

large numbers, give rise to special kinds of fermentation, and to the production of special products which are not harmless."

Now, I am of the opinion that the malarial germ often takes this route and this is why we have diarrhoea and dysentery that can only be cured by clearing out the intestines and giving quinine; other remedies, such as ipecac, opium, etc., have had no curative action in my hands in the endemics of dysentery, undoubtedly malarial, that we sometimes have in the western district late in the season after a hot and dry summer and the well water very low.

This to me is a very strong proof that these germs or organisms are carried to the intestines and these undergo changes which make them dangerous.

Again, on the other hand, I think it is clearly demonstrated that the germ which produces this plasmodium as found in the red corpuscles of the blood is taken directly into the lungs through the air we breathe and enters the circulation causing those typical cases of intermittent pneumonia, and aggravating and often producing periodical attacks of asthma.

Now, Mr. President and gentlemen, I am not going further into the consideration of the origin and development of these organisms, as if I did I would only be giving you the opinion of others, as I have not investigated this part of my subject to such an extent as would warrant me in inflicting my views on you, and your time can be much better employed by looking into the works of Laveran, Councilman and Osler, which are well worthy of perusal.

Before considering the different types of malaria, I would ask why do we have malaria in winter when the temperature is very low if it depends on vegetable decomposition due to heat and moisture, as no doubt it does.

I have seen no theory advanced to account for this, and shall give you my own as expressed in a short paper read before the Sanitary Convention in London in November, 1883. It is this: There are

three great receptacles for the malarial poison, viz., the earth, water, and the human body that have a supply in store as it were laid up for the winter, which under favorable circumstances manifests itself in the shape of intermittent or other forms of malaria. The water in the wells is perhaps the greatest source of supply, particularly when the ground is frozen hard for a long time and the water gets low.

The second reason is the poison escapes from under houses and spots of ground protected from the frost, and the third source is that some people living in a malarious district have a continual supply in the system only waiting to be developed when it finds a good opportunity; such as exposure, sudden changes of temperature, over fatigue, loss of rest, mental strain, or anything else that will cause the system to run down, thus reducing and impairing the vital resistance of the nervous system. One very strong proof that these organisms are latent in the system is that a man may have lived for fifteen or twenty years in a malarious section without ever having had ague or any other form of malaria. But let that man cross the Atlantic or go where malaria is unknown, and he is liable to an attack of it. I have known many such instances, which to me is a very strong proof of the latency of this germ in the blood or some of the organs of the human body.

It is true the type of malaria is milder in winter, and for the reason that the sources of supply are limited in comparison to summer, and is principally confined to localities where it is endemic. In other words, there is not enough escapes for the organs to carry it to any distance in sufficient quantities to produce its pathological effects, if indeed it could survive the frosts it would have to encounter on its journey. This, then, is my theory as to why we have malaria in winter. It may be erroneous, but I think the investigations of Laveran and others as to the organisms found in the