

danger to stock; then there is the waste water from the dairy factories becoming a nuisance and polluting the streams. One of the principal questions before us is the danger to the dairy industry through pollution of the water from flax-mills, &c. Conflicting evidence has been given as to its effect upon stock that have been drinking the water, and also as to its effect upon fish. You might give us your views on these different subjects?—Well, first of all, I think perhaps I had better just refer to dairy-factory drainage. As regards the drainage from a dairy factory which would be put directly into a stream in a perfectly fresh state, I do not think it is likely to do any harm in the way of river-pollution. Dairy-factory drainage consists very largely of water. There is only a small amount of solid matter in it. It becomes a nuisance when it is allowed to stand and putrefactive changes take place. That is what one of the witnesses referred to this morning when he mentioned a bad smell from one of the dairy factories in his neighbourhood. I would like also to refer to sawdust going into a stream. There has been a great deal stated at times about the injury that is done to trout on account of that, and I am of opinion that it is very detrimental to trout in the streams. It acts probably mechanically, by lodging about the gills—the gill-rays—of the fish, and interfering with the proper oxidization of the blood, a process that really corresponds to breathing with us. Now, as regards flax-refuse, that is a matter which I think will have to be considered very carefully and very seriously. There is an enormous quantity of it which has to be got rid of every day in an ordinary flax-mill, and to put the whole of that quantity, day after day, into a running stream is calculated to produce considerable pollution of the water. Naturally, of course, the extent of pollution depends upon the volume of water that is in the river, and also the force of the current in it. In a river like the Manawatu, for instance, in its lower reaches, it would probably not cause any serious pollution from the point of view of detrimentally affecting the health of the stock which were drinking the water, so long as they were drinking it from the main current itself. But in a river of smaller volume, or in a river which is running over a bed which is liable to leave deposits in places, or in a river where there are liable to be some backwaters occurring, then trouble may very well happen, because the flax-refuse would after getting into the water gradually undergo decomposition, and be more liable to sink to the bottom, and become a sediment there; and such collections of decomposing material would be more likely to occur in backwaters of that sort, being carried in probably by eddies, and so on. On the other hand, stock drinking from that river would probably find backwaters like that the most handy places for getting at the water. The injury to stock would occur through the poisonous material which is produced as a result of the process of decomposition that goes on. The perfectly fresh flax-refuse is not detrimental to their health, if taken in small quantities. We ourselves often see cattle picking away at growing flax, and when this is perfectly fresh, and not taken in too large quantity, it would do no harm. As a matter of fact it has been frequently suggested that the stuff should be used as a food for stock. But after it undergoes decomposition it becomes dangerous as a result of the poisonous materials which are produced from the process of decomposition; and then, of course, that brings us back again to what I was saying in the first place—it depends largely upon the volume of water in which it happens to be lying to what extent the danger exists to stock: the smaller the stream the greater the danger. I can quite realize how one of the witnesses I heard this morning noticed that their stock appeared not to care to drink the water when it was badly polluted as the result of decomposition of flax-refuse. Probably they exhibited a sort of natural selection, which one often does see in the lower animals, which leads them to avoid food or water which is liable to be dangerous to them; and, to put the thing in a nutshell, I think that the putting of this large quantity of flax-refuse in running water is a source of more or less danger to the health of stock drinking the water. It does not necessarily follow that this flax-refuse will kill them. It may simply cause a certain amount of disturbance of their digestive organs, a certain amount of indigestion, perhaps a little scouring, or put them into a condition of more or less ill health; and, at any rate, affect their monetary value and affect their general usefulness. There is one other point I would like to bring out, and that is that it has been stated that this flax-refuse might be profitably utilized for manurial purposes. Mr. Aston, the Agricultural Chemist to the Government, has made one or two analyses of this refuse, and in connection with one of them he says, "This would make a good fertilizer if well rotted and easily obtainable." I would also like to quote his analysis of another sample, which, so far as its chemical constituents are concerned, ought to make a useful sort of fertilizer. He states as follows: "Waste product in flax-manufacture: This consisted principally of fleshy portions of the leaf of phormium with a little short fibre, the whole in a fine state of subdivision. An analysis of the constituents following was requested and supplied: Water, 69.9 per cent.; organic matter, 26.6 per cent.; ash, 3.5 per cent.; phosphoric acid (P_2O_5), 0.249 per cent.; sulphuric acid (SO_3), 0.137 per cent.; chlorine (Cl), 0.082 per cent.; lime (CaO), 0.540 per cent.; potash (K_2O), 0.753 per cent.; soda (Na_2O), 0.371 per cent. Calculated on the percentage of the ash the two chief fertilizers stand as follows: Phosphoric acid (P_2O_5), 7.11 per cent.; potash, (K_2O), 21.51 per cent. Of course, there are practical difficulties in the way of handling the stuff in great volume. These are my views generally, and if you would like to ask me any questions I shall be pleased to answer them.

3. *Mr. Buick.*] Does your experience lead you to believe that the refuse from the flax-mills when it is fresh would do no harm if taken in small quantities?—No. It would have no effect of that sort. If taken in great quantity it might set up serious indigestion or something of that kind. Of course, there will always be small strips of fibre bound to accumulate in the stomach.

4. Does that refer also to growing flax?—Yes. There is one point I might have mentioned, and that is that flax contains a bitter principle, the exact medicinal character of which has never been determined. It is a bitter, and if taken in any quantity flax tends to have a laxative effect on animals; and I think it is quite possible that this bitter that is in the flax is something similar to aloes, which is used as a purgative for horses and other animals. Flax belongs to the same