

OUR PRIZE COMPETITION.

WHAT DISEASES MAY BE CONVEYED BY CARRIERS, AND HOW DO THEY CARRY TYPHOID?

We have pleasure in awarding the prize this week to Miss J. G. Gilchrist, Gillespie Crescent, Edinburgh.

PRIZE PAPER.

The particular diseases known to be conveyed to either individual persons or the general public by means of carriers, using the term in its special sense, are typhoid fever, diphtheria, and cerebro-spinal meningitis.

Carriers in this sense are of two classes:—

(a) Those who have actually suffered from an attack of the particular disease, and though restored to health, making a good recovery, still harbour the active bacillus for an indefinite period of time in their bodily system, thus proving themselves a source of infection and danger to others, accentuated by coming in contact with a susceptible person, or by carelessness in habits in giving the germ a favourable opportunity to thrive and convey the disease to others at large. This class of carrier is especially connected with the infection of typhoid fever, where the stools and urine may continue to be infectious, the germ being frequently retained, even for years, in the gall bladder.

Diphtheria is another disease conveyed by this class of carrier, convalescents restored to normal health being known to harbour the bacillus in the throat for a long period, thus carrying the infection about with them, and they may communicate it to others, in a receptive state, at any time.

(b) Carriers may be intermediaries, *i.e.*, persons in good health, who may carry virulent bacilli in the throat, as in diphtheria convalescents, and though never suffering from the disease, may convey the infective bacilli by direct or indirect contact to persons whose mucous membranes are not in such a healthy and resistive condition as their own. The bacilli are believed to live for months on the mucous membrane of such healthy persons. Some authorities are of the opinion that a break in the mucous membrane must actually occur before the bacilli can do harm. Systematic bacteriological examination on an outbreak of diphtheria amongst school children has proved the existence of the carriers of both classes.

In cerebro-spinal meningitis this class of intermediary carrier is a distinct factor in the dissemination of the infection, though it is not so easy of absolute proof as in the two above-mentioned diseases. The infective germ is

carried in the secretions of the nose and throat by those who have been in contact with patients suffering from the disease, and though the carriers may maintain their health, others may fall victims to the diseases.

Carriers of both classes are thus equally dangerous, and their presence makes the dissemination of infection very difficult to trace. Domestic animals, such as the cat, are a source of danger as carriers in the case of diphtheria especially.

Carriers known as a class called fomites, *i.e.*, clothing, food, and such materials, which harbour germs, are generally known as factors in transmitting any infectious disease; insects also act as carriers in a general sense.

A typhoid carrier may convey disease by contaminating the ground with urine containing bacilli, also excreta, which may remain active in the soil, become dry, and spread infection by faecal dust or be conveyed by flies to articles of food, or the infection may be washed into the water supply, or conveyed to such by defective drainage. Infected water may be likewise used for washing milk cans in a dairy or for adulterating milk. A carrier working in a dairy or having the handling or preparation of food may be a constant source of danger.

It is believed that the danger of infection in typhoid carriers may be especially active at certain periods of the year, such as the autumn, and when there is any looseness of the bowels. At such a time there is danger to any person disposing of excreta, and having the care of bedclothes when sheets are soiled by urine or faeces. Mussels, shellfish of any kind, also celery and watercress which all flourish near mouths of rivers and sewage effluents, are a source of infection, should the soil or water be contaminated which surrounds them. A known typhoid carrier should be kept under medical supervision, having treatment when necessary.

HONOURABLE MENTION.

The following contributors receive honourable mention:—Miss B. Grey-Johnson, Miss Jean Macintyre, Miss A. Loftus, and Miss G. C. Tupper.

Miss B. Grey-Johnson writes very simply and clearly on the question.

QUESTION FOR NEXT WEEK.

What is a parasite? What external parasites attack man? Describe in detail the treatment and management of scabies, with special reference to the prevention of the spread of the disease.

Owing to a printer's error, scabies was misspelt in this question last week.

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