purpose of others who have used it. However, difficulty soon arose in the application of water culture data to soil problems and in time the method became more and more a feature of plant physiology rather than that of soil science.

Plant physiology used water culture as a means for study of plant processes and, as a consequence of the technique found necessary for such studies, data showing the great productive potentiality of liquid culture media were not obtained. The fact that water culture has been known to plant physiology so long, and has not heretofore been applied in a practical way, created the necessity for a name to be given the new development. The name also would draw distinction between two uses of water culture—the strictly scientific and the economic.

Because the term "aquiculture," as used by the author in the first announcement, had previously been used in other connections, being the designation given to the culture of aquatic plants and marine animals, it becomes necessary to select a new word. "Hydroponics," which was suggested by Dr. W. A. Setchell, of the University of California, appears to convey the desired meaning better than any of a number of words considered. Hydroponics has analogy in geoponics—the Greek term by which agriculture was known for several centuries in the middle ages; this word appears to have been in common use before the latinized term "agriculture" obtained universal standing. Furthermore, "hydroponics" (*hydro,* water, and *ponos,* labor) has a strong economic and utilitarian connotation; therefore it is desirable in view of the historic use of water culture in plant physiology. The word has not been used heretofore in a scientific sense, and hence there can be no objection as to prior usage.

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TRANSMISSION OF THE VIRUS OF EQUINE ENCEPHALOMYELITIS BY AEDES TAENIORHYNCHUS

SINCE the initial discovery by the undersigned,[1] in 1933, that the mosquito *Aedes aegypti* is capable of transmitting the virus of equine encephalomyelitis, numerous additional transmission studies have been conducted by different investigators with various other mosquitoes. As a result some five or six additional species have been found capable of transmitting the disease.

During the latter half of the past year transmission experiments were undertaken with *Aedes taeniorhynchus.* These studies have definitely proved the ability of *Aedes taeniorhynchus* to transmit the "Western" type of equine encephalomyelitis from guinea pig to guinea pig.

In one out of a number of positive experiments a single mosquito feeding but once on a guinea pig produced the disease and death of the pig in five days. This was repeated with the same mosquito and another guinea pig, death of this pig from encephalomyelitis occurring in six days.

Transmission tests with *Aedes taeniorhynchus* and the "Eastern" type of virus, in so far as they have gone, have been negative. However, this phase of the study is incomplete and is being pursued further.

Details of the positive transmission experiments with the "Western" type of virus will be published in the near future.

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VITAMIN C IN PASTEURIZED MILK

SHARP[1] has recently drawn attention to the well-known effect of copper in accelerating the loss of reduced ascorbic acid in milk and has shown that this effect is smaller in milk pasteurized for 10 minutes at 77° C. than in milk pasteurized for 30 minutes at 62°–63° C.

As a result of his observation Sharp concludes that it is commercially feasible to produce copper-free pasteurized milk which will contain as much vitamin C as raw milk of the same age and that the main nutritional objection to pasteurized milk is thereby removed. The second conclusion is open to grave doubt for two reasons. First, cow's milk can not be regarded as an important source of vitamin C on account of low concentration of the vitamin in fresh milk and the uncertainty as to its preservation. Milk pasteurized in the most careful manner contains immediately after pasteurization only about 10 to 20 mg of ascorbic acid per liter. King[2] has estimated the daily human requirement at 25 mg for an infant and 40 mg for an adult, and recommends an estimated dietary allowance well above these minima. Thus an infant must take 2½ liters of the most carefully pasteurized milk in order to ensure ingestion of the mere minimum allowance of vitamin C. On the other hand, this quantity of vitamin C is contained in a relatively small volume of fruit juice.

Secondly, there are other milk constituents of which milk is the only source for infants and an important one for adults: and these may be harmed by pasteurization. For instance, pasteurization of cow's milk by the holder method renders its calcium less available for

[1] R. A. Kelser, *Jour. Am. Vet. Med. Asn.,* 35: 5, May, 1933.

[1] SCIENCE, 84: 461, 1936.
[2] *Physiological Reviews,* 16: 238, 1936.

the human infant[3]; and Sprawson[4] has found that raw milk protects children completely from dental caries—a most desirable result which has never been attained by the use of pasteurized milk or by any other therapeutic measures. Also, pasteurization makes cow's milk a less satisfactory food for the calf.[5]

Thus the destruction of some of the vitamin C can not be regarded as the "main nutritional objection" to pasteurizing milk. Two further points call for attention—the 2-6 dichlorophenol indophenol titration as used by Sharp for the estimation of vitamin C in milk is in our experience reliable when applied to fresh milk, but difficulties with the endpoint render it less reliable for milk samples 3 days old. And the postulated presence of an ascorbic acid oxidase in milk is difficult to reconcile with the observation that raw milk loses only about 50 per cent. of its reduced vitamin C on standing for 3 days at 2° C.

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PARAMECIUM MULTIMICRONUCLEATA VS. PARAMECIUM MULTIMICRONUCLEATUM[1]

A COMMUNICATION from Dr. C. W. Stiles informs me that it has been customary to correct grammatical errors in the naming of animals, and that this procedure is automatically authorized by the word "must" in Article 14a of the International Code. ("Specific names are (a) adjectives which must agree grammatically with the generic name.") This rule must also be observed when a species is transferred from one genus to another. Thus, when *Xiphidium attenuatum* was transferred to *Conocephalus,* it necessitated changing the specific name to *attenuatus,* though I have seen *Conocephalus attenuatum* in print.

The above rule applies only to adjectives. If the specific name is a substantive in apposition to the generic name, Article 14b applies. Here the specific name need not agree in gender with the generic name, as the example given, (*Felix leo*), shows. Consequently, the specific name need not be changed when the animal is transferred to another genus. Suppose there were a species *X-us necator,* and this were transferred to a genus with a feminine name, as *Y-a;* the masculine specific name *necator* would not have to be changed to the feminine *necatrix.*

[3] A. L. Daniels and G. Stearns, *Jour. Biol. Chem.,* 61: 225, 1924.
[4] *Proc. Roy. Soc., Med.,* 25: 649, 1931–32.
[5] A. C. McCandlish and A. N. Black, *West Scotland Agric. Coll. Res. Bull.,* No. 4, 1935.
[1] John A. Frisch, S.J., SCIENCE, 84: 2178, 290–291, 1936.

A point of historical interest and one which may explain some of the mistakes found in both botanical and zoological literature is the following. On the basis of the rule in Latin grammar that all trees are feminine, some authors have tried to extend this principle to all plants and to use only the feminine gender for all genera in botany, and conversely, only the masculine for all genera in zoology—this on the plea that it would make it easier to distinguish between zoological and botanical genera. This custom was not accepted by the International Commission.

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GLASS GLOBES CROSS THE PACIFIC OCEAN

GLASS globes are frequently found on the beaches along the western coast of North America. They are generally regarded as net-floats, used by Japanese fishermen, which have been carried by the Japanese current to the shores of America. They are reported to come ashore most abundantly during, and following, exceptionally strong storms. These globes have been known to the local inhabitants for many years. Hundreds are collected every season and sold to the tourists for souvenirs. News items regarding these curious objects have appeared in the local press, but no reference to them has been noted in the technical literature.

During the past several years, the writer has seen many of these floats which were found along the Oregon coast. These were generally made of green bottle-glass and ranged from two to eighteen inches in diameter. The globes float about three fourths submerged and the under-water portion is covered with a growth of marine vegetation containing many small shells.

These glass balls have been found the length of the Oregon coast and as far south as the Russian River in California. Their distribution is, no doubt, much greater than is indicated here. A few years ago a former student found similar globes on the north shore of the Island of Oahu; recently others have been mentioned from the Midway Islands.[1]

It would be of interest to learn more of what is known of the migration of these floats, such as the length of time required to cross from Asia to America, and also whether those found on our shores were beached immediately upon their first crossing or have made one or more circuits before stranding.

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[1] W. B. Miller, *The National Geographic Magazine,* 70: 6, 689, 1936.