

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

everywhere their small tunnels may be found. In no respect, that I know, are they injurious, but in all laborers in their little spheres for good. It has been thought, from the number of dead shrews that are sometimes found, that these little mammals are subject to epidemics.

They are naked and blind at birth. None hibernate, but all move about in the coldest weather. Shrews seem to be rejected as food by other animals, on account of an unpleasant odor they emit. Often have I known a cat to catch one and carry it about for some time, apparently loth to give it up, but never eating it and, in the end, rejecting it. Many superstitions are prevalent in Europe, particularly in Great Britain, regarding these little creatures but, so far as I know, none of them are notable in the folk-lore of our land.

The most abundant shrew in our state, and perhaps the most widely distributed in the United States, is the short-tailed shrew, *Blarina brevicauda*, (Say). An interesting account of a nest of this species is given by my friend, Mr. Charles Dury, of Avondale, Cincinnati, Ohio, in a letter of Dec. 28, 1891. The notes have since been published, (*Journal Cincinnati Soc. Nat. Hist.*, 1892, p. 183), and I give them here :

"It is well known to entomologists that some very curious and interesting insects live in the nests of mice and other small mammals. December 13, 1891, I went out to hunt nests of 'field mice,' in hopes of finding a wonderful little beetle, called *Leptimus testaceus*, said to live in such nests. This species was an especial desideratum to me, as I had never succeeded in finding it. I went to an old orchard, and under the first log rolled over I discovered a nest and secured a mouse as she rushed out. She proved to be the 'Short-tailed Meadow Shrew,' *Blarina brevicauda*, (Say). The nest was made of small bits of leaves of the sycamore tree, lined with grass fibers, and situated in a hole or pocket excavated in the ground. I lifted the nest into the sifting net and sifted it over a sheet of white paper, and was overwhelmed at the result. The fine debris was a jumping, crawling mass of insect life, beetles, fleas, ticks and larvæ. I gathered and bottled 106 *Leptimus*, and many ran over the edge of the paper and escaped. There were over a hundred large, vicious looking fleas, most energetic biters (as I discovered from those that secured a lodgment in my clothing). How the mouse could live in such a den is a mystery. The other beetles associated with *Leptimus* were *Staphylinidæ*, or 'Rove Beetles' of species new to me, and so far I have been unable to identify them. *Leptimus* is a small, flat beetle, of a pale testaceous color, one-eighth inch long, without any trace of eyes."

A smaller shrew, which seems to be comparatively common in Vigo county and is found in the Whitewater valley, is *Blarina exilipes*, (Baird.) This shrew is locally known in Vigo county as the "Bee Shrew," from its habit of entering the hives and destroying the young brood.

A form from Hanover, Jefferson county, which is about the size of the last mentioned, was identified by Prof. S. F. Baird as the Cinereus Shrew, *Blarina cinerea*, (Bach.).

From Franklin county several very small shrews were sent to Dr. Elliott Coues. He pronounced them the "Least Shrew," *Blarina parva*, (Say). The species had remained unknown from the time of Say's description. This is, perhaps, the smallest mammal in the United States, and seems to be rather common in the Whitewater valley.

A specimen from North Manchester, Wabash county, taken by Mr. A. B. Ulrey, proves to be the Common Shrew, *Blarina platyrhinus*, (DeK), which has not before been found in the state. A revision of our shrews will probably soon be undertaken, and it is very much needed for they are now in a very tangled condition. Further investigation will doubtless add other forms to our fauna.

There are three species described by Duvernoy in 1842, from this state, that are not now known. They are :

Brachysorex hartani, (Duver.), New Harmony, Ind.

Brachysorex brevicaudatus, (Duver.), New Harmony, Ind.

Amphisorex leseurii, (Duver.), Wabash valley, Ind.

I should like to request all who have specimens of shrews and other small mammals to inform me of that fact, and to urge upon all our members the importance of obtaining and preserving all such animals they can. Especially is such material desirable from all parts of the Wabash valley. The specimens may easily be dropped into small bottles or jars of alcohol after being tagged and marked, in lead pencil, with date and locality of capture. A little co-operation on the part of the members of our academy, a little thoughtfulness in saving what is thrown in our way, will do much to clear up many of the murky places in our nomenclature, many of the fogs along the lines of geographical distribution.

NOTES ON INDIANA BIRDS. By AMOS W. BUTLER.

Since the publication of my recent paper on Indiana birds* several valuable notes have been received, relating to the birds of the state. Besides these, a fuller notice of some of the brief notes given in the paper mentioned may be worthy of note. Not only is much additional information needed as to the occurrence of birds within the state, but also it is of great value to have continued observations on the range, breeding range and habits of birds. From the results of such work, carefully performed, we may map the range of birds by counties and even by townships, and, as a result, be enabled to solve many of the knotty and unravelled problems of geographical distribution. One of the labors which this academy may well carry on, and none can be more valuable, is a biological survey of the state, carefully and sincerely worked out.

Junco hyemalis shufeldti (Coale). Shufeldt's Junco. The specimen of this bird taken at Lafayette, and reported by Dr. Erastus Test, is the second one taken east of Illinois. A single specimen having been taken in Maryland near Washington. This is a form of the Rocky Mountain region which seems to extend its range southeastward.

Ammodramus henslowii (Aud.) Henslow's Sparrow. Mr. Ruthven Deane informs me that he spent a day in July, 1891, making the acquaintance of Henslow's Sparrows at English Lake, Ind. He reports seeing no less than twenty-five specimens and says: "two of us killed about ten. They have been there all summer." Within five days after receiving Mr. Deane's notes my friend, Mr. Charles Dury, of Avondale, Cincinnati, Ohio, informed me of a visit of two friends of his to English Lake in July and August. He said they found Henslow's Sparrows rather common and breeding, and took some specimens, including some young birds. An adult taken there was kindly presented to me by Mr. Ralph Kellogg, one of the collectors. Upon inquiry, I learned that these gentlemen and a friend visited the same locality noted by Mr. Deane, and, further, that they were acquainted and had collected in the same meadows.

Cistothorus stellaris (Licht). Short-billed Marsh Wren. I am under obligations to Mr. Deane, to whom I am indebted for many valuable notes, for some observations on the breeding of the Short-billed Marsh Wren in the state. He says an employe at their club house at English lake brought in a nest taken there two or three years ago. In Mr. G. Frean Morcom's col-

*The Birds of Indiana, with illustrations of many of the species, by Amos W. Butler. (Transactions Indiana Horticultural Society, 1890.)

lection is a set of five eggs of this species, taken at Davis Station, Ind., June 3d, 1887. Mr. C. E. Aiken informs me he found them in marshes bordering sloughs in Lake county, in 1871.

Protonotaria citrea (Bodd)—Prothonotary Warbler. I desire to express my appreciation of the work of Mr. Herbert W. McBride in exploring the counties of Elkhart, Lagrange and Steuben, in Indiana, and St. Joseph county, Michigan, thereby adding materially to our knowledge of the range of the birds in that region, and especially in extending the known range of the Prothonotary Warbler into all of these counties. It was found commonly in all but Steuben. This, with Mrs. Jane L. Hine's discovery of the species in DeKalb county, is very interesting to students of bird distribution.

For the following notes I am indebted to Mr. C. E. Aiken, of Salt Lake City, Utah, well known for his zoological investigations in Colorado. He formerly lived in Chicago and collected in northwestern Indiana, in 1866-7-9 and 71, and occasionally in later years:

Ardea egretta (Gmel)—American Egret. Mr. Aiken informs me it breeds on the Kankakee river, near Water Valley, Ind.

Charadrius squatarola (L)—Black-bellied Plover. One was killed by Mr. Aiken, in Lake county, in 1871.

Contopus borealis (Swains)—Olive-sided Flycatcher. Not rare in Lake county where I obtained a number of specimens in 1871. (Aiken.)

Xanthocephalus xanthocephalus (Bonap)—Yellow-headed Blackbird. Found abundantly along the Calumet river, in Lake county, in 1871. (Aiken.)

Coccythraustes vespertina (Coop)—Evening Grosbeak. A large number of specimens were obtained near Whiting Station, Ind., in 1886-7, by Mr. R. A. Turtle, of Chicago. (Aiken.)

Loxia curvirostra minor (Brehm)—American Crossbill. One of the most interesting of Mr. Aiken's notes is one of the occurrence of the crossbills in the extreme heat of summer, in the vicinity of Chicago and northwest Indiana. Of the American Crossbill he says: "In July and August, 1869, this bird became very abundant in the door yards in Chicago, and remained until late in the fall. They fed greedily upon seeds extracted from sun-flowers and were so sluggish that one could approach within a few feet of them, so that they fell an easy prey to boys with catapults. In the latter part of August, of the same year, I found them common in flocks about farm yards in Lake county, Indiana.

Loxia leucoptera (Gmel)—White-winged Crossbill. Accompanied the pre-

ceding species, in 1869, and remained through the winter. Noticed in Lake county preceding. (Aiken.)

Ammodramus leconteii (Aud)—Leconte's Sparrow. I am pleased to be able to note, upon the authority of Mr. Aiken, the occurrence of this bird in northwest Indiana. About April 15th, 1887, he observed two birds which he thought were this species at Water Valley. About the same time in 1889, near the same place, he saw three of what appeared to be the same birds. Two of them were shot and proved to be this species.

Geothlypis formosa (Wils)—Kentucky Warbler. Mr. Aiken is able to extend the range of this species as far as Gibson Station, Ind., where, he says, several specimens were taken in May, 1887.

In addition might be added that the extreme dryness of the fall for the past two years has had a noticeable effect in lessening the number of marsh birds and water fowl throughout the part of the state where shooting such game is extensively indulged in. Rail, snipe and duck shooting has been worthless the past two autumns. Birds were few, for their favorite haunts were unsuited to their wants. Marshes and sloughs were dry, as were the creeks. Much of the lakes had disappeared, leaving instead "mud flats." Many species, ordinarily common, were rare and others altogether wanting. The open winters two years past and so far this winter, have encouraged many species which ordinarily pass the winter further south to remain with us, and other species which stay in winter in limited numbers have remained in quantities.

SOME NOTES ON THE BIRDS OF INDIANA. By R. WES McBRIDE.

Loon, *Urinator imber*, Gunn. Mr. A. W. Butler, in his admirable and excellent catalogue of the birds of Indiana, says of the Loon, or Great Northern Diver: "I have no knowledge of their breeding within the state, although they will probably be found to do so." I can personally testify that it is a summer resident of Steuben county, and that it breeds in at least two of the many beautiful lakes of that county. Their eggs have been taken at Lake James and Crooked Lake. I have been familiar with those lakes for more than twenty years, and have never failed to find them there in summer. I have also seen them in the breeding season in Hamilton Lake and Golden Lake, also in Steuben county; in Turkey Lake, on the