

a single specimen "taken on the east shore of Virginia," while Prof. S. A. Forbes, in 16th Report of the State Entomologist of Illinois, p. 50, gives what seems to be incontrovertible proof that the insect was abundant in Illinois, within a few miles of New Harmony, as early as 1823. Therefore it does not seem improbable that *Simulia* may not have occurred in the Lower Wabash, and the Little Wabash, in Illinois, even before Say's residence at New Harmony, though, in attempting to secure proof of this I have been less fortunate than Prof. Forbes, as none of the oldest inhabitants about New Harmony can remember of the occurrence of buffalo gnats, except during recent years.

At the field meeting of the Academy, at Richmond, Indiana, May 12, 1892, we found another location for these insects, in Indiana, this being at Elkhorn Falls, situated five miles below the city. The larvæ, which appear to be different from any I have collected elsewhere, were found clinging to the rock and also to the algæ which overhangs the falls. No adults were found at the time, and but few pupæ.

THE DEVELOPMENT OF THE VIVIPAROUS FISHES OF CALIFORNIA. BY CARL H. EIGENMANN.

RECENT ADDITIONS TO THE ICHTHYOLOGICAL FAUNA OF CALIFORNIA. BY CARL H. EIGENMANN AND ROSA S. EIGENMANN. Published in part in Proc. U. S. Nat. Mus. for 1892 and in part in the Annals New York Acad. Sci. for 1892.

[ABSTRACT.]

We have prepared an enumeration of the fishes occurring on the Pacific coast of America, north of Cerros island, and to the depth of 150 fathoms. The explorations of the U. S. Fish Commission steamer *Albatross*, during the last three years, have added a large number of species to those previously known from this region, and our own explorations have added about as many new forms from San Diego alone as were discovered by the *Albatross* along the whole coast included in the present paper. These additions.

as well as the extension of the habitat of many species, make the present list desirable.

Several forms have recently been discovered by the Albatross in deeper water. Most of these, however, have little relationship to the littoral fauna and the deeper water has not been sufficiently explored to warrant a list at the present time.

We have placed the dividing line between the littoral and the bathybial faunas of this region at 150 fathoms, because all of the genera so far recorded from this depth have representatives in the shallower water—fifteen to fifty fathoms. Some of the littoral genera, as Sebastodes, have representatives in deeper water, but this is not of general occurrence.

Cerros island is a convenient and natural southern boundary to this region. South of it few, if any, of the characteristic genera (Sebastodes, genera of Embiotocidae,) of this region are found. A number of southern forms extend further north, but the number has not been materially increased by our explorations at San Diego; on the other hand a large number of northern forms, or representatives of northern forms, which had not been found south of Point Conception, were added to the San Diego fauna. The California fauna has hitherto been divided into a southern and a northern at Point Conception. This division was the result of insufficient exploration, and the results mentioned above have made it evident that no definite boundaries can be assigned for a northern and a southern California fauna.

It is quite evident, and readily admitted, that the fauna of California is distinct from the Alaskan fauna, and the latter has been added for convenience and comparison only. But four of the species found at San Diego are also found in Alaska. The California fauna is characterized by the abundance of species of Sebastodes, of Cottidae and of Embiotocidae. The last are entirely absent from Alaska, while only a few species of Sebastodes are found here. The boundary between these two regions lies somewhere between Sitka and Puget Sound. No Embiotocidae are found at Sitka.

The relative number of species at the principal localities is as follows:

The whole of Alaska	109 species
Puget Sound	106 "
San Francisco	155 "
Monterey	149 "
Santa Barbara	119 "
San Pedro	82 "
San Diego, including Cortes Banks	168 "

There are known from the entire region 382 species, belonging to 228

genera. Of these 116 genera, or more than half, are also found in the Atlantic ocean, and thirty-two species are found both in the Atlantic and in the Pacific. The genera having species in both oceans practically all belong to one of three classes: First, Tropical genera; second, Arctic genera, whose species are distributed throughout the Arctic seas; third, Pelagic and other genera having a wide distribution.

Among the remarkable additions made to the fauna of California during recent years are the following:

Bronchiostoma elongatum, which had been recorded but once, we have found in large quantities at San Diego.

Rhinoptera encenadae, based on a fragment of a jaw found at Encenada.
Perkinsia, a new genus of herrings.

Six species of Scopelidae.

The albacore *Euthynnus pelamys*, whose nearest recorded habitat had been Japan, was found at San Diego.

ON INDIANA SHREWS. By AMOS W. BUTLER.

Among the smaller mammals is a group of small forms generally known as shrews or mole mice. These are insect eating forms. They are little mouse-like bodies. The snout is quite elongated, extending beyond the incisors some distance. It is naked, and on its sides are to be found the nostrils. Although these small mammals are very abundant they are not often seen. They are doubtless most active at night but are not strictly nocturnal, for examples are sometimes to be found moving about in the bright sunlight. They feed upon such animal food as comes in their way, chiefly grubs, larvæ, slugs, terrestrial insects. They are very pugnacious, following mice into their nests and often attacking them. They also attack and kill each other, eating the carcass. They eat almost any kind of animal food, but of vegetation eat little. They are said to be fond of beechnuts, and will, when starved to it, eat corn, oats, wheat and other grains.

In confinement they have been known to attack and kill mice much larger than themselves. Their eyes are small, and while not covered, they can see but imperfectly. Their burrows may be found everywhere beneath meadow, pasture and lawn, under the accumulated vegetable mould of the forest, or the collection of decaying weeds of the thicket. Anywhere and