SUMMARY

Multiple precipitin formation may be induced in the rabbit by the successive introduction of different antigens, and many precipitins may exist simultaneously in the blood for some time. Precipitins no longer demonstrable in the blood of a rabbit subjected to multiple successive immunization may reappear on the injection of only one of the antigens previously injected. Whether an unused antigen would have the same effect has not been determined.

LUDVIG HEKTOEN
WM. H. WELKER

JOHN MCCORMICK INSTITUTE FOR INFECTIOUS DISEASES AND DEPARTMENT OF PHYSIOLOGICAL CHEMISTRY
COLLEGE OF MEDICINE,
UNIVERSITY OF ILLINOIS,
CHICAGO, ILL.

CATALYTIC REDUCTION AND DEACETYLATION OF THE METHYL ESTER OF HEXACETYL "β"-METHYLALDOBIONIDE TO 6-GLUCOSIDO-β-METHYL-GALACTOSIDE

THE methyl ester of "β"-methylaldobionide, from gum arabic, was acetylated and the new crystalline hexa-acetate

(having m.p. = 140°, $[\alpha]_D^{23} = -54.3°$ (in acetone)
and the following composition:
Found: C 49.24, H 5.8, OCH_3 10.01, $COCH_3$ 40.96
$C_{26}H_{36}O_{18}$
requires " 49.04, " 5.7, " 9.75, " 40.57)

has been reduced and deacetylated in methyl alcohol solution in an atmosphere of hydrogen, in the presence of copper chromite catalyst, at a temperature of 175° and pressure of 3,600 pounds per sq. in. during 5 hours. The product obtained was quite free from uronic acid (naphthoresorcinol test) and had the following composition:

Found: C 44.25, H 6.9, OCH_3 9.84
$C_{13}H_{24}O_{11}$ requires " 43.80, " 6.8, " 8.71

It had $[\alpha]_D^{25} = -61.6°$ (in water), thus indicating that the product is probably the β-methyl-glycoside of 6-glucosido-galactose.

P. A. LEVENE
R. STUART TIPSON

THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH,
NEW YORK

SCIENTIFIC APPARATUS AND LABORATORY METHODS

ON SECURING LARGE QUANTITIES OF DIATOMS FROM THE SEA FOR CHEMICAL ANALYSIS[1]

A KNOWLEDGE of the chemical composition of marine diatoms is desirable because of the essential role these organisms play each year in the constructive part of the food cycle of the sea and because of the importance diatom substance may have had in the formation of petroleum deposits. Although countless billions of diatoms may exist in small areas of the ocean, their minute size makes it extremely difficult to obtain any considerable quantity. Chief among the difficulties encountered are the very large volumes of water which must be strained and the rapid clogging of the filtering surfaces by the diatom cells. During the past summer at the Woods Hole Oceanographic Institution methods of circumventing these difficulties were explored.

The use of a large silk net towed from a boat was found more effective than the pumping method,[2] provided that the proper size mesh was selected for the type of diatoms desired. Another method, consisting of culturing a pure strain of diatoms on a large scale, is on trial by Mr. Bostwick Ketchum at the Harvard Biological Laboratories. However, exceedingly few species have been cultured successfully by any one. The advantages of procuring the diatoms directly from the sea are that any types occurring in great abundance (and hence important in the economy of the sea) can be obtained, that large quantities are procurable within a short time (at least six nets could be used simultaneously from a boat), and, since no danger exists of changes due to artificial conditions, the chemical constitution of the organisms secured will be as in nature.

To permit any useful interpretation of the chemical analysis of the material obtained, a certain degree of purity of the catch is required. If particles of detritus or protozoans *of the same size* as the diatoms are abundant in the water, it is obviously impossible to obtain a large quantity of uncontaminated diatom material by simple straining. Another time or place must be sought. In cases in which the detritus is very finely divided, it can be avoided by the use of the coarsest net which will retain the diatoms. However, copepods or other crustacea are almost sure to be encountered, and, because of their larger size, even small numbers of these animals would be a serious contamination quantitatively. Success in excluding organisms larger than diatoms was attained through the use of a cone of coarser silk placed over the mouth of the net and towed apex foremost. The mesh of this

[1] Contribution No. 164, Woods Hole Oceanographic Institution.

[2] However, pumps or sea-cocks have been found useful for collection of plankton in smaller quantities. *Cf.* L. D. Phifer, SCIENCE, 79: 298, 1934.