

UNDERWATER ORCHID

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Most people think of orchids as large showy flowers worn in corsages or displayed at flower shows or in florists' windows. Orchids are usually visualized as coming only from plants perched high on trees in steaming, hot, tropical jungles. Little is it realized that orchids represent one of the largest families of flowering plants, with flowers that range in size from minute and inconspicuous to showy and spectacular



ORCHID FOR THE AQUARIUM

Flower of *Spiranthes odorata*, "underwater orchid."

and that vary in all shades of colors. The plants themselves may grow in all parts of the world and all kinds of climates, from sea level to mountain top, from desert to rain-forest. Their roots may grow in the soil or over bare rocks or high up in the tree tops, dangling and exposed to the air. All are orchids, however, by virtue of a similar type of flower structure.

Yet, it may be a mild shock to learn of an orchid that actually grows under water. Many persons who have known of some wild orchids growing in swamps and wet places still never heard of any growing submerged in water. What, then, is this orchid? What kind of plant is it?

USED AS AQUARIUM PLANT

The story is quite simple. A number of years ago, Mr. Albert Greenberg, of Tampa, Florida, prominent dealer in water plants and tropical fishes, sent to the Museum a specimen of an orchid that he called "underwater orchid." It was identified by the writer and later verified by Mr. Charles Schweinfurth, orchid authority at Harvard's Botanical Museum, as "fragrant ladies' tresses" (*Spiranthes odorata*). Mr. Greenberg was especially interested in this orchid because he had been using it as an ornamental aquarium plant in his large establish-

ment where thousands of water plants are grown in connection with the tropical fish industry.

The natural habitat of this orchid in Florida, according to Mr. Greenberg, is in shaded swampy woods that remain flooded from three to five months of the year. Many of the plants observed were growing along the edge of streams in leaf mold and among fibrous tree roots. Occasionally some were observed to have been washed into the streams and to have established themselves where the current was not too fast. In the latter habitat these plants actually grew larger and better leaves than those at the swampy edges or in flooded land.

SUCCESSFULLY PROPAGATED

On finding submerged plants like these, Mr. Greenberg tried propagating them as aquarium plants. That he has been successful in his endeavors is testified by the fact that specimens of the same plant have been kept under water for more than three years. When the plant gets ready to bloom, a long narrow flower stalk, bearing at its top a column of several ranks of tubular, waxy, white flowers, is sent up between the rosette of light green, strap-shaped leaves. The stalk may start below the surface of the water, but the actual flowering part with the flower buds always projects above the water level. Sometimes even a small broken-off portion of a root, which has become detached and allowed to float to the surface of the water, may produce a new plant. Thus, this orchid can be reproduced even by vegetative propagation.

This case illustrates how under the influence of man a plant can extend its environment and adapt itself to an extreme habitat, where it might otherwise not grow for long. Of course, many swamp plants can adapt themselves to prolonged periods of submergence and remain indefinitely under such circumstances in a submerged leafy state of growth. Other plants ordinarily growing submerged in water temporarily can adapt themselves to land conditions when the water dries up or droughts occur. The case of this orchid is noteworthy, however, since it is so different from other members of the orchid clan. Other species of the ladies' tresses group (*Spiranthes*) often grow in wet meadows, fields, stream banks, and ledges, but many of them grow in fairly dry situations, such as dry upland woods, exposed sunny rocks, or even in desert regions. In the case of the underwater orchid (*Spiranthes odorata*) we note an ability to adapt to extreme aquatic conditions. It is a southern species of the coastal states, ranging from Virginia to Florida and west to Texas.

Geographical distribution of poisonous snakes in the United States is the subject of an exhibit in Albert W. Harris Hall.

Books

(All books reviewed in the BULLETIN are available in The Book Shop of the Museum. Mail orders accompanied by remittance are promptly filled—The Book Shop pays the postage on shipments.)

HISTORICAL GEOLOGY. By Carl O. Dunbar. John Wiley & Sons, Inc., 1949. 567 pages, illustrated with 350 photographs. Price \$5.

Historical Geology by Carl O. Dunbar is a worthy successor to the *Textbook of Historical Geology* by the late Charles Schuchert and Carl O. Dunbar. The present volume is an outgrowth of the preceding publication, not merely a revised edition. The alterations, additions, and deletions that have been made are far more numerous than are usually found in a work of revision.

A considerable portion of the text has been rewritten and many of the illustrations are new. Dr. Dunbar has never lost sight of the progress that earth sciences have made, nor has he failed to take account of such progress. Not only has he retained the objectives of the earlier volume, but he has introduced a great many features to insure presentation of the subject matter—the birth and development of the earth—with greater clarity.

The sequence of events, both physical and biological, is manifest; there are no abrupt breaks or jumps in the arrangement. The prologue has been recast and the geologic time scale has been placed in a more orderly setting. The introduction of a new, enlarged set of paleogeographic maps, with greater detail, is a major feature and a very welcome supplement. Regardless of how generalized a paleogeographic map may be, there is no other medium that provides a clearer conception of the extent of ancient lands and seas.

Some readers, perhaps many, will miss the correlation tables that have been omitted. That they are "too technical for the student and inadequate for the teacher" may be true; nonetheless, the value of such tables as a handy general reference can hardly be gainsaid.

This reviewer does not know of any textbook in which the earth's history has been more comprehensively surveyed or where the principles of interpretation of events of the past have been so well developed and co-ordinated. The book should serve, as before, not only as an excellent college text but also as a book for all professional geologists who have occasion to deal with historical geology in their routine work. Laymen interested in the origin and history of the earth will find this an easily read and understandable book providing adequate and authoritative information.

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Steyermark, Julian A. 1949. "Underwater Orchid." *Bulletin* 20(5), 8–8.

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