written for students on the continent, where the method of malting differs somewhat from ours. The printing, paper, and binding of the book are particularly good.

A. J. B.

Curiosities of Light and Sight. By Shelford Bidwell, M.A., LL.B., F.R.S. Pp. xii + 226. (London: Swan Sonnenschein and Co., Ltd., 1899.)

MANY readers will be glad to possess this collection of essays, in which Mr. Shelford Bidwell describes some of the experiments which the scientific world owes to his ingenuity. The five chapters in the volume are based upon notes of lectures delivered to various audiences; and their subjects are: light and the eye, colour and its perception, some optical defects of the eye, some optical delusions, and curiosities of vision. Each subject is presented with freshness of style, and elucidated by many simple and convincing experiments. To the popular lecturer on science, who desires to know how to produce curious and instructive optical effects, the volume will be very acceptable, and every physical experimentalist may confidently turn to it for inspiration. But though the curiosities of colour phenomena, and of sight generally, are chiefly described in the book, many questions of deep interest to students of both physical and physiological optics are discussed, so that the volume appeals to scientific as well as popular readers.

LETTERS TO THE EDITOR.

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A Curious Salamander.

THE artificial propagation of food fishes is an important part of the work of the United States Fish Commission, and for this purpose it has a number of hatcheries or "stations" scattered throughout the Union. At each of these stations especial attention is given to the rearing of the fishes best adapted to the region in which that particular station is placed, as it would be useless to breed salmon or trout for the warm, sluggish streams of the South, or to put bass and carp into the cold, swift rivers of New England or of Michigan. The sea stations are devoted to the study of marine zoology, and the propagation of shad, mackerel, cod, lobsters and similar organisms that cannot be bred in fresh water; while hatcheries have been put on the banks of several lakes at which whitefish, landlocked salmon, lake trout and the like are reared.

A few years ago a station was established near the town of San Marcos, Texas, for the culture of black bass and "crappies." A prime essential for fish hatching is a copious supply of water, and the supply should be as uniform in amount, temperature and composition as it is possible to obtain. If there be much sediment in the water, it will be deposited on the eggs and suffocate them; and sudden variations in temperature may also be fatal. As the rainfall in western Texas is untrustworthy, the Commission determined to bore an artesian well to supply the water for its new station.

The well was bored successfully and a flow of twelve-hundred gallons per minute obtained from a depth of 188 feet. There are several such wells in this region that give this amount or more, but soon after the San Marcos well was opened a number of living animals began coming up with the water. So far, four kinds of Crustacea and a salamander have been seen, and of these quite a number have been obtained. The Crustacea are new to science and were described by Dr. James E. Benedict, of the Smithsonian Institution. They are white and perfectly blind. Most of the shrimps and crab-like animals have eyes set on the extremities of stalks that project above the surface. The shrimps from this well have the stalks, but the eyes have disappeared.

The most remarkable creature that has come from the well is the blind salamander, the *Typhlomolge Rathbuni*. The name

FIG. 1.—*Typhlomolge Rathbuni*, seen from above. (Photographed by W. P. Hay.)

is compounded from the Greek *typhlos*, blind, and *molge*, a kind of salamander; while the second term was given in honour of Mr. Richard Rathbun, the Assistant Secretary of the Smithsonian Institution, and for many years the Chief of the Division

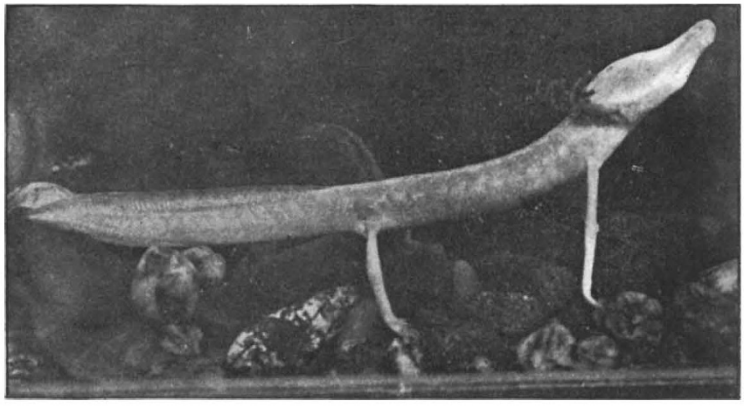

FIG. 2.—*Typhlomolge Rathbuni*, ¾ life. (Photographed by W. P. Hay.)

of Scientific Inquiry of the Fish Commission. This animal is a new species and a new genus. It was described by Dr. L. Stejneger, of the Smithsonian Institution. The *Typhlomolge* is from three to four and a half inches in length. It has a large head, protruding forward into a flattened snout that bears the mouth. The eyes are completely covered by the skin, and are visible from the outside only as two black specks. Just behind the head are the gills. These are external and stand out in festoons about the neck, instead of being covered by a lid as in fishes. The skin is a dingy white, and the sharp contrast between