are hard, and feel like the stem of a clay tobacco pipe; the discharge from the fistula is healthy or thick pus.

Fistula in Phthisis.—Fistula in phthisis is most common in the male, being rarer in the female; the buttocks are thin, and the ischio-rectal fossæ depressed from want of fat; there is an excessive amount of hair, which is long and of a silky nature; the sphincters are weak, so that when the finger is introduced into the bowel little resistance is offered; fistula begins with a chronic abscess, frequently with no pain; the external opening is frequently large and ragged, and irregular in form; the skin around the external opening is blue and unhealthy of aspect; the internal opening is large, easily admitting the finger; the sinuses are softish, and feel rather as a gutter or depression in the skin; the discharge is thin and watery.

From the above peculiarities, it is easy for the surgeon to diagnose, without examining the lungs, that the patient has phthisis or an extreme phthisical tendency.

It is scarcely necessary to remark that, though these are the general local peculiarities of phthisical, as distinguished from ordinary fistula, yet in a few cases some of these may be absent.

Now that we have accumulated sufficient data for the distinguishing of phthisical from ordinary fistula, I will endeavour to make some classification of this complication of complaints, and will place fistula in phthisical patients under the three following heads:

- i. Fistula in conjunction with active tuberculosis.
- ii. Fistula in conjunction with chronic phthisis.
- iii. What I prefer to call "strumous fistula," which answers to what is often termed "scrofulous phthisis."

I will now describe these three kinds, and the treatment I consider to be advisable in each case.

i. **Fistula in conjunction with Active Tuberculosis.**—This occurs in patients who have distinct signs of acute tubercular disease, and probably have not long to live. In this class of cases the fistula commences with a tubercular ulcer of the rectum, and develops into a blind internal fistula. This has a large internal opening, and a cavity into which fæces readily find their way and accumulate, giving rise to great pain. In such cases, it is hardly necessary to say that no attempt should be made at cure, and as little as possible should be done; but to leave the sufferer altogether unrelieved is positively cruel. An incision should be made from the outside into the cavity of the fistula, so as to allow the fæces collected therein to escape, and thus mitigate the pain. If this operation be performed, much suffering may be saved, and the patient's life be rendered comfortable until the end.

ii. **Fistula in conjunction with Chronic Phthisis.**—This comprises those patients who have had hæmoptyses, and may even still have the remains of a cavity or consolidation at the apices of the lungs, without any very active symptoms of phthisis. In this kind the fistula begins in the bowel or just at the entrance of the anus, and burrows outwards, undermining the skin. It has an internal and also a large external orifice, the latter of which has unhealthy, overlapping, livid skin. Judicious action is here called for; it is obvious that in order to give the lung a chance of recovery the discharging fistula should be cured, and a cessation be put to the drain on the system. In this variety of fistula the main sinus should first be laid open, but care should be taken to divide the external sphincter as little as possible. Fortunately, it is not usually necessary to cut deeply in these cases, for the sinuses are generally superficial. The edges of the unhealthy skin should be cut off and the base of the sinus carefully scraped.

iii. **Strumous Fistula** occurs, I think, in patients with a family tendency to phthisis—that is to say, some of the members have actually had phthisis, and others have suffered from strumous joints or various forms of glandular disease; but in the patient himself the only evidence of a phthisical diathesis is the fistula. It usually commences as a chronic abscess, and may, or may not, have an internal opening. In my opinion (and this is fortified by Dr. Douglas Powell's remarks on his first kind of phthisis), this form of fistula should be promptly attacked; for if it is allowed to remain, it may become the focus of active tuberculosis which may invade other organs of the body. The operation should be performed in the same way as that on any traumatic fistula in the healthy subject.

I have now indicated the particular procedure which appears to me to be advisable in each kind of fistula with phthisis, and will next mention the general rules for preparation of the patient for operation and after-treatment.

When both physician and surgeon have decided that an opera-

tion is desirable, the patient should, if possible, be removed to some favourable place, such as one of the South Coast seaside resorts, Margate, Brighton, Bournemouth, and so forth. A good time of the year should also be chosen, say late spring or early summer; and, if the patient has a cough, it is highly important that this should be allayed, otherwise the straining caused by the cough will retard the healing of the wound. The ordinary routine of life, so far as regards diet, both before and after the operation, should be interfered with as little as possible.

The question of the anæsthetic to be employed requires the most careful attention. Chloroform should be administered in preference to ether, for chloroform does not irritate the air-passages, and reduces to the minimum the secretion of mucus; whereas ether irritates the respiratory passages, increases the secretion of mucus, and may cause cough, or even congestion of the lungs.

It is advisable to allow the patient to get up as soon after the operation as is prudent, say the next day, or at any rate for him to remain in a semi-recumbent posture, and not be kept strictly on his back (or side), as is wise after operating upon cases of ordinary fistula. This is recommended, because, in patients with a tendency to lung-trouble, the sudden subjection to an absolutely recumbent position may cause hypostatic congestion, or an aggravation of the existing lung complaint. With regard to the local treatment of the wounds, no more than is absolutely necessary should be done. Dry dressings are, as a rule, the most satisfactory to use.

Before closing this paper, I must once more insist on the cardinal point of my argument—the importance of both physician and surgeon making a thorough examination of the extent and nature of the fistula and the nature and condition of the phthisis. Upon this examination the treatment that is desirable entirely depends. No one will think that I recommend operation in all cases of fistula combined with phthisis; for a small fistula, which causes no pain and has little or no discharge, may very well be let alone. On the other hand, if there is great pain and a copious discharge, or if there is a tendency to burrowing, it is quite as necessary to treat the fistula as it is to treat the phthisis.

One grave consequence of this complication should be studiously borne in mind. Phthisical patients are usually very hopeful, and are constantly making plans for the future with a happy absence of despondency. But a strong, healthy man who suffers from fistula speedily becomes exceedingly despondent. *A fortiori*, then, if a phthisical patient is told that he has also a fistula which must not be cured or even treated, although he may scarcely worry about his phthisis, he may be thrown into a state of great perturbation and mental anxiety by the news that he has a fistula which cannot or ought not to be cured. The mental anxiety and profound depression thus occasioned may do the phthisical patient more harm than is likely to be attendant on an attempt to relieve, or perhaps cure, the fistula, the cause of his present worry.

FOUR CASES OF TIN POISONING CAUSED BY TINNED CHERRIES.

By ARTHUR P. LUFF, M.D., B.Sc., M.R.C.P.,

Assistant-Physician to the North-West London Hospital; Lecturer on Medical Jurisprudence and Toxicology in St. Mary's Hospital;

AND

G. H. METCALFE, M.R.C.S., L.R.C.P.,

Senior Resident Medical Officer to the North-West London Hospital.

THE following cases are of interest as indicating the definite toxic symptoms produced by tin introduced as a soluble salt into the system by means of cherries and their juice, which had been preserved by the ordinary process of being hermetically sealed in a tin. And since but little is known of the actual amount of a soluble tin salt required to produce serious and dangerous toxic symptoms, a useful feature in this communication is that the form in which the tin was carried into solution has been ascertained by analysis, and the amount of the soluble tin salt present in the cherry juice has been quantitatively determined.

On January 17th of this year, a tin of meat and a tin of cherries were opened, and the contents partaken of at the same time by four men, each of whom ate both meat and cherries and drank some of the cherry juice. One and a half to two hours later they were all attacked with the symptoms of irritant poisoning described below. Three of the cases were admitted into the North-

West London Hospital, and were diagnosed as cases of either tin or ptomaine poisoning, and were treated accordingly. The subsequent analyses of the contents of the two tins indicated that the toxic symptoms were due to tin, so that it will be perhaps as well to describe first the examination of the contents of the tins. The tin of meat, which was about one-third full, contained meat which from its appearance, smell, and taste, appeared to be in good condition; it was found on analysis to be free from tin, and was also carefully examined for ptomaines by the ether and tartaric acid process described in the JOURNAL of last year,¹ but was found to be quite free from any of those animal poisons. It therefore seemed evident that the toxic substance was to be looked for in the contents of the tin of cherries. This tin (a large one) was about half full of cherries and juice. The juice was strongly acid, and the analysis of it showed that the acidity was due to malic acid with a small quantity of acid tartrate of potash. The juice contained tin in solution, a quantitative estimation of which showed that every fluid ounce of the juice contained the equivalent of 1.9 grains of the higher oxide of tin, which would be equal to 3.2 grains of the malate of tin in each fluid ounce of the juice, or to 60.4 grains in a pint of the juice. On examining the inside of the cherry tin, it was at once evident that the surface of the tin did not present any indication of corrosion, but that the solder was distinctly corroded. It would therefore appear that the tin did not get into solution by the action of the malic acid of the juice on the tinned surface, but that the solder (consisting of tin and lead) acted as a galvanic couple in presence of the malic acid, the tin taking the rôle of the negative element and passing into solution.

The following is a description of the toxic symptoms presented by the patients, together with the treatment. The first three cases were admitted as in-patients to the North-West London Hospital, under the charge of Dr. Donald Hood, the senior physician; but as they were not seen by him the treatment here given was prescribed by us.

CASE I.—A. B., aged 18, at 7.30 A.M. on January 17th ate twenty-two or twenty-three cherries, together with some of the juice. An hour and a half later he was attacked with nausea and abdominal pain, followed within a few minutes by vomiting and diarrhoea; he was very drowsy all the morning, but did not lose consciousness. The pulse was feeble, very irregular, and rapid. The patient suffered from severe abdominal pain all the afternoon, and at 4.30 P.M. was in a condition of extreme collapse, with marked cyanosis and a scarcely perceptible pulse at the wrist. He was placed in bed, with hot water bottles at his side and feet, a brandy enema was given every four hours, and a mixture containing the soluble biniodide of mercury, carbolic acid, and chloral hydrate was given with the view of relieving the intestinal irritation, and also, on account of the possibility (as considered at the time) of the symptoms being due to ptomaine poisoning, to act as an antidote to any such bodies (the soluble biniodide of mercury being an antidote to most toxic ptomaines). At 7 P.M. iced milk and soda water produced vomiting. At 9 P.M. he retained iced milk and soda water, and the diarrhoea had ceased. Evening temperature 100.8°. The next morning the temperature was normal, the urine contained a trace of albumen, and the patient was practically well.

CASE II.—J. C., aged 37, at 7.30 A.M. on January 17th ate twenty cherries, together with some of the juice. An hour and a half later he was attacked with nausea and abdominal pain, followed within a few minutes by vomiting with excessive retching; three hours after eating the cherries diarrhoea commenced. When admitted to the hospital, four hours after eating the cherries, he was unconscious, cyanosed, and the pulse was very feeble, irregular, and rapid. An emetic of twenty grains of sulphate of zinc failed to act, but mustard and water produced vomiting, the vomit containing portions of cherries. He was treated in a similar way to the first case. The diarrhoea ceased in the evening, and iced milk and soda water were retained. Evening temperature 100.5°. The next morning the temperature was normal, the urine contained no albumen, and the patient was practically well.

CASE III.—A. R., aged 25, at 7.30 A.M. on January 17th ate nine or ten cherries, together with some of the juice. Two hours later he was attacked with nausea and slight abdominal pain, followed an hour after by vomiting, which lasted for six hours. Five hours after eating the cherries diarrhoea commenced. The symptoms of

this patient were similar to those of the two just described, but were decidedly less severe, as he had eaten fewer cherries. He was treated in a similar manner to the first case. The diarrhoea ceased at 2 P.M. the same day. Evening temperature 101°. The next morning the temperature was normal, the urine contained no albumen, and the patient was practically well.

(The fourth patient did not come to the hospital, but was seen and treated by Mr. F. R. Humphreys, of Queen's Crescent, Hampstead, to whose kindness we are indebted for the notes of the case.)

CASE IV.—J. R., aged 42, partook of the cherries (number not mentioned). He suffered from similar symptoms to the other patients, with the addition of cramps in the legs and the vomiting of a little blood in the evening. Sphygmographic tracings showed great irregularity of the pulse and low tension. The urine passed next morning contained a small quantity of albumen.

REMARKS.—As far as can be estimated from the accounts given by the patients of the number of cherries and the amount of juice they took, the alarming symptoms described above must have been produced by doses of the malate of tin, varying from 4 to 10 grains. The tin salt acts as an irritant and as a cardiac poison. Its irritant properties on the alimentary tract are indicated by the abdominal pain, vomiting, and diarrhoea, and in two of the cases its slight irritant action upon the kidneys is shown by the transient albuminuria that was produced. Its action as a cardiac poison is shown by the feeble, irregular, and rapid pulse, together with the marked collapse and cyanosis, which were prominent symptoms in all the cases. These cases serve to indicate the danger of eating fruits preserved in acid juices in tins; for the public safety it is desirable that such fruits should only be preserved in bottles.

THE EPIDEMIC OF INFLUENZA IN THE RURAL SANITARY DISTRICT OF MELTON MOWBRAY.

By WILLIAM TIBBLES, L.R.C.P.E., M.R.C.S.ENG., L.S.A.LOND.,
Medical Officer of Health, Nottingham.

I AM now able to give more accurately, through the kindness of practitioners residing in the district, the dates of the first appearance of the cases in various parts of the district. Several centres appear to have been formed from which the disease spread to villages around.

(a) It made its appearance in Melton Mowbray, according to Dr. J. T. Tibbles, on December 18th. From this place it spread rapidly to many of the villages of my district, namely, Sysonby, Asfordby, Burton, Kirby, Frisby, Freeby, Great Dalby, etc.

(b) In the south of the district a centre seems to have been formed at Twyford, where it appeared on December 20th (J. Jackson).

(c) In the north-west of the district it appeared at Upper Broughton on December 18th (E. F. Trevor), spreading to Nether Broughton by the 23rd (Trevor), to Old Dalby by January 1st (Trevor), arriving also at Long Clawson on January 1st (J. M. Swain), and later at Stathern on the 20th (Swain), and by February 1st at Hose, Harby, and Wycombe (Swain).

(d) In the eastern side of the district it appeared at Eaton on December 30th (Swain), spreading rapidly to Eastwell and Branstone. It does not seem to have shown any great tendency to cross the marlstone ridge, as on one side of it the villages were attacked thus early, but on the western side of the ridge it did not appear until three weeks later at Stathern, and four weeks later at Hose, Harby, Scalford, and Holwell. Whether these villages have been thus favoured on account of their being more elevated or because the subsoil is a rocky one (ironstone) I do not presume to say, but probably both factors enter into the problem.

(e) At Wymondham it appeared on December 30th (H. Hamilton), and spread to Saxby, Garthorpe, Coston, Buckminster, Stonesby, Waltham, etc.

The first appearance of the disease was in every quarter of the district, in villages which lie low, have a clay subsoil (middle lias), and from these it has radiated in every direction, attacking villages on the ironstone last of all. By about the middle of January the epidemic was getting pretty general, and "the cases

¹ Report on the Relation of the Ptomaines to some of the Infectious Fevers, by Arthur P. Luff, July 27th, 1889.