

They require to be separated from the containing liquid, dried, lifted, and carried by currents of air. When so carried they may or may not fall into congenial soils.

Any one walking upon the chalk downs on a midsummer day may see the analogue of that which takes place in sewers. The air blowing over the Southdowns lifts up the seeds of the various thistles which grow there and carries them on to arable fields below or out to sea. In the one case they reach a congenial soil and grow, to the discomfort of the agriculturist; in the other they are destroyed. So it is with disease germs from sewers.

There is something more than smell or something less, as it has not been proved that disease microbes have any smell at all, and of course it is only those which cause diarrhoea, cholera, and typhoid, and the sewer must have a tidal state to enable these germs to find exit at the street openings. This brings me to another point in the case. There are benign microbes as well as malignant organisms. There are microbes which are friends to man, as well as those which are inimical. Take a cubic inch of mould from the Beddington Sewage Farm, and it swarms with millions of living creatures, which are hard at work on a warm day preparing the organic matter in the humus by turning its nitrogen into nitrites ready for use by the vegetable world, if it happens that no radicle belonging to a carnivorous plant is at the moment ready to save the necessity for the change. It has been shown by direct experiment that the formation of the nitrites is due to this cause, and that the development of ammonia which takes place under some other circumstances is also a reaction due to another organism of another kind, the result being acid in the one case, alkaline in another. In the one case putrescence is avoided, a nitrite or other acid being formed; in the other it is hastened, and ammonia results. Here we have another line.

How does this alternation come about? The answer is that it comes about very much in the earth or in sewers as it does

in the air; let oxygen abound, especially ozonized oxygen, and nitric acid tends to form. The organisms which cause this tendency grow as vigorously as does the yeast micrococcus in a solution of sugar. When the air is highly charged with electricity the rain which descends in a thunderstorm contains an appreciable portion of nitric acid. But let the presence of oxygen be diminishing, and compounds of nitrogen form which are alkaline, and putrefaction is then promoted. A set of microbes come into being which are sometimes inimical to humanity; but here again we see the overruling hand of a Divine Providence, for one of the products of putrefactive agency—viz., sulphuretted hydrogen, is completely destructive to those organisms that especially revel in the humors of animal life. This result is shown in the work of the doctor. It is our duty as students to do some dissecting in our student days, and we may be requested to do so at any time by the corner. It sometimes happens that the operator wounds himself. I have experienced this while making post-mortems upon those who only been dead for forty-eight hours more or less. This class of wound is always very serious, for disease germs may be transplanted, but a wound which is inflicted at the end of a dissection, when putrefaction is established, perhaps six or eight weeks after the death of the subject, has very little danger in it, for the disease-producing microbes, if they had been present, have all been destroyed in the process of the putrefactive action which has taken place. This result happens in sewers as well as in dissecting rooms.

There are two classes of microbes which have to do with destructive agencies—the moulds, which belong to the family of fungi, and the true microbe or schizomycetes order. If air be sparsely admitted the moulds predominate, and there is a tendency to acid formations, carbonic acid, butyric, nitrous acid, etc.; but if it is all but excluded the schizomycetes are most numerous, and it is on this fact that ventilation must be good or not at all. We now reach a point in our inquiry which is of