

The Year's Progress in Cane Disease Investigations.—Contd.

circumstances Streak can be transferred from maize to cane. But maize is held to favour the spread of Streak when grown in proximity to cane, since it appears to be a highly favourable food-plant for *Balelutha mbila*, and is likely to encourage the multiplication of the carrier of Streak.

This work forms a good example of the devious paths by which results may be obtained in scientific research. The study of maize has led to the solu-

tion of a sugar-cane problem. Without the previous work upon maize it is unlikely that the relationship of *Balelutha mbila* to Streak in cane would have been discovered. I therefore make no apology to the Sugar Association for a paper devoted largely to maize.

In thanking Mr. Storey for his paper the Chairman stated he felt sure the work which had been done would be most beneficial to the Industry in the future.

QUESTIONS ON STREAK DISEASE.

The next business which was proceeded with was the answering of various questions contained in the official question and answer programme issued to each member.

By special request Mr. Rapson was asked to give a specific reply to the question: "How may Streak disease be certainly diagnosed by the planter?"

Mr. Rapson replied:—The answer to that primarily is by the leaf. Streak disease is apparent in every leaf that has Streak disease in the cane. It has an elongated stripe right along the leaf and the whole of the leaf is so marked. You can finally determine Streak disease from any other leaf marks if you take out the heart leaf from a sett. By examining that you will find that if the sett is clean right through that heart leaf will be clean. But if it is a diseased sett it will also be diseased to the minutest portion of the heart leaf.

Mr. Storey gave the following reply to the same question, namely:—By examining the youngest, partly unfolded leaf of the shoot. If this bears, evenly distributed over its whole length, narrow colourless Streaks, then the plant has Streak disease. If there are no markings on this leaf, then the plant is healthy. If an odd marking or two only is to be seen, the plant is almost certainly healthy, although in a rare instance it might be a case of a new infection just starting. The Streaks are best seen by holding the leaf up to the light.

The Uba leaf is apt to bear many colourless spots upon its older leaves. These are not Streak disease unless the youngest leaves are also affected.

Question No. 7.—"What method is recommended for the selection of cane in the control of Streak?"

Mr. Storey replied: Selection should be done in a field as low as possible in Streak disease, preferably under 10 per cent diseased. The method of selection must be chosen so as to ensure the rejection of all canes the leaves of which are Streaked, and of all canes from a stool which shows any Streaked shoots. Whatever method be employed, it must be such that the selection is carried out before the leaves have been removed or allowed to wilt. It is suggested that specially trained boys be sent through the fields to cut out the cane of all stools

which are wholly or partly diseased, or to mark these stools in some way such as by tying up or cutting the tops off. The remainder of the field may then be cut for planting. The diseased canes, if of suitable age, may then be sent to the mill. Alternatively, the boys may be sent through the fields to cut out healthy canes, or top setts from healthy canes. In such cases the boys should be required to bring these canes out on to the headlands complete with their leaves, which should be cut off only after inspection by an overseer.

Question No. 8.—"Why do Streak diseased plants appear in the young cane, even if selection has been carefully carried out?"

Reply by Mr. Storey: The diseased plants in this case are due to:—

- (a) An error in selection, diseased canes having been allowed to be planted.
- (b) So-called "latent infections." It is likely that some apparently entirely healthy canes had in fact contracted Streak disease a short time before they were cut, but too recently for any symptoms to have shown. Setts cut from these canes would produce Streaked shoots.
- (c) Secondary infection from neighbouring diseased canes. If the insect-carrier is present, this is liable to happen, particularly on the edges of the field near to old diseased cane. If there are old roots from the previous crop still shooting, these are likely to act as sources of infection. Great care should be taken to eradicate them.

Question No. 9.—"When should roguing be carried out in Streak control?"

Reply by Mr. Storey: Roguing should begin as soon as the majority of setts have sent up shoots above ground. It should not be postponed. All diseased plants should be removed and the gaps filled. The next roguings should be at fortnightly intervals. It is likely that no diseased plants will be found at the third or fourth roguing. If many diseased plants are found after the fourth roguing, it is probably inadvisable to carry on roguing fur-

Questions on Streak Disease.—Contd.

When we started some two or three years ago to investigate the results of using mineral phosphates, to get the best results we found it should be ground to a very fine flour and air separated. When we tried the effect of mineral phosphates against other phosphates we got better results than we anticipated. Since then we have been carrying on the experiments.

Mr. Dodds is very interested in this and has carried out a number of experiments with the various forms of phosphates, and I think we can agree on these points that with certain soils in

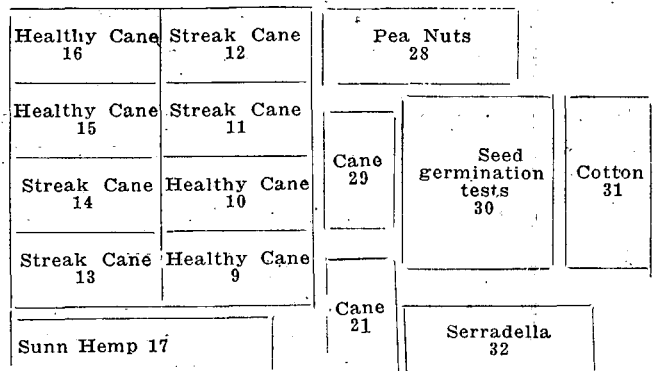
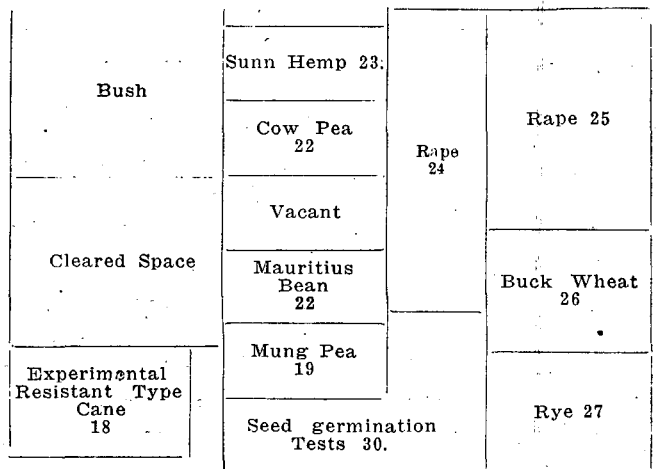
Natal, not so much the sandy soils but more particularly the midland Natal soils which are sour owing to mineral sourness, the use of superphosphates is disappointing, and a less soluble form of phosphates such as a mixture of rock and superphosphate or bonemeal or basic slag is better for that type of soil. When you come to a sweet limestone soil superphosphates is far and away the best form to use. Between those two extremes it may be difficult today to lay down a hard and fast rule, but so far as I can judge a mixture of the mineral and superphosphates is the cheaper way of improving your soil.

AT THE UMBOGINTWINI EXPERIMENTAL PLOTS.

As soon as the weather effected a temporary improvement the party left for the experimental plots and spent some time examining the crops. From a sugar planter's point of view the plots demonstrating Streak disease were intensely interesting. On the one hand there was a plot of cane planted with the disease, and alongside of it another planted with Streak free cane. At four months old this latter cane contracted the disease from the former, by contagion, and one of the plots was so full of the disease as to be apparent to the most inexperienced person. But apart altogether from the obvious effects of the Streak on the leaves, a percentage of the cane growing in the plots planted with Streak free cane clearly showed a much greater improvement in the growth of the stalks than the neighbouring one. So close together were these planted that it was possible to touch the cane on either hand and compare the growth of the stools one with the other. All manner of theories have been put forward in the past tending to minimise the seriousness of this disease which has evidently been in the country for many years, but the ocular demonstration provided by Mr. Storey was beyond question. Seen at a distance all the plots looked very fine, the cane being uniform and of a beautiful rich greenness. For this the wet season is largely responsible, and it would be interesting to see the results in a droughty season. One naturally assumes that the results would be even more striking:

Besides the cane experiments various other plots of interest to Sugar planters were provided as will be seen from the following diagram:—

Station I. DIAGRAM OF EXPERIMENTAL PLOTS



Hut

From Rendezvous.