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.

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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.

were very numerous and widespread" (L. L. Powell), but it was not general in the marlstone or ironstone districts until the middle of February.

Further experience of the disease confirms my opinion that it is due to a microbe or bacillus unknown; that it probably belongs to the miasmatic class of diseases, of which ague is the type, and that it is allied to dengue. The disease is directly infectious, though in varying degrees, for if one member of a family is attacked others soon follow; but the infection is not dependent upon animal tissues only for development, but thrives and multiplies in the atmosphere or other external media in a manner which renders the disease widely epidemic in a way which is independent of infection from person to person. It is probably not very contagious, as although many persons in one house have had it, some of the inmates have escaped though in daily contact. It spreads from village to village in two ways: (a) by the infection being carried either in the person or clothes of convalescents and others, and (b) by means of the atmosphere, travelling in the direction of wind currents. A mild temperature, with a rather quiet atmosphere, appears to have favoured its development, but a strong north-easterly wind has been more or less destructive to the epidemic.

The disease affects persons of every age and class. There is a period of incubation of about two days, often reduced to a few hours, during which there is a feeling of *malaise* and irritability, or depression. Then during a period of chilliness with occasional rigors, the temperature rapidly rises to 102° F. or 104° F., attended by severe throbbing headache, pain at the back of the eyes, muscular pains, and great nervous depression and lowness of spirits. Running from the eyes and nose has only been observed in a small percentage of cases. The prostration in most cases is complete; nevertheless many people have had it so mildly that they have been able to attend to their business.

During the course of the complaint the usual signs of fever have occurred. As a rule the duration of the fever has been from forty-eight to seventy-two hours, when the temperature has rapidly subsided during a critical profuse perspiration to normal; convalescence has usually occupied six or eight days more. The average duration of uncomplicated cases has been eight days. A relapse, however, has been observed on the sixth or eighth day in such a large percentage of cases as to be almost the rule; the period of the relapse has usually been the time for the onset of complications. The disease is evidently mild if the patient goes to bed as soon as shivering and lumbar pains come on, but it is dangerous if he is exposed to the weather, or otherwise improperly treated. Exposure to cold during the height of the fever or convalescence may entirely change the character of the complaint, bringing about a speedy relapse with some severe complications.

I have observed a rash in a few cases, not always however of the same kind; thus: 1. Several cases had a papular eruption on the head, face, neck, back, chest, and arms, the itching of which was excessive, the eruption lasted about three or four days, and terminated by desquamation around the papules. In two instances the desquamation was rather more general, extending to the hands and feet. 2. A rose coloured rash or spots have been observed. 3. Herpetic eruptions about the face have been common.

Hæmorrhages have not been infrequent; and generally I have observed that the discharge of blood has been the forerunner of a severe attack, usually accompanied by some complication. Among my uncommon cases, four set in with hæmoptysis, one with epistaxis, two with hæmaturia, and several with bloody stools. In cases with hæmoptysis and epistaxis premonitory symptoms preceded the illness by a few hours; but in the cases of hæmaturia the patients observed that, after a rigor, the next urine passed was bloody. In one instance a clot of blood was formed round the utensil of the thickness of a shilling. Bloody stools, along with diarrhoea, have not been uncommon.

Among other complications, I think pneumonia has been the most frequent; but chest symptoms of a catarrhal or bronchitic kind have been common; meningitis, severe neuralgias, otalgia, etc., have been noticed.

There does not appear to have been any definite interval between the attack of different members of the same household. Such intervals have varied from a few hours to a week or two, but in most cases they have followed in rapid succession. Although many in one house have had it, some of the inmates have escaped,

though living in daily contact. I have observed that a few persons who have escaped have either been rheumatic or had a tendency to it.

Dr. Jackson, of Somerby, informs me that he has observed that horses in his neighbourhood have been affected with a cough, with profuse discharge from the nostrils, swollen submaxillary glands, and inability to work, lasting about ten days. The same thing has been observed in other parts of the district. Bronchial attacks in horses have also been common.

The deaths from influenza in my sanitary district have been few in number.

Conclusions.

1. That it is a disease *per se*.
2. That it is of miasmatic origin, the specific germ being an unknown bacillus.
3. That it is severely infectious, and but mildly contagious.
4. That it spreads by atmospheric influence, and by development in external media.
5. That its development outside the body is the cause of its being so rapidly and widely epidemic.
6. That one attack is not protective against future attacks; though it has not been under observation long enough to decide this, we may judge from analogy with other diseases of this class that such is the case.
7. The cause of the origin of this world-wide epidemic is unknown, and that, in a given district, the epidemic probably fails from want of numbers, or some change in the atmospheric conditions.

ON THE QUESTION OF ANÆSTHETICS IN OPERATIONS FOR ADENOID GROWTHS OF THE NASO-PHARYNX.

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SINCE Wilhelm Meyer, of Copenhagen, described adenoid vegetations¹ in the naso-pharynx, and also showed that their removal offered an almost certain relief in many cases of intractable deafness in young children, the attention of aurists and laryngologists has been directed to this matter, and with admirable results. Meyer advised that in removing these vegetations, an assistant should hold the head, which is to be slightly bent forward, and the patient is to be requested to breathe deeply and regularly through the mouth during the operation. The surgeon, standing in front of the patient, introduces the left index finger into the naso-pharyngeal cavity, and with a steel instrument passed through the nostril, the vegetations were to be detached. Such a procedure is naturally followed by free bleeding, and although the operation is not in itself a very painful one, the difficulty in carrying it out on a child aged 7 may be easily imagined.

During the last few years, the operation has been considerably modified and simplified. It is also made more comfortable for the patient, in that most operators now avail themselves of an anæsthetic. Some surgeons employ nitrous oxide, whilst others use ether or chloroform; and as I have had a considerable experience in the administration of anæsthetics in this particular class of case, I should like to offer a few suggestions on this subject. It is, of course, needless for me to urge the advantage of operating under an anæsthetic. Patients of fifteen years and upwards may be found sufficiently resolute to control themselves in such a way as not to embarrass the operator; on the other hand, the manipulations of the surgeon's finger in the naso-pharynx of a child of 10 are not calculated to keep it in good humour, and the sight of a pair of forceps completes the picture, and produces a profound feeling of dismay and often panic.

The advantages of the unconscious condition are so obvious that one need not point them out, but proceed at once to discuss the anæsthetic and method of administration best suited to this particular operation.

Some anæsthetists employ nitrous oxide, but its effects are so transient, and even during the anæsthetic period it is so difficult to keep the patient tranquil, that the operator is rarely able to accomplish his aims to his complete satisfaction.

The method which commends itself most to my mind is as follows: The patient is anæsthetised either with ether (using gas as

¹ *Med.-Chir. Trans.*, 1869.