

group. Such a substance, however, is present in non-crystalline fractions, which display a distinct absorption band at 260 m $\mu$  superimposed upon the absorption of carotenoids and other accompanying substances.

*Sargassum* collected at its site of origin is relatively free from closely associated foreign organisms, even protozoa, and the "leaves" are clear and intact. However, a fairly large colony of free-swimming shrimps and fishes is present. Much of the weed finds its way into the Gulf Stream, and during its northward passage becomes heavily infested with invertebrates. Samples taken north of Hatteras present a complex picture of plant and animal commensalism: the stems are covered with masses of the long-necked barnacle (*Lepas*) and immense numbers of mollusks with their eggs. Several types of shrimps and fishes abound. The "leaves" are now extensively damaged and often completely missing.

Little imagination is needed to visualize the progressive transfer of the vitamin from the plant to the small animals, thence to the larger predatory fishes which follow the floating colonies. Such a process, combined with the drift of the Gulf Stream, may well contribute to the wide but unequal distribution of vitamin D in marine fish oils. Of interest in this connection is the report<sup>9</sup> that the cod livers taken from the White Sea and Bear Island region are consistently lower in vitamin D than those taken off Iceland in waters which are more accessible to the Gulf Stream.

The occurrence in plants of a vitamin D, in common with other vitamins, must now be recognized. The frequent association of vitamins A and D in fish liver oils is on these grounds easily understandable.

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## SCIENTIFIC APPARATUS AND LABORATORY METHODS

### THE USE OF BROMINE IN THE STERILIZATION OF FRUITS AND SEEDS

STERILE seedlings may be grown from seeds treated with any one of a number of substances. Calcium hypochlorite, as used by Wilson,<sup>1</sup> is perhaps the most popular of these, though mercuric chloride also has many advocates. An appreciable amount of time is needed for the mixing and filtering of bleaching powder, and the strength of the resulting solution is dependent on the age and condition of the powder. Mercuric chloride may cling to the seed coats and later injure the seedlings. A satisfactory sterilizing medium has been found in bromine, which I have used for more than two years with great success.

The best results have been gained with bromine water, which is diluted to 1/10 its original strength and poured over the seeds in a container, which is then tightly stoppered. Of course, care must be taken not to breathe the poisonous fumes of the bromine water. When the seed container is opened after sterilization, the weak solution does not fume sufficiently to be troublesome. Other dilutions may be used, but I have found it convenient to vary the length of time of sterilization rather than change the concentration of the sterilizing substance. The tolerance of seeds varies; oats are injured by exposures of more than one half hour, but corn, cabbage, radish and sunflower withstand an hour or more of treatment.

Bromine water has been used also in sterilizing fruits from which embryos were removed for growth in culture<sup>2</sup> and the chances of securing sterile em-

bryos increased considerably thereby. In the tomato, immature ovules, even, may be removed from fruits and treated for one half hour without injury to the young embryos.

Fragments of stems and roots, treated in this manner, have been grown in sterile culture. Even leaves and flower buds have proved sterile in culture after bromine treatment, though it is not always possible to secure sterilization without fatal injury to these delicate structures.

No rinsing is required after bromine treatment, but the structures are placed at once on sterile filter paper, in liquid or on agar, as required. The bromine soon disappears, leaving no trace to injure later growth.

Bromine water will keep for long periods if stored in the dark. Shaking up the excess bromine in the water a few minutes before use insures a bromine content of satisfactory uniformity.

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### TO KEEP CULTURE-MEDIA FROM DRYING OUT

ONE of the problems of the small clinical laboratory and only a lesser problem in other laboratories is that of keeping culture-media ready for use, particularly Loeffler's medium, blood-agar slants and blood-agar plates. For this purpose and for preservation of stock cultures we have found a material called parafilm (made by the Marathon Paper Mills Co., Rothschild, Wisconsin) so useful that we wish to bring it to the attention of others. A square of this film pressed down on the mouth of a culture tube, the cotton plug

<sup>1</sup> J. K. Wilson, *Amer. Jour. Bot.*, 2: 420-425, 1915.

<sup>2</sup> C. D. La Rue, *Proc. Nat. Acad. Sci.*, 22: 201-209, 1936; *Bull. Torr. Bot. Club*, 63: 365-382, 1936.

<sup>9</sup> Lovern, *Chem. Ind.*, 56: 75, 1937.