

AGRICULTURAL.

Tuberculosis and its Prevention.

FROM a late number of Harper's Magazine we take a few extracts from an article on the dread disease, Tuberculosis. The writer, T. Mitchell Prudden, M. D., says that it is neither wise nor necessary for non-professional people to concern themselves much about disease, or weigh anxiously the chance or mode of its requirement. But now and then conditions arise which demand general attention and instruction regarding certain diseases in order that a great threatened or actual calamity may be averted. Such a condition faces the people in all lands to-day in the appalling prevalence of tuberculosis. A disease which in mild or severe form affects at least one-half of the whole human race, and which causes the death of fully one-seventh of all who pass away, killing about one-third of those who perish between the ages of fifteen and forty-five—a disease which is most insidious in its onset, and often relentless in its course, and which may be largely prevented is one about which we cannot be indifferent, and should not longer be inactive.

There has long been reason for believing that tuberculosis is a communicable disease. Its cause, up to the commencement of the last decade, was altogether unknown, hence its ravages could not be stayed. But in these later years a great light has been thrown upon this and other kindred diseases.

The secret and study now in progress in many of the laboratories has had much to do with the present knowledge of diseases which are caused by micro-organisms or bacteria.

Different groups and races among the bacteria have different habits, and vary widely in their special powers. Complex and powerful as is the aggregate results which they accomplish in the world, the performances of the individual are comparatively simple. They are most liberally endowed with the capacity for multiplication, and each germ acts as a tiny chemical laboratory, taking into itself the organic matter on which it feeds and resolving it into new compounds. Some of the latter are used in building up and maintaining its own body, while others are given off into the surrounding media.

The diseases caused by the growth of germs in the body are called infectious, the germs of which are given off from the bodies of their victims in such form as to be readily transmitted through the air to others, in whom they may incite similar disease. Such diseases are spoken of as readily communicable, though it is not actually the disease itself but only the germ causing it which is transmitted. In other infectious diseases transmission but rarely occurs.

Without parading the whole list of germ diseases in which tuberculosis stands foremost, we will at once glance at the germ called the tubercle bacillus, the germ which takes self alone can cause the disease under consideration. It does not exist in the body of men or animals in health. Without the entrance of this particular germ into the human body from without, tuberculosis cannot develop in it. Without the transmission of this germ in some way or other in a living condition from the sick to the well, tuberculosis cannot spread. In the life history of this tiny germ lie both the potency for mischief which we deplore and the secret of our release from its bondage. The tubercle bacillus is a little colorless rod-like plant, so small that even many thousand of them piled together would make a heap still far too small to be seen with the naked eye. It cannot move about,

nor can it grow without moisture, nor at a temperature much above or much below that of the human body. The material upon which it feeds must be very nicely adapted to its requirements, and it has no lurking or growing place in nature outside of the bodies of men and a few warm-blooded animals. It can be cultivated artificially in the laboratory, and we know more about its life and peculiarities than about almost any other germ. While it can remain alive in a dried state for many weeks, it is readily killed by heat, by sunlight and by many of those chemical substances which we call disinfectants. It does not flourish equally well in the bodies of all human beings.

When once it gains lodgment in a body suited to its growth, it multiplies slowly, each germ dividing and subdividing, taking from the tissues material for its growth, and returning to them certain subtle poisons which it sets free. The action of tubercle bacillus is peculiar in that it stimulates the cells of the body, wherever it may lodge, and grow to the formation of little masses of new tissue, which we call tubercles. These tubercles are as a rule short-lived, and if the disease progresses, tend to disintegrate. If the tubercles have grown in such situation as make this possible, as in the intestinal canal, or the lungs, the disintegrated and broken-down material, often containing myriads of the living germs, may be cast off from the body. In tuberculosis of the lungs, or consumption, this waste material is thrown off with sputum. While almost any part of the body may be affected, tuberculosis of the lungs is by far the most common form of the disease.

It follows from what has been said that tuberculosis comes only from getting into our bodies tubercle bacilli from tubercular men or animals. The only animals liable to convey the disease to man are tubercular cattle, and these through the use of their meat and milk. The danger from the use of uncooked meat and unboiled milk is real and serious, but the prevailing danger of infection comes from another source.

By very careful study and experiment it has been found that the tubercle bacillus cannot be given off into the air of the breath from the moist surfaces of the mouth and air passages, nor from any material which may come from them while it remains moist, nor from healthy unsoiled surfaces of the body. The establishment of this fact is of far-reaching consequence because it shows that neither the person nor the breath of the consumptive is a direct source of danger, even to his most constant and intimate attendants.

It is the sputum after its discharge from the body on which our attention must be fixed. While the sputum is moist it can, as a rule, do no harm, unless it should be directly transmitted to those who are well by violent coughing, by the use of uncleaned cooking utensils, by soiled hands or by such intimate personal contact as kissing or fondling. But if in any way the sputum becomes dried on floors or walls or bedding, on handkerchiefs or towels, or on the person of the patient it may soon become disseminated in the air as dust, and can then be breathed into the lungs of exposed persons. This germ-laden material floating in the air may be swallowed, and thus enter the recesses of the body through other portals than the lungs, and these are the most vulnerable and accessible organs.

The wide distribution of tubercle bacilli in the air of living rooms, and in other dusty places where people go, is due partly to the frequency of the disease, and the large number of living bacilli which are cast off in the sputum (sometimes millions in a day), and partly to the fact that many of the victims of consumption go about among their fellows for purposes of business or pleasure for months or years. So each consumptive, if not intelligently careful, may year after year