rent so weakened in movement and negligible in temperature that it was practically absent for many miles in all directions about the Archipelago. When I returned to Panama I learned that similar reports had been made by masters of vessels coming up the western coast of South America, the defection of the current being detected as far south as Central Chili. I have just received a detailed account of the visit of an American cruiser to the Galapagos during September, 1925. The commander reports the Humboldt Current as apparently normal again, its effects being first noticeable as far west as the Marquesas, a remarkable extension of the recorded range of this current.

The volcano on Albemarle, whose eruption coincided with the visit of my *Arcturus,* was found at the time of the cruiser's visit to be still in full activity, and several aerial photographs were obtained of the lava flowing into the sea.

A Note concerning the Sargasso Sea: My sole object in visiting this interesting area was to carry on extensive trawling directly beneath any large masses of the weed which I might encounter. I have seen two to four acres of thickly matted weed in other years, and thought that beneath such an assemblage there might be an unusual abundance of mid-depth life—in two to five hundred fathoms—attracted and nourished by the continual supply of food in the shape of a host of individual organisms which are forever dying and dropping down from the weed. Owing to a steady series of severe storms throughout at least one half of the Sargasso Sea, I saw almost no lot of weed larger than a man's head, and hence was compelled to give up my primary object and steam for the Panama Canal.

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AN INVESTIGATION OF THE PERIODIC FLUCTUATIONS IN THE NUMBERS OF THE RUFFED GROUSE

THE periodic cycles of scarcity and abundance in the ruffed grouse have been a source of much speculation among generations of American sportsmen, but in spite of the very great interest in the subject, especially of late years, there has been no serious scientific attempt to unravel the problem, which biologically is most interesting, perhaps even fundamental. We know of similar cycles in many northern mammals, especially among mice and the northern hare. We know, too, that these depression cycles of our grouse are more marked in the primitive backwoods of our northern states and Canada than they are in the settled or partly settled farm regions, but we do not know the reason for this. Various parasites, some at least of a harmless nature, have been described, and several diseases have recently been discovered,[1] but we know almost nothing of their relative significance or their interplay. Least of all do we know the life history and diseases of the young growing broods up to six or eight weeks of age.

A depression cycle which started very abruptly after an apparently successful breeding season in 1924 caused much comment and resulted in the formation of a grouse investigation committee at the annual meeting of the American Game Protective Association in New York in December of that year. This was stimulated by the work of Dr. A. A. Allen, of Cornell University, who had reported the presence of a minute worm called Dyspharynx in the proventriculus of many wild birds and also in captive specimens. In the meantime, Dr. A. O. Gross, of Bowdoin College, had planned a rather detailed study of the life history of the bird and had begun to assemble material.

October last saw the formation of a subsidiary committee, of which the writer is chairman, sponsored by the Massachusetts Fish and Game Protective Association, which is devoting itself more especially to the field of New England and hopes to raise a fund of $10,000 to carry on its work for at least several years. The Department of Comparative Pathology, of the Harvard Medical School, under Dr. E. E. Tyzzer, has agreed to take over the investigation of diseases, while Dr. Gross will devote himself to the more general problems and intimate studies of the life history of the species. Our New England committee will act in cooperation with the central committee in New York, who with Dr. A. A. Allen will operate especially in New York, Pennsylvania and bordering states.

Progress has already been made, especially in giving publicity to our need for specimens of both healthy and diseased birds. A most successful point of attack has been opened up through the use of the radio in securing cooperation of interested persons in widely scattered parts of New England and Canada. For this we have to thank Mr. Thornton W. Burgess, of Springfield, who, through the Westinghouse Station (WBZ) has appealed to the many thousand members of his Radio Nature League. So far as I am aware this is one of the first attempts to utilize the radio in a direct attack on a scientific problem. Mr. Austin H. Clark, of the Smithsonian Institution, deserves great credit in suggesting the possibilities of this new method of securing information. The great possibilities of the radio seem already proved if one may judge

[1] See *Auk,* 1925, p. 423, and SCIENCE, 1925, Vol. LXII, p. 55.

by the steady inflow of specimens, besides important data on the local status of ruffed grouse over a wide area.

For the present, fresh New England material in the form of diseased birds, which may be picked up, or healthy birds, which are shot or found accidentally killed, should be sent to Dr. A. O. Gross, Bowdoin College, Brunswick, Maine. Material from other states should be sent to Dr. A. A. Allen, of Cornell University, Ithaca, New York. Collections of crops and viscera carefully labelled and preserved in 10 per cent. formaldehyde are always valuable, as intensive studies of food habits in different parts of the country are well worth making. Contributions are greatly needed and should be sent either to the Grouse Committee of the American Game Protective Association, Woolworth Building, New York City, or to the New England Grouse Fund, Massachusetts Fish and Game Protective Association, 3 Joy Street, Boston.

J. C. PHILLIPS, *Chairman*
Committee on the Ruffed Grouse Investigation for New England
WENHAM, MASSACHUSETTS

GONIONEMUS

FOR many years investigators at Woods Hole have hoped to see the missing stages in the life history of Gonionemus filled in. Dr. L. Murbach and the writer spent many seasons at Woods Hole in an effort to solve the riddle. I have visited the famous Eel Pond at every season of the year, and have been unable to find a single polyp in the early spring. Late in April or early in May great numbers of tiny medusae appeared, but I was quite unable to discover their source or to rear the larvae long enough in laboratory aquaria to get them through their critical period.

In the light of Dr. Joseph's discoveries it is highly interesting to see how close we came to solving the problem on this side of the Atlantic. In one of my early papers on the "Life History of Gonionemus"[1] I figured polyps which I had reared from eggs on microscopic slides, in which there seemed to be a sort of basal budding going on. Only a few such individuals were seen, and they were looked upon as abnormal or as indicating a peculiar method of asexual multiplication.

At the other end of the hiatus in addition to the multitudes of little medusae with twelve tentacles in three different sizes according to age, a single medusa has been reported which was probably Gonionemus, and which appeared in a salt water aquarium. I was summoned in the middle of the winter by Professor George H. Hudson, of the Plattsburg Normal School, to examine a tiny medusa which had appeared in his laboratory aquarium. I think I am right in my recollection that the water in this aquarium had been compounded in the laboratory, such being the common practice of Professor Hudson. By the time I arrived no sign of the medusa could be found, nor did others appear, but Professor Hudson had examined the one specimen carefully and was probably correct in calling it Gonionemus.

It now appears that, at least in the European species, and we can scarcely doubt that the same thing is true of *G. murbachii,* the basal buds which appear late in the season on the polyps are medusa buds. Professor Joseph describes the polyp as producing a series of planula-shaped vegetative buds which drop off almost exactly like those of the common pond hydra. Later buds near the base of the individual assume a more compact form and develop directly into the tentacled medusa.

So many students at Woods Hole and at institutions in which Gonionemus has been used for laboratory illustration of the coelenterates have been informed in text-books and from the lecture desk that the transformation into the free-swimming medusa was a matter of conjecture only that it may interest a considerable number to know of Professor Joseph's success in closing this annoying gap. It is somewhat of a coincidence also that salt water aquaria furnished him with the first clue of the nature of the metamorphosis. Professor Joseph's articles appear in a series of publications, the last of which was the *Zeitschrift f. wissensch. Zoologie,* 125, 1925, p. 374.

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[1] Proceedings Acad. Nat. Sci., Philadelphia, November, 1920, Fig. 15.

THE VALUE OF SOCIOLOGY

PERSONAL culture and social efficiency are two very definite objectives in modern education. The study of sociology will help fulfill both of these objectives. Personal culture to-day is not attained by studying topics that do not pertain to modern conditions, but rather by receiving instruction in subjects that have a direct bearing on the conduct and problems of life. No study will necessarily make a person cultured, but since sociology deals with many current problems it will help make the student cultured from the academic viewpoint.

Dr. C. W. Eliot, in his monograph, "Education for Efficiency," after stressing the importance of character and of literary appreciation and expression, says: "The next great element in cultivation . . . is acquaintance with some part of the store of knowledge which humanity in its progress from barbarism has acquired and laid up. . . ." He says further,