Third Family.—This family lived about one hundred yards from the second. Some member of this family used to call on their neighbours daily, to inquire how they were getting on. In a short time, a daughter (about twelve) suffered from fever and diarrhoea. She was not confined to the house longer than a fortnight. After her recovery, her father (about thirty-seven) had a very severe attack of typhoid fever.

Fourth House.—As soon as the parents of the last girl saw fit, they sent her to school. The school-house was about three miles and a half away. As the girl was weakly after the fever, her parents engaged lodgings for her near the school. Her clothes were washed, but not disinfected, before she left her parents. She did not suffer from diarrhoea after leaving her home. She slept with the servant-girl in her new abode. In about a month, the servant-girl became very ill, and suffered from typhoid fever. This servant-girl never visited any of the sick people before she took ill. She was sent home, a distance of about six miles, before diarrhoea commenced. No one in her employer's house suffered after her departure.

Fifth Family.—The servant-girl's home was a low, badly ventilated, two-chambered dwelling-house. After she went home, the father, mother, and seven of the family lived in the house. Six of them slept in one apartment about fourteen feet square, and three slept in the kitchen. In succession, three sisters and two brothers suffered from typhoid fever, two of whom died. A little baby (about one year and a half), the father (about fifty), and mother (forty-five), escaped.

Sixth House.—When the last family were ill, a woman came a distance of about six miles, and visited them. She did not stay in the house longer than ten minutes. She did not partake of anything in the house. She noticed a very disagreeable smell from a recent alvine discharge. She went home, and remained in her usual state of health for three weeks. At the end of that time, she commenced to suffer from a severe attack of typhoid fever. All who lived in the house left immediately, except the husband, and an old woman who acted as nurse. In about two months, she was convalescent. The house was disinfected, and no one else suffered from the disease. The nurse was above forty, and the husband considerably above thirty, years of age. Both escaped.

I may mention that the cases occurred in the above order, and that eleven months elapsed from the time the servant-girl came home from Bridge of Allan till the last case was convalescent.

Taken in a straight line, the distance between the first and the last house is about seven miles. Taken in the zigzag way by which the contagium must have passed, it is over seventeen miles.

Conclusions or Inferences.—1. The exhalation from the lungs, skin, urine, or fresh stool, must be infectious; because the sixteenth case could not have got the disease in any other way. 2. There is danger of infection for some time after the stoppage of the diarrhoea; for the only reasonable way of accounting for the way in which the servant-girl in the fourth house got the disease is, because she slept with the girl who suffered from the fever and diarrhoea a few weeks before. Whether the breath, the exhalations from the skin, urine, or feces, contained the contagium, I cannot say. 3. Persons over thirty are not so susceptible as under that age; and over forty, they are less susceptible still, because the father and mother, both above fifty, escaped in the first house; father and mother, both above forty, escaped in the second; mother, above thirty, escaped, but father, above thirty, took the disease in the third house; husband, above thirty, and nurse, above forty, escaped in the sixth. All these had to attend to the sick during their illness. 4. The period of incubation was twenty or twenty-one days in the sixteenth case.

IS ENTERIC FEVER CONTAGIOUS?

By H. DONKIN, M.B., F.R.C.P.,
Assistant-Physician to the Westminster Hospital.

THE following facts tend to support the contagiousness of enteric fever: a view lately readvocated in this JOURNAL by Dr. Collie of Homerton, whose series of papers on this subject is most valuable, from the careful observation and accurate reasoning by which it is marked.

During a period of over three years, three nurses, all young women, took enteric fever in the East London Hospital for Children at Shadwell. The cases were typical, and declared themselves within a few weeks after the nurses had begun to tend enteric patients. These nurses, in common with the rest of the residents in this hospital, had been exposed to the chronic influence of bad drainage for some time before they sickened with enteric fever: two of them for many months; one of them for at least two years. The fact of the very faulty drainage (which is now being thoroughly rectified) was established by a recent exhaustive inspection, and with almost equal force by a long

series of maladies, chiefly incident on the resident staff, and referable, from their nature, to poisoning by sewer-gas.

But, spite of the numerous cases of diarrhoea, sore-throats of great severity, and nondescript, albeit marked, cases of pyrexia, which took place during these three years with such persistence that at last the term "Shadwell fever" became commonly used amongst our residents, the only cases of enteric fever which arose in the hospital were those of the nurses to whom I have alluded.

What was there to make a distinction between the circumstances of these nurses and those of their fellow-residents, most of them probably liable, through their youth, to take the disease; and all of them living in a sewer-poisoned air, which often, presumably, included in its baneful ingredients the exhalations from the decomposed stools of many enteric patients admitted from time to time into the wards? They had all three been in constant attendance on cases of enteric fever.

I submit this piece of evidence, apparently confirmatory of the unpopular, though, if true, important view, of the contagiousness of enteric fever, under the impression that the *drain-theory*, supported as it is by a great cloud of no mean witnesses, has an authority somewhat out of proportion to the amount of strict and unbiased reasoning on which it rests. The evidence brought forward by the late M. Piedvache of Dinan has been over lightly treated; nor can we omit to observe that, even in Dr. Cayley's Croonian Lectures, no mention is made of the recent arguments urged by Dr. Collie in favour of this serious disease possessing, like its relatives, the quality of being, in some manner, "catching".

ENTERIC FEVER IN THE PACIFIC.

By P. HERBERT METCALFE, M.R.C.S.Eng., Norfolk Island.

Dr. GEORGE WILSON, in his *Handbook of Hygiene*, points out somewhat particularly the necessity of attending to the periodic cleansing of wells. A case lately under my care would seem to confirm Dr. Wilson's opinion, and at the same time point to the theory that typhoid fever may be generated *de novo*.

I am the resident medical officer to the community of Norfolk Island; and on this island, in latitude 29° 3' S., longitude 167° 58' E., four hundred miles from the nearest inhabited land, in January this year I visited a gentleman who had arrived from England the September previous. I found him suffering from an unmistakable attack of typhoid fever. The most prominent symptoms of that disease were well marked. The supervention of the attack was gradual. Headache and aching limbs, with a feeling of exhaustion and loss of appetite, had existed for some days; and giddiness was complained of. The tongue, at first moist and coated, subsequently became red and glazed; and the face was somewhat flushed. About the twelfth day, there was abdominal tenderness on pressure in the right iliac region, and the typical rose-rash was very distinct. Abdominal pain increased during the succeeding week; whilst about the nineteenth day there was slight diarrhoea, with traces of blood in the stools. A gradual rise and fall of temperature extended over a period of six weeks. The thermometer rose above 105.6° Fahr. Convalescence was gradual and tedious. Now, this gentleman joined the Melanesian Mission on this island in September 1879; and up to that date he had never had any illness. Several years before he left home, he lost a sister from enteric fever; and a brother also suffered from it at the same time; but since that date he had never come into contact with any case of this disease. How, then, did he contract this attack?

To my certain knowledge, there has been no enteric fever here for upwards of fifteen months. In the beginning of the year 1877, a man is reported to have died of it at the Mission; and in 1868 there was an epidemic of some fever here, though I cannot ascertain of what kind. These are the only instances of which I can hear of anything like typhoid fever existing on the island. Anyway, here is a veritable case of typhoid fever generated in an island of the Pacific, four hundred miles from the nearest land, fifteen months for certain (probably much more) after any fever has existed in the island, and only one person has been attacked.

The water-supply at the Melanesian Mission is obtained from wells; and, after careful inquiries, I found that my patient was the only person who had been drinking water from a well that had a reputation, unknown to him, of being unclean. The water in this well was used for washing purposes and cooking only. Upon examining the well, I found that on one side of it, at a distance of about seven feet, was an open sewer; and that, just opposite to the well, much of the sewage-water became so stagnant as to form an offensive cesspool. I suggested that the well should be cleaned out; and my suggestion was at