seen for the first time with a well-marked unilateral swelling of the neck, looked like a form of aberrant mumps, but careful examination showed that the parotid gland was not affected, and the children had no pain in closing the jaws or in eating; besides, some of the cases had previously suffered from mumps. It has been suggested that the disease might be a peculiar form of influenza; but as a rule in recent years, when abnormal types of that protean disorder occurred, we were able to diagnose them as due to the influenza poison from the fact that in the same house or locality other ordinary forms of that disease were detected. None of these usual forms of influenza occurred in the houses where the cases I have described were seen. I believe the cases were true examples of that acute epidemic infectious fever in which there is primary inflammation of the lymphatic glands. The poison of glandular fever is probably microbial, and the present extraordinary atmospheric conditions may present precisely those factors necessary for the growth of the infective germ which causes the disease. Some have suggested that infection is through the intestine; in the cases seen by me, it seems more likely that the invasion was by the throat.

Since writing this article I find that in a family where the children suffered from the ailment I have described, two of the adults developed a follicular tonsillitis, but in them although the glands of the neck were tender there was no palpable enlargement.

NOTES ON THE DISTRIBUTION OF CANCER IN THE FREEBRIDGE LYNN RURAL DISTRICT.*

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the Division.

THE following notes are an epitome of a special report on the subject recently laid before the above district council.

The district in question consists partly of a chalk plateau covered in places by beds of boulder clay, glacial and post-glacial gravels and sand, and partly of the lower greensand; there is also a considerable area of alluvium. Each parish was visited, and the actual house, or its site if it had been pulled down, in which the patient lived, made out. During the forty-one years 308 deaths from cancer were registered; from these were eliminated those which were obviously due to sarcoma, and they were further corrected for immigration and emigration. As thus amended, 241 were found to have lived upon the various geological formations as given below, for a period of not less than three years preceding their death.

	Deaths.
Glacial and post-glacial gravels and sands	88
Lower greensand	75
Boulder clay	26
Chalk	25
Chalk marl	16
Post-glacial clay	6
Alluvium	5

Of 265 deaths traced to their altitudes, one-half were found to have resided below 50 ft., and less than one-tenth between 100 and 300 ft. above sea level. The disease was more frequent in the western than in the eastern half of the district in the proportion of 3.1 to 1.8 per cent.

Some of the villages have suffered much more than others, and, furthermore, certain parts of some produced more cases than other parts. Especially was this the case in water-logged places where the water supply is derived from surface wells. There was evidence of the disease being more frequent amongst those who used certain wells. For example, in one village in which there were 10 deaths, 4 of them occurred in a small cluster of cottages around one shallow well from which they all drew their water supply; there were nineteen other wells in the parish. In another village there were 3 deaths all using the same surface well; in this parish there were twelve other wells. In another there were 3 cases amongst the users of one well out of a total of 5 cases; there were twenty-three other wells in this parish.

When the yearly deaths of each parish were "charted," in many cases a tendency to fall into groups was observable, a point quite hidden when the whole series of deaths in the

district was treated in a similar way. This falling into little groups or miniature epidemics, when it occurred, was very striking. There were 5 instances of husbands and wives dying from cancer and 2 instances of the first and second wives of the same husband. In 13 instances 2 cancer cases occurred in the same house, in 10 of which both cases died in the house.

Woodland seems to have had no effect on increasing the number of cases, for the six parishes with the most woodland (2,635 acres) averaged 1.0 case per cent., while six other parishes without any woodland averaged 2.4 per cent. Neither had beer drinking any observable effect.

Respecting the geological formations most liable to cancer, it is interesting to note that they are the same in West Norfolk as those which produce most calculus,¹ namely, the gravels and sands, where the percolation of water is rapid, not upon the chalk, the deep wells of which yield water of great organic purity.

REFERENCE.

¹ On the Distribution of Calculous Disease in Norfolk, by C. B. Plowright, BRITISH MEDICAL JOURNAL, November 7th, 1885.

A NOTE ON DR. PRIMROSE'S PAPER ON FILARIASIS.

By SIR PATRICK MANSON, K.C.M.G.,
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IN his interesting article on filariasis,¹ Dr. Primrose, of Toronto University, gives the details of a case of lymph scrotum associated with embryo filariae in the blood. Two months after removal of the scrotum, in which an adult filaria and several fragments were found, the filarial embryos had disappeared from the circulation. Dr. Primrose concludes that the subsequent absence of embryos from the blood was attributable to the removal of the parent worm.

On January 29th, that is twenty-four days after the operation, embryos were still in great abundance in the blood, as many as 1,764 having been found in 1 c.cm. at 9 p.m. Dr. Primrose's assumption, therefore, postulates that the life of an embryo filaria is at least twenty-four days. I take the liberty of dissenting from Dr. Primrose in his interpretation of the facts.

Dr. Primrose states that his patient, forty-six days after the operation, suffered from an attack of elephantoid fever, accompanied by much inflammatory swelling at the root of the neck; the swelling was incised, and a mass of sloughy broken-down tissue was removed. I attribute the disappearance of the filariae from the circulation, not to the operation on January 5th, but to the attack of lymphangitis on February 19th.

The infection in Dr. Primrose's case was so severe that it could not have been produced by two or three parental filariae. We do not know how many adult filariae it would take to produce a stock of embryos such as he describes, but I think if we regard a minimum infection (that is, the product of one pair of parental filariae) to be five to ten embryos in a drop of blood (and this I consider an over-estimate), such an infection as Dr. Primrose describes would require ten to twenty, or even more, female adult filariae to produce. The scrotum must therefore have contained more parent filariae than were found in it, or there must have been parent filariae in some other part or parts of the body. The latter is my view, and I conclude that the main body of parental worms was destroyed during the very severe attack of lymphangitis on February 19th.

In 1892 and for several years subsequently I frequently saw a gentleman the subject of filarial varicose glands in the groin. His blood contained large numbers of embryo filariae—300 to 400 per drop at 10 p.m. About this time I was endeavouring to find out what became of the embryo filariae during their daily absence from the blood, and what might be the duration of the life of the individual embryo filaria. To settle these points, or at all events to throw some light upon them, I had arranged with the gentleman I refer to to have some of his blood transfused into two monkeys, my idea being that the embryos would continue to live in the monkey pretty much as they lived in their human host, and that by periodical examination of the blood I could watch their disappearance, and so get a key to their life-span. I also hoped from this experiment, should the embryos exhibit their usual periodicity of appearing and disappearing in the general circulation, that by killing one of the monkeys during

* Read at the Autumn Meeting of the West Norfolk Division of the East Anglian Branch of the British Medical Association.