

physical state of fat in milk will not explain the activation of lipase by cooling. Our data indicate that the most plausible hypothesis for the acceleration of the lipase activity in milk by cooling is to be found in the effect of cooling on the permeability to lipase of the adsorption "membrane" surrounding the fat globules. A mild, churning-like agitation of milk will activate the enzyme without cooling of milk. The addition of formaldehyde to milk and aging will also increase considerably the rate of lipase action without the necessity of cooling. The addition of formaldehyde to well-cooled milk has no effect on the rate of lipase action. The ineffectiveness of formaldehyde as a milk lipase inhibitor was shown by Palmer in 1922.²

2. The holding of milk at 32°–37° C. for 1 to 3 hours immediately after it leaves the udder exerts a profound retarding effect upon the activity of lipase even though the milk is cooled afterwards. Our results show that by holding for 2½ hours at 33° C. the development of perceptible rancidity was postponed for over 30 hours in milk which otherwise became strongly rancid in 12 hours. The retarding effect is inversely related to the concentration of lipase and is progressively increased up to about 3–3½ hours of holding.

It is expected that a detailed paper of this study will be published in the near future. It is becoming increasingly evident that in a study of lipase activity in milk a knowledge of the temperature history of the milk from the time it leaves the udder is essential.

N. P. TARASSUK
G. A. RICHARDSON

UNIVERSITY OF CALIFORNIA,
DAVIS

THIURAM SULFIDE FOR TURF DISEASES

APPLICATIONS of mercury fungicides are considered necessary for the maintenance of desirable bent turf in sections of the country where turf diseases are troublesome. The war has caused such a tremendous increase in the prices of mercury that the cost of these materials has become exorbitant. This fact has occa-

sioned an increase in the work on the testing of materials for their fungicidal properties. More than 100 chemicals were tested during the past year for the control of turf diseases. Some of the thiuram sulfide compounds have shown considerable promise. Of these, tetramethyl thiuramdisulfide (known commercially as TUADS, Thiurad, and DuBay 1205-U) has been the most effective to date. Previous investigators have found it to be valuable as an insecticide¹ and also as a fungicide in the control of *Venturia inaequalis* (Cke.) Wint. on apple.²

Tetramethyl thiuramdisulfide was tested on the turf garden at the Arlington Experiment Farm, Arlington, Virginia, and on the two nearby golf courses for the control of both brownpatch (causal organism, *Rhizoctonia solani* Kühn) and dollarspot (causal organism, *Sclerotinia homoeocarpa* Bennett) on bent turf.

The experiments were conducted on three different strains of creeping bent, and no injury to the turf was observed at the rates used. The material was mixed with sufficient dry sand to serve as a carrier, broadcast evenly over the area and watered in lightly. It was applied at weekly intervals, during the summer months for the control of brownpatch, and during the spring and fall months for the control of dollarspot.

This season's applications of the chemical at the rate of 4 ounces to 1,000 square feet effected complete control of both diseases, whereas the untreated plots were 70 per cent. infected. In these series the turf was superior to that on the plots which had received treatments with mercury fungicides. Lighter applications were tried for the control of dollarspot. A 2-ounce rate gave just as effective control as a 4-ounce rate when repeated treatments were employed. Where the rate of application was reduced to 1 ounce to 1,000 square feet from 7 to 15 per cent. of the area became infected.

GEORGE E. HARRINGTON

U. S. GOLF ASSOCIATION GREEN SECTION

SCIENTIFIC APPARATUS AND LABORATORY METHODS

NEW PARAFFIN-RESIN INFILTRATING AND IMBEDDING MEDIA FOR MICRO-TECHNIQUE

HERETOFORE the writer has used a paraffin, bayberry wax, rubber mixture for both infiltration and imbedding of tissues. The media herein described are prepared from paraffin of melting range 56°–58° C. and from a water-white hydrocarbon resin, LX-291, produced by the Neville Company, Pittsburgh, Pa. Preliminary advantages are that the ingredients are easier to obtain, the media are simpler to make, are clear and

white and can be more easily filtered. The chief technical advantage is that the solidified media suggested here differ from each other appreciably in hardness at a given temperature, but not essentially in melting range. Consequently, excellent sections, which ribbon well, of any desired thickness below about 20 μ , can be cut at room temperature.

The compositions of the paraffin-resin media are indicated here by the percentage by weight of resin in the mixtures. Hardness of the media increases as

¹ H. G. Guy, Univ. of Del. Exp. Sta. Bull. No. 206, 1937.

² L. S. Palmer, *Jour. Am. Chem. Soc.*, 44: 1527–1538, 1922.

² H. B. S. Montgomery and M. H. Moore, *Jour. Pomol.*, 15, 253–266, 1938.