Letters to the Editor

Iodine as a Cytological Stain

The use of iodine as a staining reagent in cytological work has apparently never been very carefully explored. It has been employed, however, as a test stain to demonstrate the presence of glycogen (Lee, 1937) and amyloid (McClung, 1937) and thus has some value as a cytochemical reagent. Presumably also on the basis of the precipitation reaction produced by choline derivatives (Greiss and Harrow, 1885; Rosenheim, 1905; Booth, 1935) it should have some value as a neurological stain. Although this assumption may be entirely fallacious, it has been found that iodine in potassium iodide solution (Lugol's solution) can be used successfully as a staining reagent. When applied to fresh frozen sections of nervous tissue such as brain material, it is found to stain selectively a host of exceedingly minute bodies scattered throughout the cytoplasm and along the processes of the neurone. These bodies can be seen clearly only with the oil immersion objective. Their nature is also uncertain, but for the present they may be designated simply as periodide bodies. Similar organelles are present in some other tissues, such as liver and pancreas, which have been investigated in a preliminary fashion.

In like manner, if iodine is applied to fresh teased muscle preparations, it will stain the nerve end organs and make evident the characteristic features of these structures, namely, the sole plate, the granules of Kuhne, and, to some extent, the periterminal net. While the use of iodine as a stain for nerve endings has certain disadvantages it also possesses some distinct advantages, such as speed of application, and it is hoped it will make a staining reagent of considerable technical value. Full details of the methods employed in using the iodine staining reaction will be given in a forthcoming article.

F. B. Adamstone and A. B. Taylor
University of Illinois

DDT and the Black Widow Spider

Occasionally, under favorable conditions, a considerable concentration of black widow spiders (*Latrodectus mactans*) may occur around a single dwelling. This results from the "ballooning" method of dispersal employed by the young spiders on emergence from the egg sac. With the wind in the right direction and other conditions favorable, a house may be treated to a shower of spiderlings, many of which will find suitable locations, establish their webs, and grow to maturity. I have seen houses with black widows behind every shutter and drain pipe, around the foundation, in cellar windows, etc. While the risk is not great, due to the shy and retiring nature of the spider, it is just as well to exterminate them, particularly if young children are present.

Since the common insect sprays are ineffective and lethal substances, such as hyrdogen cyanide are too dangerous or difficult for common use, there has been to date no satisfactory method of eradication short of hunting out and destroying each individual spider. This is always very difficult, as the spider tends to make her retreat in the deepest hole or crack available.

To test the action of DDT a number of mature black widow females were collected. One was placed in an up-ended, open cigar box fixed in a retort stand over a pan of water (to prevent the escape of the spider). The spider made her characteristic irregular web through the box and out to the retort stand. A 10-per cent solution of DDT in kerosene was sprayed very lightly on the outer part of the web, care being taken not to hit the spider or the inner part of the web where she had her retreat. After about 24 hours the spider was observed halfway down the web with the legs constantly making an unnatural twitching motion. The next day she had dropped from the web and was dead. Without additional spraying another spider was placed in the same web and in a couple of days was dead. Four additional spiders placed in the web also died.

As a result of this experiment it may be said that a 10-per cent solution of DDT in kerosene sprayed on the web is lethal to the black widow spider and that the effect of one spraying lasts for some time. This, then, should prove to be a safe and sure method of eradication.

Walker Van Riper
Colorado Museum of Natural History, Denver

Fairy Shrimps in California Rice Fields

Branchiopod crustaceans have been of interest to zoologists for many years, chiefly because of their phylogenetic significance. These have a wide distribution in various parts of the world as inhabitants of lakes, streams, and especially small ponds. Recently a charge has been placed against a member of this group—the genus *Apus*—as being of some economic consequence to the rice growers in the Sacramento Valley of California. Growers have occasionally seen *Apus* in the rice checks, but no damage has been claimed until during the season of 1946.

The first report of damage by *Apus* was received on 31 May 1946 from L. L. Davis, of the U. S. Rice Experiment Station at Biggs, Butte County, California. Reports from Sutter County have also been received. Upon investigation it was found that *Apus* were present in many rice checks and in such numbers that their presence was of definite significance. The damage by these animals is twofold. The young plants are attacked shortly after germination; young leaves are chewed off at the base and float free on the surface. Subsequent wind action brings the freed leaves into windrows against the dikes. A second damaging effect is that the silt is stirred up and the water kept in a muddy condition. As a consequence, sunlight penetration is prevented and poor growth of the plants results.

The undersigned would welcome reports of damage by

Apus or *Lepidurus* to plants as seen in this or any previous season.

A detailed illustrated report of the damage and results of experimental work on control will be published elsewhere.

LAUREN E. ROSENBERG
Division of Zoology, College of Agriculture
University of California, Davis

Asphyxiate and "Anoxiate"

I have had occasion to review the literature on anoxia (*Anoxia: its effect on the body.* Univ. Chicago Press, 1942). One chapter, albeit a short one, was entitled "Definition of Terms." In this chapter exception was taken to the unfortunate misuse of the terms asphyxia and anoxia, and an earnest effort was made to distinguish clearly between them. I contended strongly that during anoxia there is no accumulation of CO_2 in the alveolar air or, presumably, in the tissues of the body, because the hyperpnea produced by anoxia washes the CO_2 out of the lungs. In the conditions of asphyxia exactly the opposite obtains. Precision of explanation requires us not to use the same word for two distinctly different conditions. Accordingly I summarized my view as follows:

"The author believes that it is understood by many that in asphyxial conditions there is an accumulation of carbon dioxide in the lungs and in the tissues of the body. If this actually is the concept that many biologists have of asphyxia, it is not difficult to accept the distinction between anoxia and asphyxia previously mentioned; that is, anoxia designates a diminished supply of oxygen to the tissues, and asphyxia a condition of anoxia combined with an increase of carbon dioxide tension in the blood and tissues. If this distinction were generally accepted, it would do away with much misconception and would distinguish sharply between asphyxia and anoxia" (p. 6).

My distinguished friend and fellow physiologist, the late Yandell Henderson, did not entirely agree with me in the distinctions I made between anoxia and asphyxia. In his stimulating manner he took me mildly to task. One of his criticisms was that the term asphyxiated is firmly established in the literature and that there is no equivalent for this term when a condition of anoxia is actually meant. Granted that this be true, then let us create one: the equivalent would be "anoxiated."

It has seemed to me for some time that the term "anoxiate" (to "anoxiate" or "anoxiated") should have a definite place in our scientific language. It is, for example, quite incorrect to say that a man was asphyxiated because he ascended to such a great height that the oxygen tension was too low to sustain life. This man was not asphyxiated; he was "anoxiated."

I wish, then, to make an earnest plea that the term "anoxiate" be accepted by scientific writers (and perhaps later by laymen). In order for them to do so it is quite necessary, of course, for the editors of scientific journals not only to recognize this descriptive term but actually to encourage its proper use.

EDWARD J. VAN LIERE
West Virginia University, Morgantown

Book Reviews

Principles of physics II: electricity and magnetism. **Francis Weston Sears. Cambridge, Mass.: Addison-Wesley Press, 1946. Pp. 434. (Illustrated.) $5.00.**

This book completes Sears' trilogy of texts for the two-year elementary course in physics at the Massachausetts Institute of Technology. Volume I, on Mechanics, Heat, and Sound, and Volume III, on Optics, were published last year. The present volume, like the others, is intermediate in difficulty and scope between the usual one-year elementary physics texts used at other schools and the specialized, advanced, undergraduate texts. At the beginning of this volume the proofs involve vector equations and integration; at the end, solution of simple differential equations.

A genius for clear explanation runs through the discussions, the derivations, and the beautiful diagrams in Sears' whole series. It falters only once in Volume II, in the half chapter on chemical emf's, which was not written by Sears himself but by a collaborating author. The treatment of the troublesome E and D, B and H, and their relation to atomic behavior and to surface and bulk effects, is the clearest the reviewer has yet seen in a text and should be used for reference by every physics teacher who has ever got lost among these vectors.

The book keeps roughly the traditional order of subject matter, proceeding from electrostatics and steady currents to magnetism, alternating currents, and electromagnetic waves and optical reflection and refraction. But the usual welter of units and viewpoints is brought here into a lucid, teachable orderliness. This improvement comes, first, from putting the fundamental particles at the focus of attention and deriving all from them—fields from electron interactions, poles from fields and currents, and so on; second, from holding to the rationalized mks system of units throughout; and third, from the fine approach to the electric and magnetic vectors noted above.

The reviewer was less pleased by the poorly organized wastebasket chapter on "Electronics" at the end of the book and by the tabloid introductory paragraphs centered around nuclear energy. The latter were evidently hastily inserted just before publication and are, of course, already out of date. They contain several mistakes, such as the invention of the mythical element "triterium."