AN OUTBREAK OF FOOD-POISONING.

AT CHADDERTON.*

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ON Thursday, July 28th, 1898, a confectioner in Chadderton made 268 pies, of which 160 were of veal and 108 of pork. Of these veal pies, some were sold on Thursday, some on Friday, and the remainder on Saturday. Amongst those who partook of the pies, especially on the Saturday, an outbreak of disease occurred, of which the main symptoms were severe and uncontrollable vomiting and diarrhœa, followed by collapse. There were in all in the Chadderton district 36 or 38 cases, with 3 deaths; and in Oldham 12 or 14 cases, with 1 death.

All these sufferers were found on inquiry to have eaten a whole or part of one of the veal pies. As with the exception of these cases very few cases of diarrhœa were present in the neighbourhood at the time, and all the cases presented a very striking similarity in the symptoms, it was assumed that the cause of the outbreak was poisoning with the pies. An inquest was held on the three deceased persons by Mr. Molesworth, the District Coroner. The verdict was that the persons died from eating the pies, which had been over-kept, and although no blame was attached to anyone, the jury added a recommendation that in future all meat pies should be sold on the same day on which they were made.

I made an inquiry into the matter, and ascertained the following facts:

SYMPTOMS.

In the cases attended by Dr. Bowes and my *locum tenens*, Dr. McSherrie (of which I have been kindly supplied with a full description), these were:

About five to fourteen hours after eating the pie, the patient felt sick and vomited, the first vomit containing in some cases an undigested portion of pie. At the same time diarrhœa began, and in nearly all cases the onset was accompanied by shivering. In some cases there were violent pains in the abdomen (and in the back in many cases). The vomiting and diarrhœa continued throughout the illness in severe cases. The motions were at first grass-green, but soon became dark green and very offensive in smell. There were no white nor "rice-water" stools, except in one case, where they

* Read before the North-Western Branch of the Incorporated Society of Medical Officers of Health, November, 1898.

were said to resemble soapsuds. In a very few cases a little blood came with the motions. There was no retraction of the abdomen.

The diarrhoea, which was very bad on the first day, became still worse on the second day. One patient stated he was purged forty or more times in one day; and, in fact, in the worst cases there was an almost constant evacuation of the bowels. With these symptoms the tongue rapidly became black, sordes collected about the teeth, the lips were dry, black, and excoriated, and every symptom of the most severe prostration ensued. The temperature remained high, varying from 100° in the milder cases to 104·5° in the most severe. The pulse was very rapid, weak, and dicrotous. In some of the worst cases severe nervous symptoms were observed, delirium of the low type seen in typhoid in a few cases. Disturbances of vision were noticed occasionally. In one case the patient, a young girl, saw things in the air, and people, etc., in the bedroom, whilst she lay with her eyes open. These disturbances of vision lasted till the temperature became normal. Cramps were also sometimes felt, and in nearly all cases pains and stiffness in the muscles.

In the cases which recovered the symptoms commenced to abate about the fourth or fifth day, the tongue clearing, the temperature dropping to subnormal, and the pulse getting slower. The vomiting and diarrhoea gradually ceased, stopping altogether on the Friday, Saturday, and Sunday.

In the fatal cases the vomiting and purging continued till the last; the patient became livid, and collapsed and died.

In very many cases an eruption of herpes about the lips made its appearance about the third to the sixth day, and some patients had a roseolous or urticarious eruption, which itched, and was followed by desquamation of the cuticle. Convalescence was very prolonged in severe cases—in fact, some of the patients are still weak, three and a half months afterwards.

The treatment which seemed most successful consisted in a purge with castor-oil as soon as the nature of the case was discovered, and then the free use of stimulants and artificial heat, hot-water bottles, hot fomentations, and such small nutrient enemata as could be retained in the rectum, as the stomach rejected everything. Medicines to check the diarrhoea and vomiting seemed useless—in fact, the main indication seemed to be to keep the patient alive till the disease had run its course.

POST-MORTEM APPEARANCES.

These in one of the Chadderton cases, a man, were principally patches of congestion of the mucous membrane of the intestine,

becoming more marked and frequent lower down, and the lining membrane of the large intestine being highly congested. The large intestine contained green fluid.

CAUSE OF THE OUTBREAK.

It was, unfortunately, impossible to procure any part of a pie, as all were sold, and if any jelly or meal were left over it was thrown away or given to the dog. Neither was any of the first vomit secured. This was unfortunate, as a bacteriological examination would have been interesting. Some two or three weeks after the outbreak Dr. Durham of Cambridge took samples of the blood of patients who had recovered, and also of some who had eaten pies and not been made ill.*

Before proceeding further, I may mention that several persons who had eaten pies or portions of them were not affected injuriously. I spoke to perhaps half a dozen who had done so. As to the pies themselves, I asked all who had eaten them, and all with one exception said that they looked good, had no smell whatever, and no bad taste. In a few of the pies the jelly was rather thin.

The articles used in the manufacture of the pies were: Veal, paste, jelly, and seasoning.

The veal was obtained from a butcher in Oldham. Its antecedents I know nothing about, except that it was said to have been purchased from a well-known breeder. The price was stated to be 8d. per pound boned. On arrival at the confectioner's shop, it appeared perfectly sound. I believe no complaints were made of the rest of the carcass.

The calf was killed on Tuesday night, sent down to the confectioner's at noon on Thursday, and the pies were made that day. Thus between the calf being killed, on the Tuesday, to Saturday, when the pies were most virulent, four days had elapsed. The paste was made from flour, with lard and boiling water. Flour and lard from the same batch had been used for other confectionery without any bad result. (Although some of the pastry sold from the same shop caused sickness and diarrhoea to one or two persons to my knowledge, it was not sufficient to base a general accusation against the pastry or its constituents.) The jelly was made on Thursday by boiling the veal bones with two pig's feet and water. The pig's feet came from a reputable butcher, and cost 2½d. each. About four quarts of jelly were made, and used for both *pork* and *veal* pies, about one tablespoonful being placed in each pie. No cases of sickness occurred in those eating the pork pies. No gelatine

* Dr. Durham's results will be found on p. 238 of this issue.—Ed.

except that in the pig's feet was used to make the jelly "set," and no preservatives were used.

The seasoning was pepper and salt, both of which I examined for mineral poisons, but found none.

PROCESS OF COOKING.

The meat is cut up in a mincing machine, which is cleaned after each time of using. The seasoning is mixed with it, and it is then put into the pie-moulds. The pies are cooked for twenty minutes at a heat of 400° to 500° as indicated by a pyrometer. On removing the pies from the oven, the jelly is poured in whilst hot. The pies were kept in the shop window and on a table in the shop.

The bakehouse was clean and well arranged, and all the cooking utensils were clean. There was, however, a gully in a corner of the bakehouse leading to an untrapped drain which communicated with the main sewer. This has now been removed outside the bakehouse and trapped.

SOURCE AND NATURE OF THE POISON.

As to the nature of the poison, it must have been identical with that in other meat-poisoning cases. The whole course and symptoms of the disease resembled that of a specific fever, even in some cases to the rash and desquamation. The high temperature was characteristic of a fever, and I suppose would not be caused by any mineral or organic poison unless bacteria were present also.

When I wrote a former report on this subject, I was under the impression that the incubation-period was six to eight hours, but I find, on referring to a table of cases, that it was really as follows :

Incubation-period between 5 and 8 hours	...	...	10 cases.
" " " 8 and 14 hours	...	...	15 "
" " above 14 hours	...	...	7 "
" " 3 hours	...	...	1 case.

33

Of the other cases I have no record.

The period of incubation was short, as a rule, in the severe cases, and long in mild cases. The longest was twenty-nine hours (a mild case). I think the onset of the symptoms in many cases was delayed by sleep, as where the pie was eaten for supper on Saturday night, and the symptoms began on awaking on Sunday morning at five o'clock, or later.

I do not think that the fact of some time elapsing between eating the pie and the onset of the disease proves that the disease was *altogether* due to the growth of bacteria in the body. Even if due

to so-called ptomaines, the onset of diarrhoea might be delayed a variable time owing to the idiosyncrasy of the patient.

I am of opinion that in the veal itself was the original fault. Granted that the rest of the carcass was all right, it would appear that the meat had become contaminated in some manner either on its way from the butcher's or whilst it was in the bakehouse. I do not see that the jelly can be blamed, as it underwent prolonged boiling, and was used at the same time for pork pies. Was the open drain responsible? If it was, why did not the meat or jelly in the pork pies absorb the poison whatever it was? The weather being very warm at the time, no doubt bacteria would develop very rapidly in the jelly as well as in the meat of the pies when they had once been implanted.

The only measures I am able to suggest to prevent such cases as these occurring in future are the same as those suggested by the Chadderton jury, *i.e.*, that pies should be sold the same day as they are baked, especially if they contain jelly. This is now done by the baker concerned. Of course, the meat for pies should be chosen as carefully as for any other purpose. Cleanliness and good ventilation of bakehouses and confectioners' shops are indispensable.

But I think that as long as people—especially working people—will buy such ready-cooked articles as meat pies, fried fish, *et hoc genus omne*, for supper, instead of going to the trouble of cooking something at home, they will have to run a certain amount of risk of such occurrences as this epidemic, as well as of minor illnesses, as acute indigestion, diarrhoea, etc., in spite of every effort of the sanitary authorities to the contrary.

AT OLDHAM.*

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THE following are particulars of the cases of meat poisoning which occurred in Oldham and Chadderton about the last few days of July in this year :

On Tuesday evening, July 26th, a calf was killed in an Oldham slaughter-house. The forequarter and breast (22½ lb.) of the carcass were sent to a baker on Thursday morning, and were cut up and made into pies by three o'clock on the same day, the pies being baked in batches (about three or four). After the pies were

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