

taken from the western North Atlantic has been undertaken by Dr. Joseph A. Cushman, Miss Frances L. Parker and the writer. The immediate purpose of this study has been twofold: first, to determine the distributions, according to depth, temperature, etc., on the continental shelf and slope; and second, to use these data as a yardstick in interpreting environments represented by faunas occurring in sediments of submarine cores and tows. This latter applies directly to the Pleistocene history of the North Atlantic. Another purpose in pursuing such a study is that the data obtained on foraminiferal ecology may be used in interpretation of certain marine sediments of Cretaceous and Cenozoic age.

In submarine cores collected from the continental slope and basin of the western North Atlantic there occurs a fauna of Arctic type, beneath the warm temperate fauna occurring in the sediments at the surface of the ocean bottom. This Arctic fauna is of Pleistocene age and represents different oceanic conditions than those obtaining to-day. In order to interpret accurately the environmental conditions represented by such a series of faunas found in the cores it is necessary to know the ecologic conditions under which the animals live. It is known from the records of the expeditions of the *Challenger*, *Meteor* and others, that certain species are pelagic in habitat, particularly of the families Globigerinidae and Globorotalidae. It is generally assumed that all other species are bottom-living, and in the case of species having arenaceous tests this must certainly be true. Relatively little other pertinent information appears to have been recorded.

The impression that living pelagic Foraminifera are now rare or almost absent in the waters of the western North Atlantic seems to have gained headway in recent years. This is due to the fact that they have not been observed to occur in plankton tows, especially in the experience of the biologists at the Woods Hole Oceanographic Institution who are doing intensive work on the plankton from the area in question. It is true that most of this plankton is being collected for other purposes and the nets are too coarse to retain Foraminifera. Moreover, preservation of plankton in formalin dissolves the calcium carbonate tests of Foraminifera, due to the acid nature of this preservative. The procedure used in the treatment of phytoplankton, which is collected in fine mesh nets, is even more radical in the use of acid, and under these conditions no calcium carbonate test could possibly survive solution.

During a short cruise of the research ship *Atlantis* made during the early part of August, 1940, the writer successfully collected Foraminifera in zooplankton

tows. The tows came from the surface waters above the upper half of the continental slope between north latitudes 37 and 39 degrees. Four samples were taken with fine mesh silk nets of the type ordinarily used for the collection of diatoms (about 150 strands to the inch) at depths of 30, 40 and 50 meters at noon, early evening, midnight and early morning. The content of Foraminifera was relatively small in proportion to the amount of plankton obtained, being a maximum of about 100 specimens in approximately 5 cc of plankton. This material was placed in a 70 per cent. solution of alcohol, which coagulates the protoplasm and does not affect the calcareous test. In the laboratory the material was examined suspended in water after the sample had been washed and the amount of fluid reduced to a minimum.

The species obtained in these tows are *Globigerinoides rubra*, *G. sacculifera*, *G. aequilateris*, *Globigerina bulloides*, *G. inflata*, *G. dubia* and *Orbulina universa*. *Globigerinoides rubra* was by far the most common species, and several specimens of this species retained long, delicate spines protruding from the test (never preserved in bottom samples), in many cases the length of these spines is about three times the diameter of the test. In a great many the coagulated protoplasm was observed protruding from the aperture or partially surrounding the test. In other cases the protoplasm was discovered inside the test after breaking the shell with a dissecting needle. The specimens of *Globigerina dubia* were reddish brown in color; some of these were mounted in tragacanth glue and were white when dry.

Using this technique it will be possible to check the vertical and areal distribution of pelagic Foraminifera and a beginning on this work in the western North Atlantic is planned for the near future. Quantitative and seasonal collecting should give data on the present rate of accumulation of foraminiferal deposits in bottom sediments. These are some of many problems pertaining to the general ecology of the Foraminifera which need extensive study.

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ON THE SPECIFICITY OF RENIN

It has been found that by the action of the kidney protein renin on a blood globulin a thermostable pressor substance is formed (angiotonin¹), or hypertensin.^{2, 3, 4} Crystalline derivatives of this substance

¹ I. H. Page and O. M. Helmer, *Jour. Exp. Med.*, 71: 29, 1940.

² E. Braun-Menendez, J. C. Fasciolo, L. F. Leloir and J. M. Muñoz, *Rev. Soc. Arg. Biol.*, 15: 420, 1939.

³ J. M. Muñoz, E. Braun-Menendez, J. C. Fasciolo and L. F. Leloir, *Nature*, 144: 980, 1939.

are reported to have been obtained by Page and Helmer.¹

Renin is secreted by ischemic kidneys,^{5, 6} and hypertension is afterwards formed in the blood.^{2, 4} Renin is presumably an enzyme and does not act directly on blood vessels but by the intermediation of hypertensin. The hypertensin-precursor in blood was found to increase after nephrectomy and to decrease or disappear after the injection of renin. This fact suggests that there is a slight renin production by normal kidney. Such a production of renin also explains the rise in blood pressure obtained by Govaerts and Muller⁷ by grafting normal kidneys to nephrectomized dogs.

While the pressor substance was found to be formed by the action of swine renin on the sera of horse, swine, cattle or dog, none was formed with human serum. When, however, human renin was used, hypertension was formed with the serum of any of the above species.

This peculiar specificity of renin leads to the prediction that no pressor response should be obtained in man when swine renin is injected intravenously. Our experience, while limited to sick men, came to confirm this prediction, although hypertensin injected intravenously to the same subjects caused a rise in blood pressure. Since other investigators may have tested this action we are eager to know of further confirmatory evidence.

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JUNE 11, 1940

EXCHANGE PERIODICALS FROM FOREIGN COUNTRIES

THE note in SCIENCE, Vol. 92, November 15, page 452, from the Engineering Societies Library, in regard to the receipt of exchange periodicals from foreign countries (not including the American continents) and the statement that that library has made arrangements to store the periodicals in the country of origin until the end of hostilities, is of great interest to the library of the Marine Biological Laboratory. But is

not this decision, asking that all countries that are at war hold their exchange material until hostilities have ceased, somewhat unnecessary at the present time when, as is the case for this library, periodicals from England, Ireland, Wales, Scotland, Australia, Indo-China, China, Tahiti, South Africa, Dutch Indies, India, Egypt, Syria, Newfoundland, Morocco, Portugal, Japan and Siberia are still coming through regularly, though somewhat delayed, and even a few German periodicals are now arriving again by way of Siberia and Japan? The fact that so many countries are able to get their publications through to us has encouraged this library to take a more opportunistic attitude by not stopping in all cases the shipment of exchange material destined for us. This library has asked all its exchange institutions in countries on the continent of Europe to hold their publications but has not as yet made this request to the other countries mentioned above in the hope that the necessity for this may not arise. If and when the necessity arises, a request to have the publications held back will be sent. This is more troublesome and perhaps entails risk, but it appeals to us as a practical method. The above has no reference to the *paid subscriptions* held by this library in foreign countries outside of the Americas, but, in general, the same method for securing the subscriptions continuously or at a later date has been applied.

PRISCILLA B. MONTGOMERY

ANTIQUÉ GALENICALS

WHILE our British colleagues are deserving of deep sympathy and commiseration in these dark days, one can not feel sorry about their difficulties in obtaining buchu leaves, seneca root, jalap, krameria, galsemium seed, black catechu, aconite, and calumba root; as noted in SCIENCE, October 25, p. 373. Why such antique galenicals are still used by British physicians is hard to understand unless it be on the basis of steadfast British tradition. It seems that if this war has no other good effect, it may at least serve to modernize some features of British therapeutics.

HOBART A. REIMANN

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SCIENTIFIC BOOKS

MATHEMATICAL PAPERS OF SIR WILLIAM ROWAN HAMILTON

The Mathematical Papers of Sir William Rowan Hamilton, Vol. 2, Dynamics. Edited by A. W. CONWAY and A. J. MCCONNELL. xv + 656 pp.

⁴ E. Braun-Menendez, J. C. Fasciolo, L. F. Leloir and J. M. Muñoz, *Jour. Physiol.*, 98: 283, 1940.

⁵ K. G. Kohlstaedt and I. H. Page, *Proc. Soc. Exp. Biol. and Med.*, 43: 136, 1940.

Cambridge: Cambridge University Press. New York: Macmillan. 1940. 50 sh.

THIS impressive book is the second volume of Hamilton's collected papers, the first volume of which

⁶ L. F. Leloir, J. M. Muñoz, E. Braun-Menendez and J. C. Fasciolo, *Rev. Soc. Arg. Biol.*, 16: 75, 1940.

⁷ P. Govaerts and P. Muller, *C. R. Soc. Biol.*, 131: 1311, 1939.

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