that in all the digestive tract was affected. In three (Cases III, IV, V) there was a definite history of the eating of ears of barley or corn, and in two others (I, VI) this was probable, I having helped at harvest, and VI being a farm labourer. Of Case VII, in which symptoms of typhlitis began in February, nothing can be said as to the mode of infection; but of the six others it should be noted that in five the symptoms commenced in the late summer or autumn months—that is, soon after the harvest; while the remaining patient (Case V) had eaten barley and wheat at various times of the year. The suspicion which other observers have thrown upon uncooked cereals as a source of infection in actinomycosis is therefore to some extent supported by these cases.

In conclusion, I must thank my colleagues, Drs. M. O. Taylor and Chicken, for permission to make use of their cases, and to Drs. Littlewood, Sharp, and Simpson for valuable information.

APPENDIX.

The following case, seen since the above paper was written, is of interest especially in regard to the mode of infection.

Mr. B. was brought to me on November 27th, 1895, by Dr. Littlewood, with a swelling in his neck. The following was the history of the case:

Towards the end of September, 1895, while out shooting in Ross-shire, the patient ate some grains of oats, and became aware that one stuck in the right tonsil. Efforts were made to dislodge it, but a few days later the tonsil swelled, and in the course of a week suppurated and discharged matter. Under treatment the inflammation subsided, and for a fortnight the patient felt no discomfort. During the last week of October, however, he noticed a swelling just under the angle of the jaw on the right side. The lump, which was but slightly painful, slowly spread down the neck, so that at the date of his visit to me it appeared to reach the thyroid cartilage. The original swelling under the jaw had, however, by this time diminished in size, and I could feel here but a kind of thickened cord. This seemed to pass upwards inside the jaw, and downwards was continuous with an irregularly oval mass about 2 inches in its long diameter. This mass was firm and slightly brawny. It did not implicate the skin, which was of normal colour and was not very tender. Its lower end reached to the position of the top of the right lobe of the thyroid gland, but this organ appeared normal. The pharynx, larynx, mouth, and teeth were normal.

From the history of the infection, the mode of growth, and the characters of the swelling I gave the opinion that the case was probably one of actinomycosis. We arranged to immediately give and push iodide of potassium, but, in view of the contiguity of important structures to the growth, not to postpone operation for more than a week or two if the drug failed to produce marked benefit. Mr. A. R. Anderson, who saw the case two days later, entirely agreed with the diagnosis and proposals for treatment. Dr. Felix Semon and Mr. Butlin also thought the diagnosis not improbable. The patient took iodide of potassium for a fortnight, reaching a dose of 100 grains per diem, but no distinct improvement was observed. The skin became reddened, infiltrated, and brawny, and the growth spread somewhat towards the front of the thyroid cartilage, at which spot it became softer. No rise of temperature was observed. Accordingly, on December 12th Mr. Anderson operated, making a long incision down the side of the neck and a transverse cut across the front of the thyroid cartilage. The latter at once opened an abscess about the size of a walnut, and in the pus which escaped numerous spherules of actinomycetes were found. The rest of the swelling consisted of granulation tissue, which was freely scraped away, some portions of sternomastoid muscle being removed and the skin scraped quite thin. The wound was washed with perchloride of mercury lotion (1 in 2,000), dusted with iodoform, and stitched up, with a drainage tube at its lower end. The patient made an uneventful recovery from the operation; there was but little discharge, and the tube was removed on the second day. With the exception of a temporary oedema of the edges of the transverse incision about a fortnight after the operation, there was never any appearance of a recurrence, and this was a false alarm. He took iodide of potassium, in daily doses of $\frac{1}{2}$ drachm, for a month after the operation, and is now perfectly well.

The case indicates the advisability of early surgical interference in this disease, as some extension certainly took place during the fortnight of medical treatment. Rydygier² has recently reported one case nearly cured by the injection of pot. iodide into the swelling, and another completely cured after taking 150 grammes of iodide; but, when operation is feasible and important structures are endangered, it is clearly right to use the drug only as a supplementary therapeutic agent.

THE PROGRESS AND TREATMENT OF A CASE OF ACTINOMYCOSIS COMMENCING IN THE VERMIFORM APPENDIX.

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As is usual in actinomycosis, the disease in this instance existed for a long time before it could be demonstrated.

During 1892, at intervals of about three months, the patient, a strong

man, had three attacks of twisting pain over the abdomen. The pain became localised in the right iliac fossa. Each seizure was more definite than its predecessor. The breath was very offensive, and the patient became more irritable, thinner, and apathetic. There was no abnormality in the urine.

In February, 1894, there was a recurrence of the symptoms, and now there was no doubt that he was suffering from appendicitis. Three colleagues who examined him came to the same conclusion. The disease lasted about three weeks, and then the patient apparently recovered.

In May, 1894, he had another attack. A swelling on the right side appeared, and reached from the anterior extremity of the eleventh rib to the middle of Poupart's ligament. Symptoms pointed to matter formation, and on several occasions quantities of pus and gelatinous material were discharged through the bowel. A boggy swelling next showed itself in the right lumbar region. Mr. Godlee opened this, and a large amount of material, similar to what had passed *per rectum*, was evacuated. In the discharge actinomycotic granules were discovered. The wound, which was very septic, was irrigated by iodine solution. There was no more discharge *per rectum* after this time. Five-grain doses of potassium iodide were given three times daily, but with no appreciable effect.

On August 1st the swelling in front, now fluctuating, was opened by Mr. Godlee. The incision was a little above and towards the outer third of Poupart's ligament. Very severe hæmorrhage (a likely contingency in these operations) followed the attempt to establish communication between the anterior and posterior abscess cavities. The wound was packed with strips of boracic lint.

After consultation with Mr. Godlee and Sir William MacCormac, 20-grain doses of potassium iodide were ordered three times a day, and the first dose was given on August 5th. Profuse serous discharge quickly followed, and the granules gradually altered in size, consistence, and characteristics. The medicine was continued till August 21st, when it was stopped by reason of gastro-intestinal disturbance. It was resumed on September 1st, and given till the 19th, when it had again to be discontinued.

Mr. J. J. Hemming (*locum tenens*), finding the patient intolerant of iodide of potassium, gave iodide of sodium in 12 to 15-grain doses three times a day, and he remarked similar changes in the discharge and granules. The patient's general condition distinctly improved, and the inflammatory effusion and discharge diminished. The discharge had acquired a peculiar mouldy smell. However, he changed again for the worse, and could not retain the sodium iodide.

On November 18th, and for seven subsequent days, I injected a 2 per cent. solution of iodide of potassium. It cleaned the burrows effectively, but I did not note any diminution in the deposit.

On December 15th, whilst the patient was under the influence of chloral, sp. vini rect., and water (1 in 3) was used as a douche. The solution trickled through all the openings. The quantity of pus increased, and in four or five days masses of deposit, faecal in odour, came away. The injections were continued till January 10th, when, owing to the patient's weak condition, the irrigation was stopped. He became extremely emaciated and weak, and died quietly on February 23rd, 1895. For a few days before death there was scarcely any discharge.

The "sectio" was made by Dr. James Galloway. Both thighs were flexed; the right more firmly fixed. There was no fluid in the peritoneal cavity; the burrowing and matter were entirely extraperitoneal. The bowels were extremely attenuated. The opening of the vermiform appendix was closed by old inflammatory material. There was a cyst in the appendix containing mucus, and about the size of a cherry. Beyond this the appendix was obliterated by inflammatory material. There was no caseous or granular matter. Behind the cæcum was a mass of adhesions, which included the appendix. A large inflammatory area extended beneath the peritoneum, along the right borders of the lumbar vertebrae (without affecting the bones or periosteum) up to the diaphragm. The area of disease was free from pus and caseous matter. Only the walls of what had been an abscess remained. There was nothing to demonstrate actinomycosis. Several sinuses led from the abscess cavity to the skin. The right psoas muscle was the seat of an abscess which had opened in Scarpa's triangle. There was no disease or secondary deposit in the lungs, liver, or other organs. A slight old pleuritic adhesion existed at the middle of the posterior margin of the lower lobe of the right lung. In the "sectio" we saw no remains of corn or other cereal, but it is probable that the fungus reached its first point of attack by some such vehicle. The fact that the patient had a constant habit of chewing these substances whenever opportunity offered, and the numerous cases of Bostroem and Jensen's observations point to this conclusion; and, except in the appendix, there was an absence of lesion in any other organ, abdominal or thoracic. The patient's occupation did not bring him into contact with horses or cattle.

Thomassen¹ cured 80 per cent. of cattle with 75-grain doses of potassium iodide twice a day, the tumours being cross cut and tincture of iodine applied. He afterwards gave up the tincture of iodine, and achieved marvellous results with the potassium iodide alone. Thomassen² also mentions four successful cases in man, the doses varying from 15 to 40 grains per diem. Ransom's patient recovered under 60 grains per diem. Buzzi and Valerio³ gave 30 grains daily for three months with successful result. Netter⁴ gave 60 grains per diem with recovery.

The changes in the discharge and granules in this case were:

1. Rapid thinning and profusion of discharge; most distinct during the first two periods, when the more diffusible potassium iodide was given.

¹ Bureau Animal Industry, New York, 1893, p. 210.

² Edinburgh Royal Infirmary Reports, vol. ii, K. C. F. Leith.

³ Reform. Med., May, 1893.

⁴ Tribune Méd., 1893, No. 46.

² Wiener klin. Woch., 1895, No. 37; Ref. in Bakt. Centr. bl., 1895, No. 17.

2. Decrease in the size and number of granules; their paler tint; diminished density in the rim of the colonies.

3. Disintegration of the granules and loss of consistence, as evidenced by their more easy dispersion by pressure on the cover glass.

4. A gradual clearing and disappearance of clubs. Except during the exhibition of the iodides, there was always an abundant and characteristic arrangement of clubs.

5. To these may be added the absence of cicatricial indurations and granulomatous masses, so characteristic when the disease reaches the surface.

Dr. West⁵ mentions a fatal case of actinomycosis treated with large doses of potassium iodide, with absence of skin affection. Dr. Barton⁶ says, "The tumours considerably diminished under large doses of potassium iodide." Dr. Pringle⁷ says, "Skin lesions have markedly improved, having withered and flattened down to skin level."

I have heard of other cases since, in which similar effects were observed. Therefore the absence of cicatricial thickenings and granulomatous masses is coincident with the exhibition of large doses of potassium iodide. It is, further, a significant fact in the present case that after the exhibition of large doses of the iodides, the disease did not invade adjacent organs, nor were there any secondary deposits, a most exceptional condition considering the *locus* of the malady and the time it had existed. Cultivation of the fungus was tried by several experts without effect.

The granules were bathed in the profuse serous discharge, following the full doses of the iodides; the fungus was robbed of its food and its vitality lowered by the resolution of the inflammatory deposit. I think, then, we are justified in saying that the curative effect of the iodides in actinomycosis is corroborated by this case.

With reference to the relative action of the compounds of potassium and sodium, it is important to note that, whilst the potassium salt is more diffusible than the sodium iodide, it is much more poisonous to nerve fibre, nerve centre, and muscle, and more irritating to the gastro-intestinal tract. Therefore where there is much tissue waste or gastro-intestinal irritability, it may be found safer and as efficacious to give the iodide of sodium.

Cures are reported⁸ by parenchymatous injections of 1 per cent. solutions of the iodides of potassium and sodium. In this case the douching by 2 per cent. solutions of potassium iodide produced no marked effect, probably on account of the fluid running over the deposit without penetrating it to any extent.

Very definite results followed the spirit applications. These were:

1. Great power of penetrating and cleaning the burrows and abscess cavity.

2. Dehydrating and coagulating effect on albuminous substances, causing the deposit to come away in masses.

3. Germicidal action.

There being no evidence of the ray fungus at the "sectio," it seems that the fierce battle between the besieged and his assailant ended in the almost simultaneous destruction of both.

MEMORANDA: MEDICAL, SURGICAL, OBSTETRICAL, THERAPEUTICAL, PATHOLOGICAL, ETC.

A CASE OF ECZEMA TREATED BY THYROID EXTRACT.

ON March 12th I was called to see Mrs. A. D., aged 43, married, nulliparous, who complained of her right leg being red, "weeping," swollen, and intensely itchy. The inflammation extended from the sole (which was not affected) to the level of the tibial tuberosity, and encircled the entire limb. At times scales were seen.

Two and a half years ago the patient noticed a small red

spot on the inner side of the ankle; the redness round it spread in all directions. The patient has been accustomed during the last eighteen months to putting on starch poultices to relieve the pain.

From March 12th till April 27th I treated the patient locally with zinc oxide, ammoniated mercury, bismuth, etc., and internally by arsenic, with citrate of iron and quinine. She had also lotions of lead and calamine. The redness increased and the itching continued, so that on April 24th she was compelled to remain in bed.

On April 27th, I noticed that she had a small, hard goitre on the right side of the neck, about the size of a small hen's egg. This appeared fifteen years ago, and had never left her. There was no exophthalmos. I then gave thyroid extract, 5-gr. tabloids (Burroughs and Wellcome), three daily, and dusted the limb with a simple dusting powder.

By May 5th, scales had formed over the surface of the leg. The redness was slightly diminished; the itching was nearly gone. Six thyroid tabloids were ordered daily.

By May 13th, the scales had peeled off considerably. The skin underneath looked more healthy, and "weeping" and itching had ceased.

On May 14th, the patient had to attend to her duties, and accordingly got up.

On May 30th, the redness had nearly disappeared; the skin was smooth and natural. She merely complained of a little stiffness, and a very little cedema at the ankle. Pulse and temperature were during all the time normal.

On June 10th, there were two small crusts on the inner side of the ankle, each the size of sixpence; otherwise the leg was nearly as white as the other. The patient could perform all her duties with no discomfort. The goitre had not changed during the treatment by thyroid.

The patient is still taking six tabloids daily, and she has suffered no inconvenience constitutionally excepting one day's nausea.

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POISONING BY CAMPHOR: RECOVERY.

ON May 2nd, 1896, at 10 P.M., I was called to see a woman, aged 35, who had swallowed 1 oz. of camphor oil in mistake for castor oil. The camphor oil contained camphor and olive oil, in the proportion of 1 to 4, consequently she had taken about 96 grains of camphor.

On taking the drug she felt a burning pain in the throat and stomach, accompanied by great thirst. She became giddy, vision was blurred, and breathing difficult. In about ten minutes she was seized with a convulsion, which quickly passed off and left her delirious. She then retched, but was unable to vomit. I arrived at the house about half an hour after the poison had been taken. I found her in a convulsion, the back rigid, arms and legs extended, face pale, pupils dilated, and the breathing inclined to be stertorous. Twitchings then came on, beginning in the face, the eyelids moved, the arms were thrown to-and-fro, and the legs jerked about as in the clonic stage of an epileptic fit. This condition lasted about a minute. She became quiet for several minutes, and then sat up in bed in an excited, semi-conscious state, with pale face, and perspiring profusely. The pulse was full, soft, and 120.

I administered an emetic of mustard and tepid water without much difficulty, and it acted in about five minutes. She vomited half a pint of a yellowish fluid, smelling strongly of camphor, containing small pieces of food and shreds of mucus. Shortly after the emesis she had another convulsion, but milder than the last. The emetic was repeated, with a large draught of tepid water, and about half a pint of fluid, like the last, was ejected. After a short interval a third emetic was given, and this time the ejected fluid had only a slight odour of camphor. I was unable to wash out the stomach, as I had no siphon tube with me. She seemed greatly relieved by the repeated emeses, and became quiet, but complained of severe pain over the hypogastric and left hypochondriac regions. The pain disappeared on applying a poultice. Her breathing now became regular, her pupils less dilated, and she fell asleep about 11 P.M. (one hour and a half after taking the camphor). She passed a tolerably comfortable night, but had several mild convulsions. Next day

⁵ BRITISH MEDICAL JOURNAL, November 17th, 1894.

⁶ Path. Soc. Trans., 1889.

⁷ Med. Chirurg. Trans., vol. lxxviii, p. 37.

⁸ British Journal of Dermatology, March, 1896.