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EDITORIAL.

Mr. Whitaker, who, except for a brief interlude, has been editor of this paper since its inception, has sometimes felt that the editor of such a paper should be in closer touch with the members of the J.A.S.T. than was possible for him, as manager of an estate.

Logically, his mind turned to the newly formed Research Organisation, the staff of which is constantly touring the estates. Therefore, after allowing an interval to get the routine of the Research Department organised, we have now, with pleasure not unmingled with trepidation, taken over the editorship of this journal. The explanation we have given will show that we have taken on the work for the sake of expediency, and not because we have any particular flair for it, and, in fact, from the point of view of picking an editor, a scientist, other things being equal, should probably be the last choice. On the occasions, therefore, when this journal drops below the very high standard set by the former editor, we must seek the indulgence of our readers and remind them that our aim is high, even if at times it prove faulty.

A second difficulty has beset us in this number, in that, limited as we are by shortage of paper, we have had to condense the reports of the Chemical, Engineering and Agricultural sections very greatly in order to fit them complete into one number. Miss Bovell's paper on "Drainage and Water Control" has been condensed by herself and even so, the very clear diagrams, with which she illustrated her talk, have had to be omitted. The other contributions to the discussions reported have also been cut drastically, and a few may have been omitted, but we hope that the wrath of our contributors may be tempered with mercy towards the editor.

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REPORT OF THE MEETING OF THE AGRICULTURAL SECTION OF THE
JAMAICAN ASSOCIATION OF SUGAR TECHNOLOGISTS.

At the first meeting of the Agricultural Section of the Jamaican Association of Sugar Technologists Mr. Barnes, being elected Chairman, opened a discussion on:—

"The Fertilizer Position in Jamaica Under Wartime Conditions."

He pointed out that with commercial fertilizers in limited supply, the use of substitutes should be considered, and went on to outline the use of some factory wastes. Furnace ash, he said, was considered to some extent a source of potash, but was not considered a suitable substitute for the usual imported potassium compounds. Results obtained from filter mud had been poor, or entirely negative. With Oliver filter mud as distinct from filter press cake, however, the contrary was found to be the case, and the reason for this was thought to be the lower proportion of sugar retained in the former. With regard to dunder, the disposal of which would be controlled by the Public Health Law, there appeared to be a possibility of neutralising it and applying it, after concentration, in measured doses to fields which would be likely to benefit from it. Composting, fly penning and pen manure applications, he believed, should now come into their own again, having at one time been the only methods available to Jamaican sugar planters of maintaining the fertility of their fields.

**REPORT OF THE MEETING OF THE CHEMICAL AND ENGINEERING
SECTIONS OF THE JAMAICAN ASSOCIATION OF SUGAR TECHNOLOGISTS**

**DISCUSSION ON THE DISPOSAL OF SUGAR FACTORY AND DISTILLERY
REFUSE WITH SPECIAL REFERENCE TO DUNDER.**

The Chairman opened this discussion by stating that during the past crop the Board of Health had made clear to the Sugar Manufacturers' Association their intention to refuse licenses to sugar estates to dispose of untreated factory wastes in water courses. This virtually would mean that in many cases distilleries would not be able to continue operating. The Sugar Manufacturers accordingly gave their word that measures would be taken to meet the situation by the beginning of the next crop. The Association had been asked by the Sugar Manufacturers' Association to discuss measures of dunder disposal and to put forward concrete proposals for its satisfactory disposal at the various sugar factories. The meeting then discussed methods of dunder disposal and the deliberations of the meeting have been summarised as follows:

Anaerobic and Aerobic Process.

It was pointed out that the problem for the disposal of dunder was one of reducing the Biological Oxygen Demand (B.O.D.) of the dunder to a satisfactory level before its disposal into water courses. When dunder was discharged into streams or rivers without pre-treatment its organic matter content was oxidised at the expense of the oxygen in solution in the river water upon which animal life in these rivers was dependent for continued existence.

The reduction of the Biological Oxygen Demand (B.O.D.) of dunder could be achieved by either the decomposition of the dunder by anaerobic process or by the oxidation of the dunder by an aerobic process, or by a combination of the two processes. Decomposition by anaerobic process in large pits with methane gas as an end product would be a slow process and it was decided that in Jamaica it should be used in conjunction with an aerobic process. This would mean that dunder would have to be discharged into large sealed pits where anaerobic decomposition would take place. The partly decomposed dunder would then be led over filter beds for oxidation to take place so that the final effluent would be of a sufficiently low B.O.D. to satisfy the Board of Health.

While it was hoped that a dunder of high B.O.D. could be legitimately discharged into a water course of large volume it was pointed out that pollution would probably be judged by the B.O.D. of the discharged waste as it entered the water course and not by the B.O.D. of the water course itself after the dunder had been discharged into it. Thus discharging untreated dunder into a flooding river would probably not satisfy the Board of Health Authorities, unless sufficient dilution could be obtained before discharge into the river.

It was pointed out that the Board of Health had not specified what percentage Biological Oxygen Demand content dunder would be allowed to be discharged into water courses but it was thought that if the oxygen demand of the dunder were the same as that of the water into which it was discharged this would be sufficient to satisfy the Board of Health.

Incineration of Dunder.

An alternative method to the disposal of dunder into water courses would be that of evaporation and incineration, the resulting ash being used as a fertiliser, but although the potash of this ash would be as high as 33% (worth £13 per ton in Jamaica) the meeting decided that this method was impracticable at the present time because it required increased factory evaporation capacity which was dependent upon the availability of suitable metal or glass equipment for construction of the necessary evaporators.

Discharge directly into fields.

On some sugar estates, with highly alkaline soils, dunder could be discharged directly into fields by a system of trenching or canals, the fields left fallow for a period of six months after which they could be brought back

into cultivation. This would have to be investigated, however, as the sugar content of dunder might have an adverse effect on the soils as had been found to be the case with high sugar content filter press mud when used as a fertiliser.

Another method that might be practicable would be that of diluting the dunder with a very large volume of hard water to a satisfactory pH, the final solution being led by irrigation canals directly onto the fields.

Sink Holes.

In some parts of the Island especially Trelawny natural sink holes have been used by some sugar estates for the disposal of their dunder with satisfactory results.

Recommendations.

A proposal was put forward and generally accepted by the meeting that as the question of dunder disposal had already been the subject of a great deal of investigation in Louisiana that an engineer and a chemist should be sent by the Sugar Manufacturers' Association to Louisiana to study the method of disposal in use in that country.

The Chairman collected data showing the dunder production at different factories and also the methods of disposal at present in use at these factories. This data (shown in the table below) was submitted to the Sugar Manufacturers Association so that this information could be available to the engineer and chemist selected to go to Louisiana should the Manufacturers' Association approve of this proposal.

The Meeting also decided that the requirements of the Board of Health were not specified in sufficient detail and that a memorandum should be submitted to the Board of Health asking that Board to define the quality of dunder that would be allowed to be discharged into water courses and also to indicate those factories not at present disposing of their dunder satisfactorily.

DUNDER PRODUCTION AND METHODS OF DISPOSAL IN JAMAICA.

ESTATE	Appx. Daily Total of Dunder (gallons)	PRESENT METHOD OF DISPOSAL.		REMARKS.
FROME	24,000	Discharged into	river	Plentiful water supplies. Poor drainage.
KEW	2,500	" "	Drains, then river.	Poor drainage. Acid soil.
BARNETT	6,000	" "	river.	Outlying Soils deficient in potash. Poor drainage.
ROSE HALL	4,000	" "	sea.	Very near sea level. Could possibly be applied to soil.
IRONSHORE	Unknown	" "	dunder pond, then into sea.	Very near sea level. Could possibly be applied to soil.
HAMPDEN	5-6,000	" "	dunder pond and sink holes.	—
CAMBRIDGE	Unknown	" "	dunder pond.	—
VALE ROYAL	"	" "	sink holes.	—
LONG POND	"	" "	sink holes.	—
LLANDOVERY	"	" "	river, near sea.	—
RICHMOND	"	" "	gully, near sea.	—
WORTHY PARK	"	" "	sink holes.	—
BOG	"	" "	trench then sink holes.	—
GRAYS INN	40,000	" "	stream, then sea.	Poor drainage.
JAMAICA SUGAR ESTATES	17,000	" "	drain and then swamps.	Very poor drainage.
SERGE ISLAND	5,000	" "	gully and then river.	Good drainage.
BERNARD LODGE	25,000	" "	pond and canal and then sea.	—
CAYMANAS	8,000	" "	pond and then into 200 acre pasture.	—
INNSWOOD	Unknown	" "	pit and gully.	—
BYBROOK	"	" "	dunder pond.	—
SEVENS	12,000	" "	pits.	Pits under capacity and very near river.
MONYMUSK	27,000	" "	river.	Suggested dilution and used as irrigation water. Would require 7,000,000 gallons spray pond water to raise pH to 6.0 — 6.3.
RAHEEN	Unknown	" "	trenches.	—
APPLETON	"	" "	sink hole.	—
HOLLAND	"	" "	swamp.	—
GREEN PARK	"	" "	pond.	—
RETREAT	"	" "	pond, then used as manure.	—