border of the liver. Obtained *post mortem* from a woman 38 years of age. (Museum of the Royal College of Surgeons.)

In regard to treatment the method I adopted appears to be novel and radical, but it was justified by a speedy and satisfactory convalescence, and this is more encouraging when compared with the method of incision and drainage adopted by other surgeons. Thus in Doran's patient the sinus persisted even seven months after the operation, and Müller's patient, although much of the cyst wall was cut away at the time of the operation, required four months to heal.

Special treatises on hepatic diseases make no mention of the solitary (non-parasitic) cyst of the liver, but there is now sufficient evidence to show that it is a clinical entity and may require surgical treatment. It is noteworthy that in the few cases which have been recorded the patients were women. Some cysts contained a clear fluid, one bile (Doran), and others blood.

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SOME REMARKS ON

A CASE OF ACTINOMYCOSIS OF THE LUNGS.*

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THE case which I wish to bring before your notice to-day is, I venture to think, of considerable interest, though also of considerable rarity—it is one of actinomycosis of the lungs. I wish to draw attention to it because I believe that these cases, though rare, are probably by no means so rare as is supposed. It is probable that such cases are often mistaken for tuberculosis, and may die and be buried without the mistaken diagnosis ever being corrected. The following is the account of the present case:

The patient is a healthy-looking young farmer in good circum-

* Read before the South Midland Branch of the British Medical Association.

stances, aged 32. He came to see me in private a few weeks ago, and gave the following account of himself:

History.—There was no family history of consumption. He had enjoyed good health, but for the last two years had had a certain amount of cough, which seemed to be increasing latterly. About three months ago he coughed up what he described as a small piece of bone. On cross-questioning it seemed probable that this was really a lung stone, a concretion of lime-salt formed in some chronic cavity. He also noticed that the sputum, which he coughed up in small quantities, was of a peculiar colour and, as he thought, contained blood. Apart from these symptoms he had noticed no signs of ill health except an unaccountable feeling of lassitude at the end of his day's work.

State on Examination.—The patient looked healthy and well developed. His pulse was 66, quiet and regular; his respiration was not hurried, and there was no elevation of temperature. His weight was 118 lb., about his normal weight. His chest was well formed, and moved well everywhere on respiration. I could detect no abnormal physical signs anywhere, with the exception of a very slight and questionable impairment of percussion resonance at the right apex both above and below the clavicle, and a few still more doubtful crepitations on inspiration after coughing in the same regions. The heart was normal; nothing abnormal was detected in the abdomen, and the urine was acid, of specific gravity 1024, and contained no albumen or sugar.

Diagnosis.—The case was thus rather indefinite and obscure, but the probable diagnosis seemed to be that the patient was suffering from pulmonary tuberculosis. It seemed likely that he had a small obsolete lesion, accompanied by the formation of a small cavity, in the substance of the right apex, and that it was too small and deeply situated to give characteristic physical signs. From this cavity probably the lung stone had been coughed up, and in connexion with this focus there was probably some slight recrudescence of the disease taking place.

Further Examination.—To clinch this diagnosis, I asked that a specimen of the sputum should be sent. When it arrived it struck the eye at once as being somewhat peculiar. It was thick, tenacious, not nummulated, and of a peculiar colour, like very pale anchovy sauce. On spreading it out on a glass plate to select a suitable piece to stain for tubercle bacilli, I noticed scattered here and there some minute whitish-yellow or almost white bodies about the size of half a pin's head. On removing one of them to a slide with a needle, it showed itself to be a compact and tenacious mass, unlike the little masses of caseous matter or fatty-degenerated cells which one sometimes finds in tuberculous sputum. On squashing it between a cover glass and slide it presented the appearance of a small mass of tallow or paraffin so characteristic of an actinomycotic body. I could not detect any clubs, but on staining the body by Weigert's modification of Gram's method there was found to be a copious feltwork of mycelium, accompanied by a number of spores or spore-like bodies. Furthermore, there were no tubercle bacilli to be found in the sputum.

The case was thus shown to be one not of pulmonary tuberculosis, which appeared to be the most likely diagnosis, but of pulmonary actinomycosis, or, at any rate, of infection with a streptothrix body closely allied to the streptothrix actinomycotica. So much for the present case.

It must be regarded as one of pulmonary actinomycosis, but in a comparatively early stage and with so few abnormal physical signs that there was nothing characteristic about the case, and even a suspicion of the true diagnosis would have been impossible without a careful examination of the sputum. The following remarks, therefore, which I wish to add on pulmonary actinomycosis in general must not be regarded as based on the present case, but on two others, much more advanced and characteristic, which I had the good fortune to see and study at the Brompton Hospital for Consumption and Diseases of the Chest, and on the general literature of the subject.

PATHOLOGICAL CHANGES.

To understand the various forms of pulmonary actinomycosis clinically one must first discuss briefly the pathological changes which take place in actinomycosis. These changes are much the same whatever part of the body the fungus affects, but they are undoubtedly best seen in the liver and lung.

When the actinomycotic fungus begins to grow in any part of the organism it sets up irritation. The result of this is that there is a proliferation of cells round the fungus, and a nodule or tubercle is formed. Then two further phenomena, as a rule, happen. The cells in the immediate neighbourhood of the organism undergo degeneration of a fatty and granular nature, and liquefy to form a fluid more or less of the nature of pus, while the cells at a greater distance organize themselves to form a more or less effective barrier of granulation tissue. Hence you get formed, in the liver and lung more especially, a kind of reticular network or spongy tissue composed of a multitude of little cavities communicating with one another, due to the liquefaction of the cells above described, and bounded by the fibrous walls, due to a less degree of irritation at a further distance from the organism. If the degree of irritation caused by the organism is more extreme, and more especially if its infection is complicated

by a secondary infection by pus-forming organisms, then the results will be somewhat different, but only different in degree. There will be more liquefaction and formation of pus while less fibrous tissue will be organized, and hence the abscess cavities will be larger and the destruction of the tissue greater.

On the other hand, if the organism is feeble in virulence, if it is uncomplicated by secondary infection, or if the tissues of the animal are specially resistant to it, then there will be much less destruction and liquefaction and more new formation of fibrous and granulomatous tissue, so that tumours of considerable size may be formed, such as so frequently occur about the jaws of cattle, and which used to be considered to be of a sarcomatous nature. Hence two types of the disease have been described: (a) a new-formation type, and (b) an inflammatory type. The new-formation type is most common in cattle, and is readily cured. In man it rarely occurs except in infection of the tongue. The inflammatory type is most common in man; it is the more virulent of the two, and much less amenable to treatment.

It will be seen from this description that the pathological changes in this disease in many respects closely resemble those of tuberculosis. If the lesion, however, be examined more closely, there are important minute differences. It would be tedious here to go into this matter thoroughly, and I will merely summarize the characteristic differences in the two following tables:

ACTINOMYCOSIS.	TUBERCULOSIS.
Usual mode of spread by direct continuity irrespective of anatomical boundaries.	Anatomical boundaries usually respected.
Lymphatics and lymphatic glands rarely affected.	Lymphatics and lymphatic glands almost always affected.
Lesions highly vascular; vessels patent.	Lesions avascular; vessels blocked by proliferative endarteritis.
Fatty and granular degeneration of cells, giant cells usually absent.	Coagulation, necrosis, and caseation of cells; giant cells usually present.

The only point which I wish here to emphasize is the spread of actinomycosis by direct continuity irrespective of anatomical boundaries, because it is very important clinically.

When the disease has lasted any length of time in the lung, liver, or anywhere else, it always spreads to and involves neighbouring organs and tissues, and finally generally ulcerates through to the surface of the body by fistulous tracts and sinuses.

This is not as a rule the case in tuberculosis. Tuberculous ulceration of the lung, for example, rarely ever passes by direct continuity from one lobe to another of the same lung, much less often does it pass through the pleurae, erode the ribs or spine, and ulcerate through the skin. Hence, in any case which we may meet which simulates tuberculosis, if there are sinuses present communicating with the diseased internal organs, we ought, I think, to have present in our minds the possibility that we are confronted by an actinomycotic lesion.

CLASSIFICATION.

This short consideration of the general pathological changes which take place in actinomycosis enables me to proceed to the various forms of pulmonary actinomycosis that may occur and their classification. An attempt has been made to classify actinomycotic diseases of the lungs simply according to the amount of tissue involved.

This is Israel's classification,¹ and he distinguishes three degrees:

1. Lung alone invaded.
2. Pleurae and neighbouring viscera invaded also.
3. Additional invasion of the thoracic wall.

According to this classification, which is convenient but has no special scientific basis, the present case would fall into the first category.

Another attempt has been made to classify the cases according to the anatomical mode of invasion. Thus Pic² and Nausac³ have divided pulmonary actinomycosis into (1) broncho-pulmonary, and (2) pleuro-pulmonary forms. According to this description the case would fall into the broncho-pulmonary category. Pic and Nausac's classification, though possibly more scientific than that of Israel's, does not, however, include all forms.

Canali⁴ described a case of chronic bronchitis associated with the expectoration of actinomycotic bodies. The case recovered, and has remained unique, but if we are to accept it we must add a bronchitic form, and we must certainly add a miliary form due to blood infection.

Dr. Frederick Taylor⁵ has described a case in which

actinomycosis of the liver was complicated with miliary foci of actinomycosis in the lungs, apparently entirely due to blood infection.

We should, then, have four categories: (1) Bronchitic; (2) broncho-pulmonary; (3) pleuro-pulmonary; (4) miliary or haemic. Or Karowski's⁸ classification may be accepted: (1) Catarrhal form on surface of bronchial mucous membrane; (2) destructive form in three stages: (a) Deeper strata of bronchi producing peribronchitis; (b) involvement of pleura, with haemorrhagic exudation and signs very often like an empyema; (c) metastatic formations about the body, with symptoms of general septicaemia.

As regards the modes of infection of the lung, the fungus may be brought by the blood stream, be airborne, or spread directly from neighbouring viscera. In the miliary variety of the disease the mode of infection is, of course, haemic. In the pleuro-pulmonary variety the mode of infection is certainly sometimes by direct extension from neighbouring viscera, as in one of the cases I saw at Brompton, where the disease apparently started in the liver and spread through the diaphragm to the base of the right lung.

But in this form of the disease probably, and certainly in the broncho-pulmonary forms of the disease, the fungus finds its mode of entry generally by the air passages. Many cases have occurred at harvest time after threshing, as Illich⁷ has shown. Israel,⁹ however, disputes this view, and thinks that most cases become infected through the alimentary canal, as happened, for example, in a case of Soltmann's,⁹ when an infected head of barley stuck in the oesophagus of a child and caused infection of the lung secondarily.

DIAGNOSTIC POINTS.

As regards the symptoms and diagnosis of the disease, it can be readily understood from the present case how impossible the diagnosis may be unless the characteristic fungus is looked for and found. The great source of confusion is, of course, pulmonary tuberculosis.

In both pulmonary actinomycosis and pulmonary tuberculosis the patient is the subject of a chronic pulmonary disease, characterized by periods of exacerbation and comparative quiescence, accompanied as the disease advances by general constitutional disturbances, with extreme wasting.

In both cases the pathological processes, though showing characteristic differences, are very closely analogous. Nevertheless, in the more advanced cases of pulmonary actinomycosis, at any rate, reasons may be found, from the symptoms and physical signs, for suspecting that the case is not a tuberculous one.

As regards the situation of the lesion, it is much more often basal than apical. Israel even went so far as to say that it always began basally, but this is not the case. The situation of the lesion in the present case is probably in the right upper lobe, and that was also the case in one of the two patients I saw at Brompton. Illich¹⁰ found that in fifty-eight cases of pulmonary actinomycosis, nine had begun in the upper lobe. It must also be remembered that pulmonary tuberculosis may begin basally. Nevertheless, a basal situation is a distinct point in favour of actinomycosis.

A diagnostic point, however, of far more importance is the fact on which I laid stress in speaking of the pathological processes of actinomycosis, that the disease always tends to spread by direct continuity through everything in its way until it forms a subcutaneous abscess and discharges by fistulous openings through the skin. For example, in one of the cases I saw at the Brompton Hospital, the disease, while yet in a comparatively early stage, had eroded the ribs, burrowed through the thick layers of the muscles of the back, and presented as a subcutaneous abscess in the interscapular region. Such a process only occurs very rarely in pulmonary tuberculosis, though of course a subcutaneous abscess associated with pulmonary tuberculosis may arise from an independent focus of disease. In the case just mentioned, it was thought that the interscapular abscess was due to caries of the spine.

Owing to the progress by direct continuity, it need hardly be said that the pleura is generally involved. Some stress has been laid upon this from the point of view of diagnosis, but it can hardly, I think, give much help, as involvements of the pleura are extremely common in tuberculosis. What is apparently much more characteristic is involvement of the pericardium. It was not involved in any of the cases I have seen, but Poncet and Berard¹¹ say it is involved in a quarter of the cases.

Excavation.—This does not take place to so great an

extent in pulmonary actinomycosis as in pulmonary tuberculosis.

Haemoptysis.—This, again, is also comparatively rare. This may appear surprising when we consider how much more vascular the lesions of actinomycosis are than those of tuberculosis. It is probably due to the less tendency to excavation and ulceration in the former disease.

Pain, even of a severe character, is common in actinomycosis when it has spread to the pleura and neighbouring tissues. Pleuritic pains are, of course, not uncommon in tuberculosis, but do not evince the same persistency and severity.

Temperature.—This in actinomycosis is more irregular and generally less elevated, and does not exhibit in so marked a degree the hectic type as that of tuberculosis.

The sputum, if it contains the actinomycotic bodies, is, of course, absolutely characteristic. Apart from these, early fetor has been considered characteristic, but it was not present in any of the cases I have seen.

The tuberculin reaction is given by actinomycosis as well as tuberculosis, as has been shown by Illich¹² and Friedrich.¹³ As a minor point, I may mention that the glands are very rarely involved in actinomycosis. Furthermore it must be remembered, though this Illich denied, that pulmonary actinomycosis and pulmonary tuberculosis may coincide. Two such cases have been recorded by Littledale¹⁴ and Eichhorst.¹⁵

I have not seen such a case myself, but in a case of Mr. Percival's at the Northampton Hospital, suffering from actinomycosis of the liver, there was found also a patch of caseous tubercle in the lungs.

Poncet and Berard¹⁶ sum up the diagnostic points as follows:

In favour of actinomycosis, the absence of constant evening rise of temperature, with the occasional inverse type almost constant in tuberculosis; the integrity of the apices and the predominance of the lesions at the bases (8 times in 10), the evolution of pleural effusion independently of the state of the lung; the severe pain and the slight dyspnoea; the exceptional rarity of haemoptysis and nummular expectorations: the early fetor of the expectoration before signs of excavation; the absence of enlarged axillary and cervical glands; and, lastly, the relative integrity of the other functions and the general state of health.

It is, I think, useless to labour too much diagnostic points. The main thing is to have present in one's mind the possibility of actinomycosis when an anomalous and insidious case of lung disease does not show tubercle bacilli in the sputum, and especially when the disease is basally situated or complicated with the formation of subcutaneous abscesses. The two other main thoracic diseases which may give rise to a suspicion of actinomycosis are chronic empyema and intrathoracic new growth. Of chronic empyema, one can only say that actinomycosis often evinces itself as a chronic empyema, and the diagnosis must rest on the discovery of the fungus. A diagnostic point in favour of actinomycosis is that when one opens what appears to be an empyema necessitatis, and expects to find a large cavity and quantities of pus, one finds no proper cavity at all, and the pus oozing out of spongy tissue. The symptoms of intrathoracic new growth may closely simulate actinomycosis, but in the latter one does not get the characteristic "gooseberry-jelly" expectoration that one so often gets in cancer of the lung, nor in the former do subcutaneous abscesses occur.

Of other rarer diseases, gangrene of the lung may give rise to confusion, and also a hydatid cyst of the lung or pleura, especially if it suppurates and discharges into a bronchus. Pulmonary aspergillosis, again, may occur,^{17 18} and also infection by other streptothrices.¹⁹

TREATMENT.

The treatment of pulmonary actinomycosis is by iodide of potassium in large quantities, by eucalyptus oil, and, when possible, also by surgical interference.

The prognosis is, as may be supposed, very gloomy. Illich²⁰ says the result is always fatal. Naussac²¹ gives 28 per cent. of cures in the broncho-pulmonary form of the disease and 25 per cent. in the pleura-pulmonary form, but his statement has not been borne out by others. Canali's peculiar case, however, recovered,²² and Rührh reports a case of Glentworth R. Butler's, which was cured, at any rate for the time, by eucalyptus oil in spray and in capsules.

About the prospects of the present case I can as yet say little. It has been diagnosed while still presumably in a very early condition, and may therefore have a better chance of recovery. The patient has now been under treatment eight

weeks, and appears to have markedly improved. He feels stronger and better in every way, and has gained $7\frac{1}{2}$ lb. in weight.*

I cannot now detect even the obscure signs that I thought I noticed at first. The sputum has greatly diminished in amount, but still contains the streptothrix bodies, and the patient has also coughed up two more of these concretions, one of which I show you. It is a hard, brittle irregularly-formed mass of lime salts apparently, almost the size, though not the shape, of a cherry-stone. It is blood-stained, and has a fetid, unpleasant smell.

As regards treatment, I should mention that the patient is having increasing doses of iodide of potassium, at the present moment 25 gr. three times a day, and also 6 minims of eucalyptus oil three times a day in capsule. He is also having much fresh air and nourishing food.

Lastly, I should like to say a word as regards the incidence of pulmonary actinomycosis, especially in the British Isles. Last summer I endeavoured to collect all the cases of actinomycosis reported in the British Isles. A few have been reported since, which I have not collated, and no doubt many cases have occurred which have never been reported, but the following figures probably represent pretty accurately the relative incidence of actinomycosis on different parts of the body in this country:

Total Number of Cases, 79.

Head and neck, 27, or 34.17 per cent.	{	Face and neck ...	24
Thorax and lungs, 12, or 15.18 per cent.		Tongue ...	2
		Brain and orbit ...	1
Abdomen, 39, or 49.3 per cent.	{	Liver ...	20
		Intestinal tract, peritoneum, and abdominal wall ...	16
		Bladder and prostate ...	2
		Generative organs ...	1
Lesion not stated, 1.			

Rübrah in 1899 summed together all the cases at that time reported throughout the world, and produced the following table:²³

Total, probably counting several twice, 1,094.			
Head and neck ...	...	604 (56 per cent.)	
Digestive tract ...	...	223 (20 per cent.)	
Pulmonary ...	...	164 (15 per cent.)	
Skin ...	...	26 (20 per cent.)	
Doubtful ...	...	63 (6 per cent.)	

The incidence of lung cases in the British Isles, then, closely corresponds with that obtained throughout the world.

I feel, perhaps, that I ought to apologize for again bringing before this Society so rare a case instead of talking about something of more practical importance. However, I feel sure that both cases of actinomycosis and of the obscure disorder allied to it are much commoner than is generally supposed, and that they are frequently passed over unrecognized. It is, at any rate, very noticeable that when one case has occurred in a neighbourhood, more are generally reported from time to time, indicating that where observation is on the alert then such cases are not missed.

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* In the interval between writing this paper and its publication the patient has apparently made a complete recovery. For the last five months he has had no cough or expectoration and appears in robust health. He coughed up four lung stones in all.

BEQUESTS TO MEDICAL CHARITIES.—The late Mr. Thomas Sheldon of Clevedon, Somerset, whose will has now been proved, bequeathed £500 each to the Bristol Royal Infirmary, the Bristol General Hospital, and the Hospital for Incurables, Putney, and £200 each to the Bristol Royal Hospital for Children and Women, the Bristol Eye Hospital, the Clevedon, Tickenham, and Walton Hospital, the Clevedon Convalescent Home, and the Weston-super-Mare Sanatorium.

NOTES OF AN EPIDEMIC OF INFLUENZA OCCURRING IN THE MIDLOTHIAN AND PEEBLES ASYLUM.

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THIS asylum has been singularly free from influenza, and, in the course of its thirty years' history, there has been only one previous outbreak. During the great epidemic of 1890 there were 8 cases; 7 of these occurred amongst the staff, 6 of them females, and the eighth case, regarding the nature of which there was considerable doubt, was that of a male patient. The reason for this immunity hitherto is difficult to find. The situation of the asylum is one of the most exposed in Scotland. Standing near the east coast, 700 ft. above sea level, and with no shelter from the north or north-east, it has a very trying climate for seven months in the year. The ground is damp on account of its clayey nature, and the temperature variations are so sudden and so marked, that the female patients and staff are able to spend only a little while each day out-of-doors in winter. During the fifteen years that have elapsed since the previous epidemic there have been no sporadic cases even of typical influenza.

CAUSE OF PRESENT OUTBREAK.

The conditions that prevailed at the commencement of the present epidemic were:

1. The past three winters have been very open. There has been little or no frost this past winter except during the night, and after the first week in February the temperature was much above the normal, while there was plenty of sunshine. These weather conditions allowed of the patients going out more than usual, with the result that the able-bodied have all been in more than the average good health.

2. During the past four years the wards, which were previously heated by open fires, have been heated by hot-water pipes. The temperature in the wards, therefore, has been always high compared with the outside temperature; and often, on account of a difficulty in the system of regulating, much too high. This probably rendered the patients who go about from ward to ward in working garb, such as kitchen, laundry, and ward workers, more susceptible to cold. In other respects the conditions have been changed of late years, and in the matter of food, breathing space, etc., the patients are vastly better off than they were formerly.

3. The proportion of aged and infirm patients in the asylum was very high this winter, particularly so on the male side, where fifty per cent. of the patients were so designed. It was, however, the working patients chiefly who took the disease, and the male side suffered comparatively little compared to the female side.

4. Influenza in epidemic form was very prevalent in Edinburgh, whither some one of the staff went on leave every day.

GENERAL STATISTICS.

Sixty female patients were affected out of a total of 170. Out of a female staff of 26, there were 18 affected. On the male side, of 168 patients, only 9 took the disease, and only 2 attendants out of 19. In the female hospital there were at the time of the outbreak 46 patients, of whom 22 were in bed, on account chiefly of old age or bodily weakness. Of the 46, only 6 were attacked, while of the 6 nurses 5 were affected. In the three other wards on the female side where the patients were able to go about, most of them working, about half took ill in each ward. Of the 60 cases amongst female patients, 25 were laundry or kitchen workers, 30 were strong women doing domestic work in wards and dormitories, or working in the sewing room. Only 5 of the total could be said to be in indifferent health, and of these only 1 was in bed. Of the female private patients who occupy the same wards as the others, but have a better dietary and do no work that takes them out of the wards, and who may in some instances be more warmly clad when out walking, only 4 were affected out of 25.

SOURCE AND SPREAD OF THE INFECTION.

Although the bacillus was undoubtedly carried from ward to ward, it seemed to attack those who were working outside the wards or were in "open-door" wards, and could go out and in to cold corridors as they pleased. In a paper on an epidemic in Morningside Asylum,¹ Dr. Robertson and Dr. Elkins state that the males were slightly more subject to the disease than the females.