Contractile vacuoles: One for the most part occurs, sometimes two or three which flow together before systole.

Small, about 15 microns in diameter; numerous, no coalescence among them; systole slow.

Endoplasm: Permeated with a large number of larger and smaller vacuoles.

Filled with small vacuoles.

Food: Alga filaments, flagellates, nematodes, rotifers and small amoeba.

Flagellates, ciliates, diatoms, rhizopods, nematodes, vegetal tissue, etc.

The only difference of considerable value between the two descriptions lies in Neresheimer's assertion that the contractile vacuoles coalesce before systole, whereas Schaeffer maintains that he has observed vacuoles remain in contact for a minute or more with no coalescence. The descriptions agree so closely that it seems that the two men were describing the same species. This contention is supported by the fact that both Schaeffer and Neresheimer found optically active crystals attached to spheres, and further Schaeffer (18), p. 10, says, "Altogether, the crystals form the most definite specific character of this amoeba, and the presence of such crystals attached to spheres in an amoeba may be regarded as definitely proving its specific identity."

If it is actually true that these authors did describe the same species, as appears to be the case, then according to the recent amendments to the International Rules of Zoological Nomenclature,[4] adopted in 1927, the name of the rhizopod should be *Amoeba dofleini.*

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DEVONIAN CONCRETIONS OF WESTERN AND CENTRAL NEW YORK

IN studying the stratigraphy of the Devonian, one is impressed with the common occurring concretion.

These peculiar formations, invariably built around a nucleus, may be composed of mud, limestone and even marcasite. The last is of diagenetic origin and is by far the most interesting, from the standpoint of the flora and fauna around which it has formed. As to size, Devonian concretions may range from a few feet in diameter to mere nodules. Their structure usually varies with their composition. Certain upper Devonian concretions possessing the peculiar cone-in-cone structure, for which no explanation has as yet been offered, to the characteristic radial form of marcasite. Again, the larger concretions may be grooved, these cracks being filled with extraneous material, thus giving the appearance of a turtle's shell. Other nodules, as those from the Genundewa limestone, are of even texture, composed entirely of *Styliolina fissurella,* surrounding the nucleus.

To the paleontologist, the flora and fauna that form the basis of most concretions, especially marcasite, offer a fascinating study. In the marcasite nodules, the iron pyrite has replaced the organic, as the case may be, by its silver-white metal. When broken open, the metal quickly tarnishes upon exposure to air, and in a short space of a few weeks will disintegrate. The nuclei can be preserved by immersion in kerosene or by covering with balsam.

The following invertebrate forms have been found in Devonian marcasite: *Phacops rana,* trilobite. Goniatites are quite common, especially *Manticoceras intumescens.* An orthoceras, plus many gastropods and pelecypods, have been found. The latter forms can not very well be identified, owing to the peculiar metallic replacement. As to plant remains, only one specimen has been found in marcasite, probably of the genus *Callixylon.*

The larger mud concretions and "turtle backs" are invariably duds. Though goniatites are frequently found in these freaks of nature, they are not as well defined as their much reduced relative in marcasite.

The type locality for Devonian concretions is the already famous Eighteen Mile Creek, Erie County, New York.

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DIVING EXPERIMENT AT THE UNIVERSITY OF MIAMI

STUDENTS of the general zoology and field zoology classes of the University of Miami were recently introduced to what the writer believes is an entirely new feature in university teaching, when they were given the opportunity to enter the waters of the Atlantic Ocean clad in bathing suits and diving helmets to study the animals living there.

Thirty-three students were taken on the "See-Bottom-Boat," with a movable glass window, making regular trips to the marine gardens beyond Biscayne Bay near Soldier Key, about fifteen miles southeast of Miami. Mr. W. F. Miller, of Miller-Dunn Company, manufacturers of the Miller-Dunn "Divinhood," loaned four helmets for the occasion and following the regular trip over the gardens, the boat was anchored and the students entered the water with the writer in groups of three. The helmet is so easily handled and so simple to operate that thirteen students were enabled to descend to the ocean floor in twenty feet of water and walk about, studying corals, sponges, echinoderms and fishes. No student had used these helmets before and several were unable to

[4] Stiles, C. W., 1928, "Amendments to the International Rules of Zoological Nomenclature," SCIENCE, Vol. 67, pp. 17–18.

swim, but not the slightest difficulty was encountered in carrying out the experiment. With the big copper helmets weighted with lead to hold each diver down and connected to hand pumps on the deck by fifty feet of ordinary garden hose, it was possible to walk around in perfect comfort and pass beneath the boat where those above could plainly see every move through the big glass in the floor of the dark-room.

Sharks and barracuda abound in the waters about the Florida Keys, but they were apparently kept off by the strangeness of the apparitions that constantly bubbled great bubbles of air to the surface as they stalked about among corals, sponges and sea fans.

The writer had used the helmets in 1925 while with Mr. William Beebe among the Galapagos Islands and Cocos Island. While there we found that at a depth of thirty or thirty-five feet, the water rose in the helmet about to the level of the diver's chin, compelling him to keep his head erect. In the shallower depth, chosen for the class experiment, water remained probably two inches lower.

The trip was an experiment, but it proved highly successful and similar ones will take their places as part of the regular schedule of course work in the zoology classes of the university.

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SCIENTIFIC THEORIES

THERE are indeed grave objections to the use of the word "belief" as a name for the attitude of a scientist toward a proposition, law or theory which he employs in his thinking, experimenting or writing. Dr. E. C. L. Miller's communication in the issue of SCIENCE for March 23 is very pertinent.

His letter suggests to one reader who has given some thought to this matter in recent years such questions as these:

(1) Why should not some of our able popularizers and socializers of science employ their skill to disseminate a knowledge of and an interest in the scientific attitude and method as well as in more transient information in regard to scientific progress? There are opportunities from time to time, as, for instance, when Einstein spoke with such complete detachment of how his theory of special relativity must fall if the Dayton Miller experiments showing ether drift should be confirmed. "Experiment is the supreme court," said he. This might have been dramatized. Fully utilized, his attitude might have done quite as much for the advancement of science as the Miller experiments.

(2) Why should it not become a fixed policy of writers and publishers of text-books in science to see to it that every science book in the future should contain a page or two, at least, intended to make clear to students that there are certain scientific attitudes common to all sciences which are even more important than the specific information constituting a particular science?

(3) Why should not every teacher of science who reads Dr. Miller's letter or this, attempt to formulate for himself and for his students, a little more carefully than he has heretofore, his own conception of the difference between scientific "acceptance for use" on the one hand and "belief" on the other?

In the institution from which I write a considerable number of students have been taught each year recently that real scientists do not believe their theories and laws as other people believe their inherited and absorbed beliefs; that scientists use their generalizations as tools of thought and guides in experimentation and observation; that, in their more rational and more philosophical moments, at least, scientists do no more "believe" their theories, laws, etc., than they believe a benzene ring diagram or a logistic curve. Their generalizations work to correlate and coordinate concepts, observations and experiences with one another. That is enough.

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SCIENTIFIC BOOKS

Entomologie d'Haiti. By GEORGE N. WOLCOTT. Republic of Haiti. Published under the direction of the Service Technique du Département de l'Agriculture et de l'Enseignement Professionnel. Port-au-Prince, Haiti, 1927. 440 pp., 133 figs., 8vo, cloth.

THIS volume, which is the second of a series of works written for the use of the students of the Central School of Agriculture of Haiti, is far more than the usual government or state bulletin.

It is necessarily largely a compilation of the facts known to every entomologist, which form the basis of the study of insects, and yet Dr. Wolcott has given his book quite a tropical flavor. The reader will be surprised at the start by the many excellent illustrations, many original and by the author or by M. Fritz Maximilien.

The work begins with a short discussion of entomology as a science and as a branch of zoology. The next chapter is headed "Les Arthropodes," and defines the members of this group and gives much interesting information.

The external anatomy of insects is next taken up, then internal anatomy and then development.