more accurately the temperature coefficient of photochemical destruction of riboflavin in foods which represent good riboflavin sources.

Samples of fresh skim milk and beaten raw eggs were heated under the conditions described above. The results are listed in Table II.

From Table II it is evident that light destruction of riboflavin in liquid foods proceeds at a rapid rate, although it is somewhat slower than the destruction in clear solutions. The opacity of many foods tends to prevent excessive riboflavin losses during cooking, but large losses in foods such as milk and eggs, which alone contribute approximately 40 per cent. to 50 per cent. of the riboflavin supply in the average American diet, may appreciably aggravate shortages of the vitamin.

ROBERT R. WILLIAMS
VERNON H. CHELDELIN

PRIVATE LABORATORIES,
SUMMIT, N. J.

SCIENTIFIC APPARATUS AND LABORATORY METHODS

RECLAIMING AGAR FOR BACTERIOLOGICAL USE

WITH the cessation of imports, an acute shortage of agar may be encountered before new sources can be developed. Two proposed substitutes under study in our laboratory, carrageen and sodium alginate, which are also extractives from marine plants, do not appear very satisfactory.

The procedure for reclaiming agar from media herein presented is a modification of the method used by us for several years to purify commercial crude agar. The treatment produces a product which is actually superior to the common commercial agars being used by bacteriologists. Such reclaimed agar has a hardness of approximately 100 compared to 20–50 as determined by our hardness apparatus,[1] has an ash content of 1 per cent. or less compared with an average of 4 per cent. (our findings and those of Whitaker[2]) and a crude protein nitrogen content of 1 to 2 mg per g, which is ½ to ¼ less than commercial samples. Also most of the non-solidifying gum content (30 to 40 per cent.) is removed. The nitrogen content can be still further reduced by treatment with pancreatin, but this has not been considered necessary.

The used culture medium is sterilized, made slightly alkaline to litmus and filtered through cheesecloth and absorbent cotton. It is then cooled slowly until solidified. The layer of sediment is removed and the agar is shredded by passing it through a fine wire screen of at least 16 mesh. After a preliminary washing of several hours in a cheesecloth bag by running water to whiten, the bag is transferred to a container for infusion with tap water with stirring at intervals. The water should contain a residual or added calcium salt. Sodium hypochlorite is added (excess detected by odor) primarily to prevent bacterial growth. The temperature of infusion should not exceed 50° C. The waste filtrate is siphoned off and fresh water added at intervals. After 6 to 8 infusions covering several days the excess water is drained from the agar and traces of hypochlorite and salts are washed out with distilled water. Depending on laboratory facilities, the agar may be either evaporated down on a steam bath or frozen and thawed to remove more water or dried directly in thin layers in an oven at 50° C. to 70° C. and finally at 100° C. When dry, the pieces of agar may be weighed and soaked preliminary to use or may be ground to a powder by aid of a hand mill.

Agar can also be reclaimed from blood-agar and differential media containing indicators and dyes as phenol red, E.M.B. and Endo. Such dye-containing media as Endo's should be processed separately however, and the infusions should be of acid reaction to intensify bleaching. The types of infusion containers preferred are glass or porcelain enamel and the quantity of waste agar should be several liters or more.

At times when a sufficient quantity of waste agar is not available for processing, it may be oven- or sun-dried by pouring in thin layers in pans and stored dry in bottles. This practice of drying and storing of waste agar may be found advisable even in laboratories which appear to have ample reserves of stock agar. For in case no more can be purchased, the waste agar can be reclaimed.

ALDEN F. ROE

THE GEORGE WASHINGTON UNIVERSITY
SCHOOL OF MEDICINE

[1] *Jour. of Bacteriology*, 41: 1, 32, 1941.
[2] *Jour. Am. Pub. Health Asn.*, 1: 632, 1911.

RECLAMATION OF USED AGAR

SINCE virtually all commercial agar was obtained from Japan, laboratories and other institutions using this product in the preparation of solid culture media are faced with the same serious situation as the various industries preparing rubber products. Until a satisfactory substitute for agar can be obtained, it is obvious that present supplies must be used sparingly and the possibility of reuse should be carefully investigated.

A few reports of reclamation of used agar have appeared in the literature which vary in procedure