ducting the work in close cooperation with the State Geological Survey, the State agricultural institutions and the United States Department of Agriculture, to take up lines of research that would be of much permanent value to the people of the State. Arrangements were made for the publication of these investigations in a new series of reports which should conform in all particulars to those already adopted for the State Geological Survey. These volumes, for which arrangements have now been perfected, will contain the results of investigations upon the climate of the State and will include reports upon the physiography, meteorology, medical climatology, agricultural soils, forestry, hydrography, crop conditions, botany and zoology of Maryland.

The reports upon physiography and meteorology are already largely prepared and will constitute the first volume of the series. Dr. Cleveland Abbe, Jr., has prepared a report upon the physiography, while the longer and more elaborate statement regarding the meteorology of the State is divided into three parts, the general treatment of the subject being from the pen of the distinguished Professor Cleveland Abbe, of the U. S. Weather Bureau. Mr. F. J. Waltz, the Local Forecast Official of the U. S. Weather Bureau in Baltimore and the Meteorologist of the State Weather Service, will contribute the part relating to the meteorology of the State; while Mr. O. L. Fassig, his associate, will prepare those chapters which relate to the history of meteorological investigations in Maryland since early colonial days. The cordial support of Professor Willis L. Moore, Chief of the U. S. Weather Bureau, has been secured in this work, as well as in many of the lines of special investigations which will be later pursued.

The investigation of the agricultural soils of the State, already referred to in connection with the State Geological Survey, are closely related to many of the climatological problems which will be considered in the future, and the active cooperation of Professor Whitney along these lines will add much to the effectiveness of the State work. Mr. C. W. Dorsey, of the State Agricultural Experiment Station, has been carrying on investigations in this field under the supervision of Professor Whitney, and the results of their combined work will be later brought out in the reports of the State Weather Service.

The questions of hydrography are closely related to those of climatology, and already considerable progress has been made in the study of the drainage basins of Maryland through the cooperation secured from Professor Newell, in charge of the Division of Hydrography of the U. S. Geological Survey, and special reports upon this subject will be incorporated in a later volume of the State Weather Service.

The other lines of investigation above referred to have been projected, but little work has been done upon them thus far. They will occupy the attention of the local Service during the coming and subsequent years.

WM. BULLOCK CLARK,
State Geologist and Director State Weather Service.

THE BIOLOGICAL STATIONS OF BRITTANY.

THE marine laboratories of the coasts of France and England can be reached with so little loss of time by students of zoology and botany who live near the Atlantic seaboard in America that a knowledge of the facilities for work at these stations and of their accessibility is of great importance to Americans.

Aside from the hygienic advantages of the ocean voyage and a complete change of scene to a hard-working naturalist who devotes his summer vacations to scientific research, one will in many cases find at some

of the marine laboratories of France or of Great Britain such favorable conditions for his work as cannot be obtained in connection with our own excellent laboratories.

It is with this thought in mind that I call the attention of the readers of Science to two of the stations for the study of marine biology which are situated in Brittany.

The *Laboratoire de Zoologie Expérimentale* at Roscoff, in Finistère, is under the direction of its founder, Monsieur le professeur de Lacaze-Duthiers, of the Sorbonne, whose hospitality to foreigners is most generous.

Roscoff may be quickly reached from Southampton by the boat to St. Malo, a Breton seaport, or from Harve *via* Paris. It is a quaint old town, with a port devoted to the export of vegetables to England; its narrow streets, among the ancient buildings of the village, are busy with the activities of the honest, sturdy Breton peasantry. The picturesque surrounding country, with its dolmens and menhirs, medieval chateaux and churches, attracts during the summer large numbers of tourists.

The laboratory at Roscoff is a building of the 16th century which faces, on the east, the principal public square. Ivy covered gables and round towers project behind into an enclosed garden. Between the garden and the sea, at the north, is a large grass-roofed aquarium room, with two spacious stone basins in the middle and numerous tanks along the north and south sides of the building. These are supplied with running seawater, which is pumped from a large stone vivarium situated between the aquarium and the sea.

Opening into the aquarium room is the main laboratory for investigators, with eight tables, in addition to which four private work rooms are at the disposal of the Director, besides those of himself and of his staff. The laboratory, which, like the other marine laboratories in France, is supported by the State, is well equipped with reagents, stains, glassware, etc., and a dark room is provided for photographic work.

As regards the fauna, the fact is to be emphasized that for plankton studies Roscoff is badly situated, whereas for shore collecting its position is admirable. The invertebrate fauna, especially, is very rich. The coast is diversified with numerous rocky islands and with bays which have a bottom of mud, sand or shingle. The spring tides at Roscoff rise and fall, at their maximum, about nine meters, so that a very large area is exposed at low tide.

Thirty-one investigators and elementary students during the summer of 1898 availed themselves of the advantages of this excellent laboratory. The venerable Director of the station made a brief visit in August. The following were engaged with special studies:

Monsieur L. Boutan, the Embryology of Acmea, Haliotis and Scallaria; Professor Y. Delage, Experiments upon Fertilization of the Egg of Echinus; Doctor Dominici, Hematopoesis in the Chordata (Selachians and Amphioxus); Professor P. Francotte, of Brussels, Maturation and Fertilization of the Egg in Turbellaria; Dr. J. Georgévitsch, of Belgrade, Embryology of Dentalium; Dr. N. Koltzoff, of St. Petersburg, Embryology of the Head of Elasmobranchs; Monsieur A. Robert, Embryology of Trochus; Monsieur P. Vignon, Excretion in the Crustacea.

The present writer was occupied with the Embryology of Phascolosoma.

Professor Chalon, of Brussels, studied and made collections of the Algæ.

The *Laboratoire de Zoologie et de Physiologie maritimes* at Concarneau is under the charge of Professor Fabre-Domergue, of the Collège de France. Founded in 1859 by Monsieur Coste, it is said to be the oldest marine laboratory in existence.

Concarneau is a village of southern Brittany, near the picturesque and beautiful

town of Quimper. Like Roscoff, it can be easily reached by the way of Southampton and St. Malo or from Havre *via* Paris. Fishing and sardine packing are the principal industries of the place. The port and the surrounding country are so picturesquely beautiful that many artists make their permanent residence in the vicinity.

The laboratory is chiefly devoted to fish culture and the study of fishes, although work at the station is by no means restricted to this group. The building has two floors; the first story is devoted to the scientific apparatus, to spacious private rooms for a small number of investigators, a library and a dark room for photography; and the basement contains large stone tanks and other aquaria, provided with running seawater. Large vivaria, designed for holding fish, lobsters, etc., for scientific purposes and for the use of fishermen, adjoin the laboratory and extend out into the sea. The station is well equipped for scientific research. Here Selenka and other eminent zoologists have done much of their best work.

The plankton at Concarneau is said to be very rich, and certain forms of invertebrates which inhabit a sandy shore and which do not occur at Roscoff are found in abundance at Concarneau.

Finally, it should be said that the Directors of these and of other marine stations in France which it has been the good fortune of the present writer to visit are most hospitable and generous to American zoologists. One may be assured that if he goes to the coast of France to study he will receive a hearty welcome.

JOHN H. GEROULD.

STAZIONE ZOOLOGICA,
NAPLES, December 8, 1898.

NOTES ON THE TIMES OF BREEDING OF SOME COMMON NEW ENGLAND NEMERTEANS.

SEVERAL papers by Professor Bumpus have appeared in this JOURNAL on the times of breeding of invertebrates at Woods Holl, Mass. In connection with these the following notes on the nemerteans may prove of interest to some who may desire to carry on researches on the embryology of this neglected group of worms.

It does not seem to be generally known that the eggs of some of our nemerteans can be obtained in abundance at almost any season of the year; that those of many species can be artificially fertilized, and that they will develop readily in confinement. Even in the case of those which undergo an indirect course of development the embryos can readily be reared to the early pilidium-stage. The eggs of some of the common species, moreover, are so very transparent that many of the phenomena involved in maturation, fertilization and cleavage can be followed in the living ovum without the use of stains. For these reasons they afford most promising objects for embryological and cytological investigation.

1. The eggs of *Amphiporus ochraceus* Verr. are laid during the months of May and June (or sometimes earlier) in the vicinity of New Haven. Worms which are kept in captivity sometimes deposit their ova in clusters of forty or more imbedded in a common mass of mucus. They develop readily in confinement, and the young worms may be kept alive until they attain a considerable size. As in most other Hoplonemerteans the development is direct.

2. *Amphiporus virescens* Verr. Eggs mature at Woods Holl in July and August. They develop readily when laid in captivity, although the number of eggs produced by a single worm is small.

3. *Tetrastemma candidum* Oersted. Mature in July and August at Woods Holl and New Haven.

4. *Tetrastemma vermiculus* (Quatr.) Stimp. Common on piles at Woods Holl with ripe ova in August.