unable to continue their series of publications there will be less work for printers. More money can not be raised either by societies, whose members mainly come from those professional classes which the war has hit most hardly, or by libraries which depend on private funds drawn from those same classes.

We are aware that material costs more, and that printers' labor is now remunerated on a scale which has forced publishers to raise all prices. But the general economic conditions which led to these phenomena are beginning to change. The existing scale of book prices means the cessation of book-buying. Unless novels and school books are to be the only output of the future, the present state of things must come to an end. The remedy lies with the trade; the buying public has come to the end of its resources, and refuses to be exploited any longer.

To this statement Mr. Geoffrey S. Williams, president of the Publishers' Association of Great Britain and Ireland, makes reply in the *Times*, saying:

It is unfortunate that the signatories of the manifesto about the cost of printing should have included publishers in their indictment, for publishers are fellow-sufferers with the signatories. They are dependent on the printing, binding, and paper-making trades, and until the charges made by these trades are materially reduced it is quite impossible for publishers to issue books at lower prices. On the whole, prices of books have not advanced to anything like the extent that would have been justified by the increases in the costs of production.

It is not easy to quote figures, for books, like human beings, have distinct individualities, especially from the publisher's point of view; hardly any two of them are exactly alike, though they wear the same clothes; but from calculations that have recently been before me, and give, I believe, a very fair comparison of the prices ruling in 1914 and now, it appears that the cost of printing is approximately two and three-quarter times what it was in 1914, paper (of an inferior quality) costs over double what it did in 1914, binding (also of an inferior quality) costs rather more than three times what it did in 1914, while the total cost of a large edition of a small book works out at about 180 per cent. above the 1914 figure, and publishers' establishment charges and the cost of advertising have kept pace with other items in their upward course.

## SPECIAL ARTICLES

### A BACTERIAL DISEASE OF GLADIOLUS

AN undescribed bacterial disease of *Gladiolus* has been under observation in this laboratory for a number of years, and recently a more intensive study has been undertaken. The following brief description is offered as preliminary to the publication of the complete study.

The organism has been isolated repeatedly and its pathogenicity proved by inoculation of healthy plants. The parasite is briefly characterized as follows:

*Bacterium marginatum* n. sp.

A cylindrical rod varying considerably in length, 1–3.5 x 0.5–0.8 $\mu$, frequently in pairs and forming chains in beef bouillon; motile by means of 1–2 polar flagella; aerobic, no spores, capsules present.

Superficial colonies in peptone-beef agar plates are very characteristic; circular, smooth, slightly elevated centers surrounded by a wide thin border more or less irregular at the margin. Width and character of the border vary slightly under different conditions. Growth is white and extremely viscid.

Liquefies gelatin; liquefies blood serum; does not reduce nitrates; produces slight acidity in milk; digests casein; produces acid in cultures with various sugars. Grows well in Cohn, Fermi and Uschinsky's solutions. Produces moderate amounts of indol and ammonia. No gas is formed.

Temperatures for growth, maximum 40° C., minimum 8–9° C., optimum 28–30° C. Thermal death point about 52° C. Does not grow at temperatures below 8° C., but remains alive for at least 8 weeks at 1–2° C.

Gram negative. Group number: 211.2222022.

Pathogenic in leaves of gladiolus forming circular to elliptical lesions rusty red in color becoming dull brown or purplish. These spots may occur on all parts of the foliage but are often confined to the lower leaves. Observation and experiment indicate that the disease makes rapid and dangerous progress only in warm and moist weather when the rot spreads

widely and deeply into the tissues, causing the collapse of the aerial part of the plant.

The disease caused by these bacteria is very prevalent in and about the District of Columbia. In the fields examined, 80–90 per cent. of the plants were affected but in the majority of these cases not so severely as to noticeably arrest the development and bloom of the plant.

Plants with the same disease have been received from Illinois with the information that it has caused loss to the growers. Some *Gladioli* from California apparently had the same disease but the case was not completely proved.

Lucia McCulloch,
Bureau of Plant Industry,
U. S. Department of Agriculture

## THE AMERICAN CHEMICAL SOCIETY

(*Continued*)

SECTION OF SUGAR CHEMISTRY AND TECHNOLOGY

C. A. Browne, *chairman*
Frederick Bates, *secretary*

*A rotary digester for use in bagasse analysis:* G. L. Spencer. A rotary digester is described for the digestion and extraction of bagasse for purposes of analysis. 100 grams of chopped bagasse are weighed in a tared cylinder: 1 liter of hot water is added. If ammonia is used for preserving the bagasse, no alkali is added to the digestion water, otherwise sodium carbonate is added. The cylinders are closed and revolved in the digester for an hour while steam is turned into the casing. The steam is then shut off, cold water is admitted to the casing and the revolution continued until the sample is cooled. The cylinders are then removed, dried and weighed, the rest of the procedure being the same as in the customary methods of analysis.

*Determination of reducing sugars in lead preserved cane juices:* J. B. Harris. Samples of raw cane juices for purposes of factory control are composited and preserved with dry lead subacetate. In the determination of reducing sugars, the preserved juice gives results about 10 per cent. too low where sodium oxalate or other normal salts are used to delead. Experiments with various deleading agents show it to be necessary to change reaction of preserved juice to acid in order to recover the reducing sugars combined with the lead. Best results are obtained with oxalic acid as a deleading agent, as it always gives the same results on the preserved juice as are obtained on the same juice without the use of lead or any deleading agent.

*Dry substances in molasses, syrups and juices by the Spencer electric oven:* George P. Meade. The Spencer electric oven is an apparatus originally devised for rapidly drying granular and fibrous substances, such as sugar, bagasse, etc., by drawing a large amount of heated air through the material to be dried. On suggestion of the inventor, Dr. G. L. Spencer, a method has been worked out for liquid sugar products by absorbing the liquid on asbestos as in the Babcock method for drying milk. With a ten minute heating period, known solutions of sugar, and of invert sugar and salt, are dried quantitatively to one part in 300 or better. Thick solutions, such as molasses and honey, must be diluted with water, one to one by weight. Duplicate tests on many different kinds of molasses, and on honey and cane juice, show close agreement.

*Two simple tests for the control of the crystallizer and centrifugal machine work:* M. J. Proffitt.

*A comparison of the results in the process of desugarization with the Steffen lime process, the barium process and the strontium process:* M. Potvliet. The desugarization appears to be in favor of the barium process. The real purity of the juices after deduction for raffinose is highest in the barium process. No raffinose is eliminated either in the Steffen lime process or in the strontium process, whereas in the barium process approximately 50 per cent. of the raffinose is removed into the waste water. The removal of the raffinose is important in view of the discarding of molasses. Of the 48.5 per cent. real sugar in the worked molasses, there was obtained: in the lime process 35.45 per cent. as granulated, 8.05 per cent. in molasses and 5.00 per cent. in waste water; in the barium process 43.97 per cent. as granulated, 2.91 per cent. in molasses and 1.62 per cent. in waste water; in the strontium process 43.18 per cent. as granulated, 4.32 per cent. in molasses and 1.00 per cent. in waste water. The rather heavy waste water of the barium and strontium processes can easily be concentrated to 42° Bé, whereas the very diluted Steffen waste water with large amounts of soluble lime compounds causes many difficulties. Waste water with 42° Bé contains about 12 per cent. $K_2O$ and 4 per cent. N.