THE TYPHOID BACILLUS-THE AUTUMNAL INCREASE IN THE FEVER.

E BERTH was the first—in 1880—to place the theory of a special typhoid bacillus on a sound basis, and his researches have been confirmed in every particular and extended by Koch, Meyer, Gaffky. and others. The bacillus is a short rod-shaped organism, which is found in the diseased organs arranged in radiating or net-like groups. It will grow on nutrient gelatine at ordinary temperatures, forming in twenty-four hours a delicate whitish cloud, which under a low power of the microscope is seen to be made up of a number of minute round colonies. Under a power sufficiently high to show the contour of the individual bacilli it can be seen that they are endowed with spontaneous movement, which enables them to travel across the field of the microscope. These artifical cultivations reach their maximum development in about four days, but continue to live for at least, three or four weeks more. The bacilli also grow very luxuriantly on a cut surface of potato and in many vegetable infusions, as carrots, etc.

An important point in the life-history of the typhoid bacıllus is that when grown on potato in a warm, moist atmosphere, it readily forms spores on the third or fourth day. At 86° F. the formation of spores is rapid, at 68° F. slow. A warm week in a wet summer would provide, therefore, the very conditions which the bacillus requires for the formation of spores in large numbers outside the human body. Judging by analogy, these spores once formed would be able to resist conditions of cold and drought which would be fatal to the bacilli which gave them origin, and would remain ready to give rise to the disease when introduced into the human body with water or food. Gaffky, who has made a special study of these bacilli for the German Board of Health, believes that the spores may remain quiescent for long periods, and "may sprout and form bacilli in favourable circumstances, even outside the animal economy, increase enormously in numbers, and in the warmer part of the year form spores afresh." Mr. W. H. Power, in the course of investigations for the English Local Government Board, has brought out the fact that in certain epidemics traced to the milk supply, persons who drank milk which had been kept overnight suffered earlier, and in larger numbers than those who drank fresh milk-an observation which probably finds its explanation in the fact that the spores had time to germinate and reproduce the bacilli in large numbers before the milk was drunk.

The British Medical Journal (of Nov. 21.91), in an editorial on "Autumnal typhoid," says: We know that the insanitary conditions which favour the spread of the infection of the fever are always present—in March and April as in October and November, yet the number of cases in the former months is scanty, in the latter large. "Clearly we have not touched the cause of this seasonal prevalence. . . . In what direction are we to seek our clue?" The journal reminds us that the period between infection and the development of the first symptoms cannot be set down at less than a fortnight on an average, and that the onset of the disease is so insidious that the sufferer seldom seeks advice until the disease has been on him for several days, perhaps a week, and about three weeks after the entrance of the infective principle into the system. We are therefore safe in concluding that the majority of patients are infected in September, and generally in the last weeks of it. After damp warm weather which provides the conditions required by the bacillus for the formation of its spores outside the human body.

It is well known, the Journal continues, that there are three stages in typhoid fever—the stage of ascent of the temperature, the period of stationary temperature, and the period of decline. The first period, which lasts four or five days, presents the most characteristic type of temperature, the evening rise to 2° F., and the morning descent of 1° F. It is interesting to know