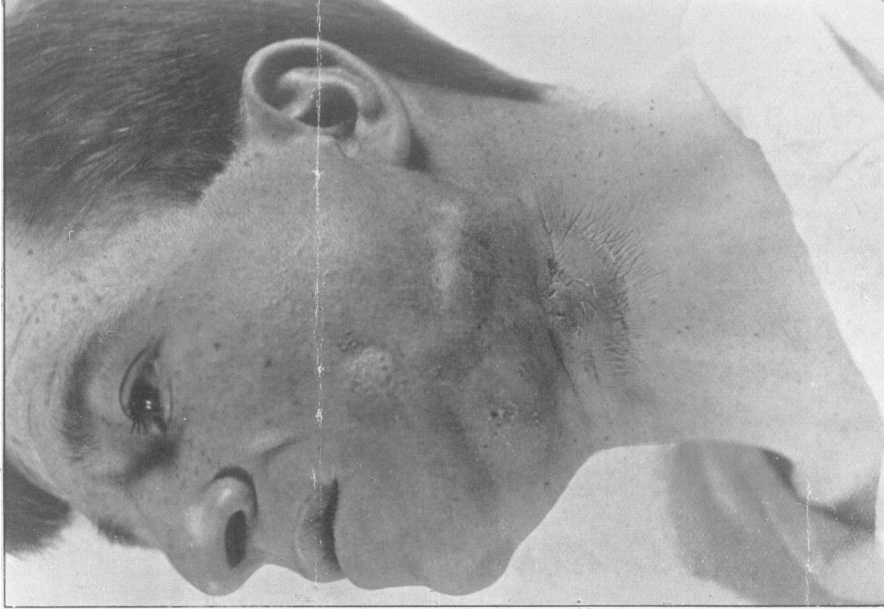


The patient had received treatment for an abscess of the neck. The resulting sinus continued to discharge. "Sulphur granules" easily demonstrated in the pus.



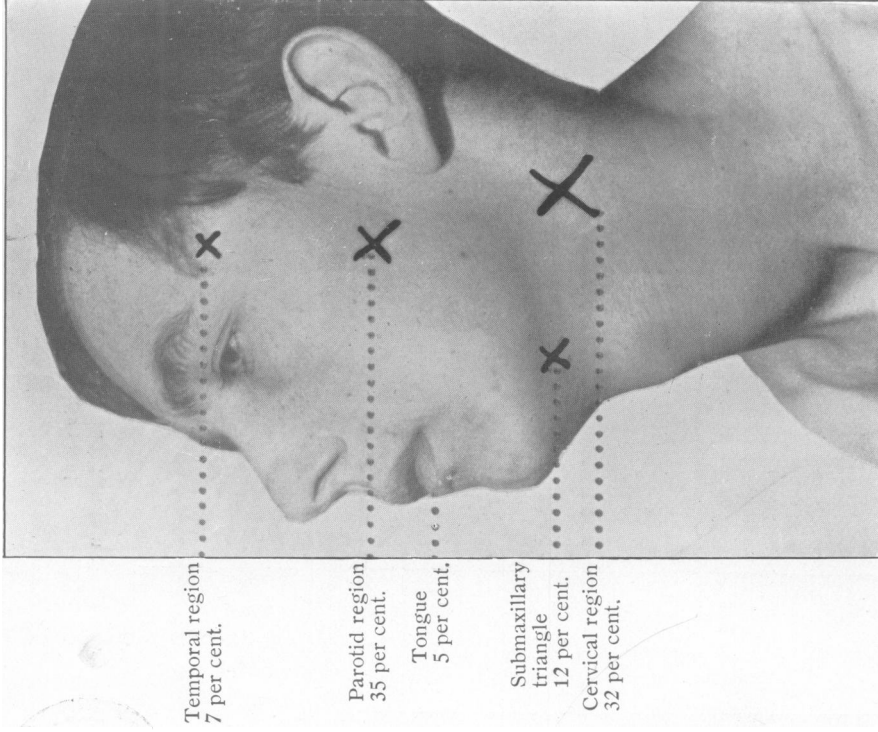
Sulphur granules were easily demonstrated in a sample of pus expressed from the sinus over the jaw.



Colour photograph of a clinical demonstration of sulphur granules from pus in above right-hand figure. A granule is seen in each of the four compressed pus drops.



**Indurated sinuses spread up the neck to the orbit. Sulphur granules discovered by the test-tube method. This patient had treatment for a dental abscess.**



**Relative frequency of the initial lesion in cases of factio-cervical actinomycosis. (New and Fig's statistics.)**

commenced to discharge, or if an abscess has been recently opened, sulphur granules (see colour figure), which are clumps of the fungus, are often seen.

*Method 2.*—When a sinus has been discharging for weeks or months the granules are more difficult to demonstrate. Express a few drops of pus from a sinus into a test tube half full of water and plug the tube with a cork. Now shake vigorously, and the elements of pus become emulsified, but sulphur granules are not broken up. They sink to the bottom and can be distinguished by holding the tube up to a strong light. When secondary infection has occurred this process may have to be repeated at intervals of one or two days for some time, but if the case is one of actinomycosis it will not be long before the all-important granules can be demonstrated to everyone's satisfaction.

*Modes of Spread.*—The disease spreads by direct continuity. It burrows upwards towards the scalp or downwards into the supraclavicular fossa, when the mediastinum is endangered. Spread by the lymphatic stream is practically unknown, and it is truly remarkable that this favourite channel for dissemination of all other infective processes should enjoy such a degree of immunity in the case of the ray fungus. Late in the course of the disease blood-borne metastases are not very rare, the liver and the brain being the two regions most commonly invaded in this way. Untreated the disease runs a rather chronic, but nevertheless surely fatal course. To recognize it early is to be enabled to cure it regularly.

*Treatment.*—Bollinger, to whom we owe so much, applying his veterinary knowledge, treated human actinomycosis with massive doses of potassium iodide. The results, on the whole, were good, but a further advance in treatment was made in 1923 when H. Chitty introduced iodized milk therapy. We will proceed to describe the present methods of procedure. An X-ray of the jaw is taken, but in none of the cases which I have seen has there been any bone disease

present. In each of the cases illustrated the radiograms, sometimes repeated, were negative. The dental surgeon attends to carious teeth, erring on the side of extraction rather than repair. Forty-eight hours later the surgeon lays open the sinuses along their course and packs with narrow strips of gauze soaked in iodine. These are removed in forty-eight hours and a gauze dressing is substituted. As soon as the diagnosis has been confirmed intensive iodine therapy is commenced. Three times a day the patient drinks half a pint of iodized milk prepared in the following manner: Five drops of fresh 2 per cent. tincture of iodine are stirred into the cupful of milk, to which, if possible, a teaspoonful of cream has been added. The iodine forms a colourless organic compound with the cream, chemically said to be an iodized fat. The dose of iodine is gradually increased until 10 minims are taken three times a day in milk. There is no necessity to push the dose of iodine beyond 10 minims, nor is there any method of administering the iodine half as effective as that described by Chitty. For instance, intravenous colloidal iodine, which theoretically might be supposed to be superior, is comparatively useless. The patient can, if necessary, continue his iodine in milk for months. He should be watched for signs of iodism which are characterized by a heavy pain over the frontal sinuses, running from the nose, salivation and erythematous blotches of the skin. Usually the drug is well tolerated, and in addition it acts as a general tonic. As improvement sets in a course of local and general artificial sunlight is beneficial. Under this régime the sinuses soon heal and a cure can be hopefully anticipated except in the most advanced cases.

In the first and second of the cases illustrated the method proved effective. Within six weeks the lesion had completely and permanently healed. In the third case, which was very advanced, progress has been slow, but sure. He is still under treatment.

Even with this treatment there are a few rebellious cases. Implantation of radon seeds or radium itself may be tried, and to judge by the few reported cases radium is highly beneficial.

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## "HAMMER-TOE."

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THE term "hammer-toe" should be confined to that type of flexion deformity which cannot be overcome by simple stretching. It therefore excludes all types of "claw-toes" which are commonly associated with the wearing of short stockings and shoes, or with other foot deformities, such as pes cavus or loss of the transverse arches.

The true "hammer-toe" cannot be straightened by traction because this is prevented by actual contracture of the skin and soft tissues beneath the flexed joint.

## CAUSE.

The condition is rarely found in infants. It is an acquired deformity and the chief factor in its development is an over-long

toe. If short socks or shoes are worn the projecting toe is pressed back into line with the others and has to assume the flexed position. As growth proceeds this deformity becomes fixed and later on pressure symptoms develop.

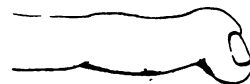
## TYPES.

The typical "hammer-toe" shows a flexion deformity of the proximal interphalangeal joint whilst the metatarsophalangeal and distal interphalangeal joints are hyper-extended. The only fixed deformity in this type is the flexed middle joint. This is by far the commonest variety and the easiest to treat.



Occasionally the terminal joint is flexed instead of extended, producing a double flexion deformity.

A third type shows flexion of the terminal joint only.



## SYMPTOMS.

Pain occurs in three situations. Firstly, in the common type, over the prominent joint from pressure of the shoe. A corn and underlying bursa develop, and attacks of acute inflammation are not uncommon. Secondly, pain may be complained of beneath the ball of the foot. The hyper-extended first phalanx presses downwards the head of the corresponding metatarsal, leading to loss of the transverse arch and consequent metatarsalgia. Lastly, if the end joint is flexed a painful corn may develop around the nail at the tip of the toe where pressure occurs.

## TREATMENT.

The development of a "hammer-toe" can be prevented in children by the wearing of full-length socks or stockings. Mothers