

that a panel 'specially qualified for dealing with juvenile cases' needs the assistance of the younger members of the Bench, who are normally in closer touch with young people and therefore better able to understand their point of view and sympathise with their interests."

Both the Act, and the explanatory Circular, give evidence of that sympathy with the children and young people with whom it designed to deal, which affords the greatest hope of its successful administration. The members of the nursing profession, so intimately acquainted with the problems which concern the nation's children, and most of whom are child lovers, will welcome it heartily.

BACTERIA.

BY MISS D. K. GRAHAM, S.R.N., F.B.C.N.

Bacteria are abundant in the soil and air, in certain foods, in most surface water, in decaying organic matter of all kinds, within the alimentary tract of man and animals, and on the skin.

They are not to be found at great altitudes in the air, nor at considerable depths in the soil, or in the healthy normal tissues of animals and plants.

Bacteria perform many functions in the soil, fitting it physically and chemically for the growth of higher plants. In fact, plant life could not long persist except for the soil bacteria, as they decompose the minerals and organic matter of the soil, converting them into compounds that may be taken up by the roots and assimilated by green plants.

Occasionally the bacteria capable of producing disease in both animals and plants are to be found in the soil.

Water from deep wells, artesian wells and some springs may be entirely free from bacteria, but they are usually present in most waters. Water from lakes, ponds and many wells contain about the same number of bacteria; streams usually have more.

Sewage water generally contains thousands of millions per cubic centimetre.

Polluted water is a very dangerous source of infection, especially when it has become polluted with the excretions of diseased animals or man.

Food is rarely free from living organisms. These bacteria may be divided into three groups—

- (1) Those that are of benefit in bringing about desirable fermentations;
- (2) Those that produce undesirable fermentations and decay;
- (3) Those that are capable of producing disease.

A large number of healthful foods contain many bacteria. Foods not freshly cooked usually contain them in abundance, but they are generally the harmless type of bacteria. Occasionally pathogenic bacteria may be present in meat or other food that has been improperly cared for.

The body is always in contact with substances covered with micro-organisms; the skin usually harbours large numbers, and as food is not generally sterile when eaten, the alimentary tract contains many bacteria.

The skin and intestines possess what may be regarded as a normal flora that multiply in their respective situations.

These bacteria, as a rule, do no harm. If they penetrate the skin or the intestinal wall, the cells and fluids of the body destroy them. The living normal tissues of the body are free from bacteria. Disease producing bacteria, however, may break down the barriers to invasion of the body and produce infections.

The body excretions, especially the fæces, contain bacteria in large numbers.

Bacteria are scattered in various ways. The most common medium of dispersal is the air. The entrance of bacteria into the air is associated with conditions which favour the presence of dust. Bacteria are not easily blown about until the material in which they have been growing has dried and has been pulverised. Therefore, the air on a dry day, especially if windy, contains many more organisms than when moist. The infection of the air from sick persons is most important, as there is no doubt that disease germs can be disseminated by means of the air.

The actions of coughing, sneezing, speaking and deep breathing, distribute minute droplets of secretions from the mouth, throat and nose, often to a considerable distance, and these may float in the air for a considerable time.

Most bacteria, however, are probably destroyed by desiccation and by the action of the sunlight before they have been suspended for a long period in the air; only those that are exceptionally resistant to these conditions will survive, e.g., the tubercle bacilli.

Apart from direct infection from individuals, pathogenic bacteria may be spread from the splashing of water infected with excreta, especially in the case of Typhoid Fever.

Organisms are often carried by water, as that in streams. The typhoid bacteria can exist for some time in water, as also the organisms producing cholera, diarrhoea and dysentery.

Milk and other fluids are the means by which large numbers of bacteria are spread. Scarlet fever and diphtheria have been traced to milk supplies contaminated with the diphtheria bacillus and the streptococci.

Insects, particularly flies, may transport bacteria in considerable numbers from one place to another, and great importance is attached to the insect type of living carrier.

Human beings and animals may act as carriers of bacteria.

Many instances are recorded of the discovery of the *B. Diphtheriæ* in the throat and nose of perfectly healthy persons.

Fomites are a very common means by which bacteria are carried from place to place. Clothing, carpets, books, etc., may harbour these organisms for long periods.

Bacteria may possess organs of motion; these are hair-like appendages called flagella. They can swim to some distance from their origin under suitable conditions, thus transporting themselves from place to place.

Few species of Cocci, many species of Bacilli, and most species of Spirilla possess flagella, and are motile.

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