ACCIDENTAL CANE FIRES

By A. C. BARNES

I propose to go beyond the scope of the symposium on fire control which took place on the 27th February, and I have called my talk "Accidental Cane Fires" — perhaps a better term would be "Unintentional Cane Fires".

The unintentional cane fire is nothing new. In recent years, there have been several references in the *South African Sugar Journal*, the Press, and in discussions, to this constantly recurring problem; but it took the major catastrophe of 1961 to bring the subject forcibly to the notice of the Industry and to get serious, collective action taken. For example, in the Umhlali-Compensation area in July, 1953 one thousand acres of cane were burnt, a matter which appeared to receive quite casual mention and then to be almost forgotten. In the *South African Sugar Journal* of September, 1955, a short article was published entitled "Increasing Danger of Cane Fires", with the sub-title "Some methods to combat the hazard". In that article, three diagrams appeared which are of great interest. The first shows that between the periods 1949-50 and 1954-55, the incidence of cane fires increased six times. These fires are not those normally set to burn cane prior to harvesting, as at Umfolozi, but are the accidental fires which constitute a grave danger, not only to the farm on which they occur, but to those adjoining it.

In dealing with the causes for the occurrence of fires, the second diagram in the article shows that 26 per cent were caused by growers' own fires; burning cane for milling 10 per cent; burning bush, grass, etc. 7 per cent; plus another 7 per cent for burning brushwood; and burning trash at sidings 4 per cent. The proportion believed to be maliciously set was 25 per cent; one quarter of the total. The South African Railways and the plantation railways accounted for 19 per cent, of which the South African Railways were debited with 16 per cent. Smoking in fields 10 per cent; lightning 7 per cent; Native Reserves 4 per cent; tractors 2 per cent; and sundry, non-identified causes 8 per cent. That statement gives us some idea of the hazards with which we are faced, both in number and variety.

The third diagram is very significant, and shows that the period of greatest danger is between July and October. July is shown as 14 per cent, August 13 per cent, September 13 per cent and October 13 per cent, half the total number of fires occurring throughout the year. That article written six and a half years ago outlines preventive measures which again were discussed at the symposium, and then gives a list of precautionary measures which could be put into effect to localise and more easily control cane fires. The first one of these is the provision of adequate and clean fire breaks, a matter which was discussed at the symposium. In addition to that, it was recommended that master fire breaks, at strategic places, should be introduced, so that, in the event of a large fire occurring, some definite limit could be placed on its spread. There is no doubt that the absence of those wide, strategic fire breaks contributed considerably to the devastation that these large fires caused last year. Thirdly, the provision of a fire fighting organisation in each district.

One of the objects of bringing this matter to the notice of The Sugar Technologists' Annual Congress on this occasion was to emphasise the importance of setting up regional organisations for preventing and controlling cane fires. Let us consider for a moment the principal heads to be dealt with; I have set out four — prevention; detection; control; and salvage. These points must, I think, be considered and dealt with in that order, if we are to check, and prevent, as far as we possibly can, the occurrence of catastrophic cane fires such as those unfortunately experienced in 1961.

Under the head of *prevention*, there come fire breaks, which were dealt with at some considerable length at the symposium, the record of which was published in the *South African Sugar Journal* of March of this year. I do not think it is necessary to repeat what is recorded there, but to suggest that you and all others interested in this vital question should carefully consider that report.

In regard to detection, I have recently thought of the possibility of using some form of instrumental detection, and I started to make enquiries when in England, but so far without very much success, except that I did discover a line of approach which could be taken if it were considered desirable to proceed.

A fire observation service is a method of detection which should form a part of the organisation to be set up to deal with cane fires.

Control: here again considerable discussion took place at the symposium, and it was clearly brought out that quick action is essential to the effective control of a cane fire. It is not only the question of dealing with the outbreak itself, but of coping with small fires which originate from that outbreak by flying burning trash. It was in that connection that both in relation to the intentional burning of cane before reaping as well as in connection with accidental fires, certain forms of fire extinguishers were discussed. Two, in particular, were mentioned — one having a two-gallon container operated by compressed carbon dioxide which will give a quick knock-out to a small fire. The other was a mobile pump mounted on a 500-gallon tank. A third one is a portable water container, fitted with a hand pump similar to the type of knapsack spray which is often used in fields for other purposes.

We come then to the question of *salvage*. Once the fire has occurred, this becomes of major importance. It calls for close co-ordination between the mills and the people who have suffered from the fires, and careful

organisation of the reaping, loading and transport. It will occur to you immediately that these affairs usually happen at night and, in order to get the burnt cane to the mill, it is necessary to work around the clock. For that reason, it is highly undesirable to have vehicles moving in opposite directions on the same track. There have been observations which appear to indicate that certain varieties of cane do not keep so well after a fire as others. If that is proved, the obvious thing to do is to reap the cane that spoils quickly and leave the other until later. A number of points arise in connection with salvage. If one considers the mechanics of a cane fire, it will be realised that cold air comes in at the base of the cane and rises to replace hot air that has moved in an upward direction, so that in a cane fire, unless it is unusually fierce, the lower part of the cane is not severely burnt—the major burning and charring occurring in the upper half. It may be thus found that the upper half of the cane deteriorates more quickly than the lower half. That is a point which one hopes will be examined on the occasion of the next convenient cane fire.

There are possibly other points which should be looked into and, in that connection, a small Sub-committee has been appointed, with the Director of the Experiment Station as Chairman, to consider what investigations should be made on the occasion of a cane fire, with the object of determining the importance of these matters to which I have just referred, and ascertaining any others that can be of value.

In connection with the risk of cane fires, the subject of insurance comes to mind. We have the mutual co-operative company established by cane growers known as the Grocane. Lloyd's Underwriters will, in certain circumstances, issue policies against loss by cane fires. These companies require that the owner of the cane shall do everything reasonable to protect himself against outbreaks of cane fires. In the Grocane Insurance regulations is a short note which, while not being specific, says: "the assessors may reject a claim in whole or in part, if they are satisfied that the claimant did not exercise reasonable diligence in the protection of his plantations against the risk of fire, or in controlling the fire or minimising his subsequent losses by delivery of the greatest possible tonnage of burnt cane to a mill". Lloyd's Underwriters require that a grower shall provide clear fire breaks about twenty feet wide for every sixty acres of cane. They are prepared, in certain circumstances, to vary that requirement, but they consider it to be a reasonable minimum protection that the grower should undertake at his own expense.

While on the subject of insurance and the risks that growers experience in connection with fires, I think I should refer to what one might call the "third party risks", that is to say the consequences of damage to a neighbour's property by negligence on the part of a grower or his servants. It is difficult to prove negligence, but nevertheless the law is very emphatic on the question of a person's liability in circumstances such as we have been discussing. That subject should be kept in mind.

I now come to consideration of the organisation which could be, and I think should be, set up in some form or other to deal with the four points that I mentioned relating to cane fires. Whatever organisation is established must be permanent. This does not, to me, appear to be a subject that can be settled by two or three committee meetings and a report. During the danger months and for a time before, there should be regular sessions so that when an outbreak does occur everybody knows exactly what their duty is, how to set about dealing with their own interests and helping others as and when necessary. Exactly how this is to be done is not yet clear, but it occurs to me that there will have to be a number of zones, in each of which there will be a central committee and a number of sub-committees. The central committee will be responsible for seeing that the general organisation is properly planned and effective, the smaller individual groups being responsible for carrying out the fire-fighting and salvage policy, if and when the need arises.

I commend, therefore, early action to form a central committee, to deal with the whole of the organisation required to cope with cane fires.

Dr. Shuker said that last year after the big fires a great deal of cane sent into the mill had to be rejected. He felt that there should be some organisation whereby cane could be tested in the field before being sent in to the mill. There was as yet no efficient test for the suitability of burned cane for milling. Purity was not a good criterion. He understood the S.M.R.I. was attempting to find a suitable test.

Mr. W. J. G. Barnes, in the chair, said there was some chaos last year, but with planning, things should be easier this coming season. There was provision in the Sugar Act for a Committee consisting of the mill chemist, the Central Board's chemist and two growers' representatives. The members of this committee would be more mobile in the next season than before. They would advise growers whether or not the cane was fit to mill. This was a rough-and-ready way of dealing with the matter however, and the real problem arose when, towards the end of the harvesting, the cane went bad very quickly.

The basic point was that some cane should not be cut and the loss from the fire should be accepted. The grower should then be told not to send in any more cane which would not be accepted.

Mr. du Toit, said Mr. Bruijn of the S.M.R.I. was doing some work on the testing of the rapid increase of gum content in burned cane after a certain time. As far as he knew it was not a method that could be applied in the field but it could perhaps be used in the factories to indicate when the cane was going off rapidly.

Mr. A. C. Barnes said last year's enormous fires resulted in factories crushing nothing else but the burned cane for very long periods. If the burned cane could be mixed with green cane the mill would be able to cope more easily.

Mr. Main referred to the naval type of smoke-screen used during the last war. This required a good breeze for its successful operation. Quite a lot of development was being carried out by the U.S. Department of Forestry on a fog laid by aircraft around homesteads, to try to protect them. He felt that it might be possible to obtain some technical guidance from the American or the Australian authorities who have been developing this fog type of fire extinguishing.

Mr. du Toit asked if between the Regional Fire Committees' areas there would be wider fire breaks, and would these Committees endeavour to provide these breaks by the time the fire hazard became great, say towards October?

Mr. A. C. Barnes said the organisation to be set up would give great attention to the matter of fire-breaks, but he did not know if it was intended to provide breaks between the various regions.

Mr. W. J. G. Barnes related that some of these regional committees were already operating. The basic issue was for everybody to put their maps together to try and programme the cutting so that there would be some kind of mutual help during the worst periods. His view was that one of the duties of these Regional Committees was to make sure that any large fire did not go out of their respective areas. Rules could not be made for the whole Industry however.

He explained to Mr. Main that the Fire Symposium ended with the appointment with a committee headed by Mr. I. Smeaton and Mr. Brian Kramer, with a representative from each Group. This committee would go into the whole matter and get things going. It was up to each Regional committee to organise its own fire-fighting scheme.

Mr. Powell asked about the soda-water type of knap-sack extinguisher and Mr. A. C. Barnes explained that the object of the carbon dioxide was merely to propel the jet of water on to the fire as quickly as possible.