

same form of the word as appears in Mr. Harper's list, while the other two are obviously identical in structure with forms given in the dictionaries. Thus *epeirogenic* becomes *epirogenic* while the *accultural* of the list has undoubted affinity with *acculturation* as defined in the works consulted.

Mr. Harper noted, however, that a few of his words were to be found in the dictionaries, but without meanings corresponding to their obvious application by the authors quoted. In three cases out of five, however, this objection has seemingly been met, at least, so far as can be determined without consulting the original references.

Peyote, also, does not seem to constitute a fair test for an English dictionary, as it is the native Mexican name for a cactus (*Ariocarpus fissuratus*) better known as 'mescal button' or 'dry whiskey.'

It would thus seem that success in reading with understanding the modern Carylean writers on scientific subjects depends in a measure, at least, on the reference books available.

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SHORTER ARTICLES.

THE PHYSIOLOGY OF SEA WATER.

For a number of years the writer has been studying the physiological action of various substances in simple and in mixed solutions. For two years the physiology of sea water has been given especial attention. A study of synthetic solutions variously prepared has seemed to indicate that such a solution when properly made is capable of replacing sea water in some instances in a very satisfactory way.

Experiments made at the Woods Hole Marine Biological Laboratory last summer by the writer and by Miss Susie Nichols, of Clinton, N. Y., working under the writer's direction, seemed to indicate that a synthetic solution prepared in such a manner as to contain the six chief substances present in the sea in the proportion there present, differed in a very marked way in its physiological properties from sea water. It seemed at the time that this difference disappeared to a large

degree when a considerable excess of salt over that given in analysis was added, and some structural differences in the molecular constitution of the two media were suggested as a possible explanation. A study of the conductivities and freezing points of the solutions concerned has been made under the writer's direction during the present season at the laboratory of the United States Fish Commission at Woods Hole by Dr. Joseph S. Chamberlain, expert in physiological chemistry of the Department of Agriculture. The evidence presented fails to sustain the experiments of a year ago. It is clearly indicated that through some error, perhaps due to insufficient allowance for water present in the salts used, a less quantity of salts was introduced than was supposed; hence the necessity for adding the supposed excess. In the correct concentration, Miss Nichols has been able to carry marine algæ for a large part of the year, in which time they have passed from spore stage to spore stage. It is a pleasant duty to state that, through the kindness of Professor A. D. Morrill, Miss Nichols has enjoyed laboratory facilities at Hamilton College for this work.

Experiments now in progress indicate that not only is it possible to prepare an artificial sea water in which certain marine algæ can develop, but it appears that many very sensitive marine animals can also be kept for longer or shorter periods of time, and often carry out a considerable part of their development in artificial mixtures.

Among animal forms that have been tested in this respect may be mentioned the following: The Ctenophore (*Mnemiopsis Leydii* L. Ag.), common in Woods Hole waters; *Gonionemus Murbachii* May., found in the eel pond at Woods Hole now being studied in this connection, I believe, by Dr. H. F. Perkins; a nudibranch mollusk which has apparently developed from the egg in an artificial medium; and the scup, stickleback and silver-sides among the fishes.

A further study of the subject both in its chemical and in its physiological phases is now in progress.

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