APPENDIX

A Simple Filter Outfit for the Short-wave Ultraviolet

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A simple but efficient filter for transmitting the short-wave ultraviolet light from a mercury arc lamp may be made from two 25 ml. fused silica round-bottomed flasks (Vitreosil T/A4/407). One contains the cobalt-nickel solution ($CoSO_4.7H_2O$ 100 g. + $NiSO_4.7H_2O$ 350 g./l.) and is placed with its centre about 7·5 cm. from the mercury lamp and acts as a lens, forming an image of the lamp about 7·5–8 cm. on the other side. It is stopped down to about 30 mm. diameter by two diaphragms which may be cut in a sheet of metal which is then bent into a U-shape, and the flask pushed in so that the holes grip it. The second flask, which has a glass stopper ground in, is filled with dry chlorine gas. The stopper is greased with vaseline and may with advantage be made hollow so that it can hold some anhydrous calcium chloride held in place with a little glass wool. This flask is so placed that the image of the lamp is formed in its centre, in which position the light passes through virtually undeviated and appears to come from the second flask. The two flasks are connected by a tube of black paper so that no light can emerge without passing through filters. A very powerful and uniform cone of light is produced. Using an 80 W. Mazda MB/V lamp with the glass removed (and choke MRG 508) the area illuminated at a distance of 4 ft. is about 18 × 24 in., the exposure with Kodak reflex document paper and Whatman no. 1 filter paper being about 30 sec.

In making the final adjustment of the positions of the flasks it is important to note that, as the system is not achromatic, the focal length of the flask containing the liquid filter solution is rather shorter at 265 mμ. The field covered by the filter system may, however, be visualized by putting a suitable fluorescent substance such as eosin in ethanol in spots on a sheet of paper and then adjusting the position of the lamp to get maximum evenness of illumination.

The Decarboxylation of Malic Acid by *Lactobacillus arabinosus*

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(*Received* 27 *December* 1950)

Korkes & Ochoa (1948) have shown that *Lactobacillus arabinosus* Strain 17–5 when grown on a medium containing L-malic acid converts L-malic acid into lactic acid and carbon dioxide. D-Malic acid is not attacked, nor does it affect the decarboxylation of the L-isomer. The enzyme system responsible for this reaction was found to include cozymase and manganese ions. The authors state that the enzyme can be used as a specific reagent for the manometric determination of malic acid. In order to use this method it was necessary to collect further information on the general properties of the malic decarboxylase. The present paper reports results of a study of this enzyme system.

Since the completion of this work Ochoa, Salles & Ortiz (1950) and Blanchard, Korkes, del Campillo & Ochoa (1950) have published further information concerning the *Lactobacillus* enzyme and its use in the estimation of L-malic acid.

METHODS

Preparation of cell suspensions. Subcultures of the organism were maintained on a medium containing 5 g. peptone, 20 ml. yeast extract (obtained by boiling baker's yeast with an equal weight of water and filtering), 5 g. glucose and 0·5 g. KH_2PO_4 in 250 ml.; the pH was adjusted to 6·8 with 2N-NaOH.

The medium used for growing bulk supplies contained, unless otherwise stated, 10 g. Pronutrin (Enzymic casein digest marketed by Herts Pharmaceuticals Ltd., Welwyn Garden City, Herts.), 1 g. Difco Yeast Extract, 10 g. sodium acetate trihydrate, 0·5 g. KH_2PO_4 and 0·5 g. anhydrous $MgSO_4$ in 400 ml.; the initial pH was 7·0. To this were added 50 ml. M-sodium DL-malate solution and 50 ml. 20% glucose. The medium was inoculated with 5–10 ml. of a 24 hr. subculture. After 20 hr. incubation at 38°, the cells were centrifuged, washed successively with 50 and 25 ml. distilled water and finally suspended in 30 ml. water. The yields varied between 2·5 and 3·5 g. wet wt. (up to 650 mg. dry wt.). The suspension was stored in the refrigerator.