

ARTICLE II.—*Description of New Illinois Fishes.* By S. A. FORBES.

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LEPOMIS GARMANI, n. sp.

A sunfish of the *Xenotis* group, of average proportions, rather thin in front, the dorsal outline before the fin well arched, with a decided depression at the nape. Length 4 inches, depth 2.25 in length. Color dark, with a purplish tint; sides striped with rows of bronze blotches, one to each scale, about seven rows below the lateral line. Sides of the head in alcoholic specimens with an appearance of irregular lines. Opercular flap large, about two-thirds the length of the eye, bordered above and below, but not posteriorly, with pale. Head 2.75 to 2.9 in length; nose 3.9 to 4.25; interorbital space slightly greater than length of eye.—3.4 to 3.75 in head. Mouth normal, moderate; rudimentary maxillary bone minute; upper jaw below the middle of the pupil; maxillary 2.85 to 3.1 in head, scarcely reaching the front of the pupil; lower jaw 2 to 2.4; teeth on vomer, not on palatines. Eye large, circular, 3.6 to 4. Cheeks with five rows of large scales; opercles with about six longitudinal rows. Gill rakers very short and few—eight on the lower part of the arch, their length about equal to the diameter of the arch. Dorsal fin of moderate height, —X— 10 to 11, the longest spine 2 to 2.3 in head; length of spinous dorsal 2.9 to 3.25 in body; of the soft dorsal 4.8 to 6.3. Anal III— 8 to 10, its height 4.7 to 5.7 in body, its length 4.2 to 5. Pectoral rather long, reaching anal; ventrals surpassing the vent. Lateral line high-arched, 34 to 41, longitudinal rows 5 to 6 and 13 to 15; 17 to 20 scales before dorsal.

This well-marked little sunfish has been obtained by us only in the Wabash Valley, from Little Fox River at Phillips-town, and from the Wabash River and Drew pond at Carmi.

Described from 15 specimens.

## OXYGENEUM gen. nov.

Body long, subcylindrical, a little compressed, dorsal behind ventrals, rudimentary caudal rays not unusually developed. Lateral line complete or nearly so; breast scaly; lower jaw thin, with a sharp, hard edge; upper jaw protractile, with a fleshy covering; no pseudo-branchia; pharyngeal teeth 5—5, with grinding surface. Peritoneum black, intestine long, twice or more the length of head and body.

This genus seems most nearly allied to *Acrochilus*, from which it differs especially in the absence of a horny plate upon the upper jaw.

## OXYGENEUM PULVERULENTUM, n. s.

In general form this species resembles a *Moxostoma*, having the subcylindrical, slightly compressed body, deep caudal peduncle, and posterior position of the dorsal of that genus, but with a small conical head and large, terminal, oblique mouth. A single specimen obtained is 2.5 inches long, the depth 5 in length, caudal peduncle 4.2. The color in alcohol is light, slightly silvery on sides and belly, brightly so upon cheeks and opercles. Back and upper part of sides finely lined with brown or black, owing to the presence of a small brown spot upon the middle of the front of each scale. The scales on back and sides are finely and uniformly specked with black over all their exposed surfaces, these specks being arranged in concentric rows on each scale. They are more conspicuous upon the lower part of the sides than above, and extend forward upon the upper part of the opercle and the side of the head, and even dot the iris of the eye. The head is pointed, but slightly convex above, scarcely curved from the occiput to the nostrils. It is contained 4.15 times in the length of the fish, and its depth 1.35 times in its length. The nose is rather long, 3.13 times in head, slightly decurved, interorbital space 3.12. The mouth is of moderate size, terminal, oblique, contained 2.7 times in length of head, the lower jaw a little the shorter, thin and somewhat extended around the margin. The upper lip is above the center of the eye; the upper jaw extends to the posterior border of the first nostril, and is contained 3.4 times in head. Pharyngeal teeth 5—5, the three anterior with grinding surface. The gill-rakers of the anterior

gill are rather slender, about .2 the length of the gill filaments. The head and body are contained 2.4 times in the length of the intestine. The eye is circular, of moderate size, 4.1 in head; the branchiostegal rays are broadly united to the isthmus. Dorsal I—8, unusually high, its longest ray contained 4.5 times in head and body, the length of the fin 9.1. The anal is also high, I—7, its height 5.5 in length, its length 9.75. The caudal is long, not very deeply forked; the pectorals and ventrals are of moderate size, the latter reaching the vent, the former 5.4 in length of fish, not attaining the ventrals. The scales are very small and uniform, 63 in the lateral line, with 20 longitudinal rows, and 31 scales before dorsal.

This species is represented by a single specimen obtained from the Illinois River at Peoria in 1878.

NOTROPIS PHENACOBIVS, n. s.

This fish unites with a strong general resemblance to Phenacobius the characters of Notropis. The body of the adult is short and deep, the head square, the nose long, and the eye unusually large. Length 2.5 in., depth 3.5 to 4; caudal peduncle 4 to 4.75. Color in alcohol indefinite; sides somewhat silvery, scales along and above the lateral line slightly specked with black. The head is quadrate in transverse section, flat above, 3.75 to 4; nose decurved, 3.4 to 3.5; interorbital space 2.9 to 3.1. The mouth is inferior, horizontal, rather small, lips fleshy, not lobed, lower jaw much the shorter, 2.75 to 3.1 in head, upper lip opposite the lower margin of the pupil, upper jaw to posterior margin of nostrils, 3.33 to 3.9 in head. Teeth 4—4. Intestine about equal to head and body, .97 to 1.17. Eye very large, circular, placed high up, 3.4 to 3.5 in head. Branchiostegals free from isthmus. Dorsal I—8, decidedly before ventrals, its length 7 to 8 in body; anal low, I—8; paired fins rather broad and short; ventrals not reaching vent, and pectorals falling far short of ventrals, the former 6.25 to 6.4 in head and body. The scales are thin, large, crowded anteriorly upon the sides, breast wholly naked in all the specimens seen. Lateral line 35 to 36, longitudinal rows 7 to 9, 13 to 14 before dorsal.

Described from 10 specimens, the only ones seen, all taken at Peoria.

## NOTROPIS MACROLEPIDOTUS, n. s.

This fish, represented by a single specimen in our collections from Illinois, closely resembles *Notropis atripes*, from which it differs especially in the larger scales, and in the entire absence of any blotch at the front of the base of the dorsal fin. It is elliptical in outline, strongly compressed, its greatest thickness being less than half its depth, the back making a uniform curve from the front of the dorsal to the nostrils. Length 2.1 inches. depth 4.2 in length, caudal peduncle 4.6. Color in alcohol plain, the sides somewhat silvery, the opercles brightly so; no dark vertebral line, but the scales upon the back and upon the upper part of the sides thickly sprinkled with rather large circular black specks: fins all plain; upper surface of the head a little dusky, and thickly sprinkled with black. The head is a compressed cone. 4.5 in length, upper surface convex; snout regularly decurved, 3.5 in head; mouth rather large, terminal, oblique; upper lip opposite the middle of the pupil; maxillary to posterior margin of nostril; upper jaw 3.15 in head, lower not projecting. 2.6 in head; teeth 4, 2—2, 4; eye large, circular, 3.75 in head: dorsal fin I—8, about 4 scales behind the ventrals: anal 11; scale formula 6—40—3, 19 before dorsal.

## NOTROPIS ANOGENUS, n. s.

This is a small, insignificant species, extremely similar to *Cirola heterodon* with perfect lateral line, but clearly distinguishable from it in every case which I have observed, by its peculiar mouth, very small and extremely oblique, the lower jaw standing at an angle of no more than 40 degrees with the vertical. Length, 1.5 in., depth 4.33 to 4.5. Color dark above, yellowish beneath, with a very distinct black lateral band extending from a small black spot at base of caudal along sides to eye and around the nose. Within this band, a small black blotch about each pore in the lateral line. No vertical bar below eye. Back very dark, sometimes nearly black, the scales being thickly specked with black on their lower exposed surface, but only narrowly edged with dusky for one or two rows of scales above the lateral band. Edge of lower jaw also specked with black: fins all dusky. Head dark above, white

beneath, with the opercles silvery. The sides of the fish are also slightly silvery. Head small, 4.25 to 4.5 in length; nose short and blunt, 4.5 to 4.75 in head; interorbital space 2.6 to 2.9; mouth very small, terminal, extremely oblique, almost vertical, lower jaw included, its posterior extremity scarcely reaching the eye, 3.2 to 3.4 in head; upper lip above the upper margin of the pupil; maxillary scarcely attaining the nostril, 4.5 to 5.1 in head. Teeth 4-4, with grinding surface, sometimes plain, sometimes crenate, more or less hooked at tip. Eye large, 3.1 to 3.33 in head; iris dark above, silvery beneath. Dorsal I—8, about one scale behind the ventrals, very oblique on terminal margin, the posterior rays being less than half the length of the anterior, height 4.5 to 4.66 in length; anal I—7, height 6.33 in length, pectorals and ventrals moderate, the latter attaining the vent, very nearly as long as the pectorals, 6 to 6.75 in length. Lateral line straight, complete, 34 to 37, longitudinal rows 8 to 11, 13 or 14 before dorsal.

Described from 24 specimens, all collected from Fox River at McHenry.

## ERRATA.\*

Page 5, line 3 of table, second column, for 39 read 38 ; line 6, second column for 121 read 120.

Page 9, line 17, for *conjunction* read *conjugation*.

Page 21, line 13, for *Ricciacie* read *Ricciaceæ*.

Page 67, line 17 from bottom, for *fraligifolia* read *fragilifolia*.

Page 123, line 4 from bottom, and page 126, line 1, for *Tricholeæ* read *Trichocoleæ*.

Page 126, line 2, for *Tricholea* read *Trichocolea*.

Page 177, line 16, for *Lecythia* read *Lecythea*.

Page 333, line 1, after *Tachidius* add *Lilljeb*.

Page 338, under *Daphnella brachyura*, line 16, insert *Hab.*—Massachusetts (*Birge*), Minnesota (*Herrick*).

Page 340, line 5, for *Scapaoleberis* read *Scapholeberis*.

Page 389, line 7 from bottom, for *carpogonium* read *sporocarp* ; lines 9, 12, 15, for *ögonium* read *carpogonium*.

Page 391, line 1, for *Cessatii* read *Cesatii*.

Page 400, line 4, for *Myceliumin conspicuous* read *Mycelium inconspicuous* ; line 14, for *coleosporium* read *Coleosporium*.

Page 401, line 9, for *connatus* read *connata* ; line 12, for *Taraxicum* read *Taraxacum*.

Page 408, line 15, for *macrocarpa* read *macrospora* ; line 18, for *Hypohyllous* read *Hypophyllous*.

Pages 470 and 471, head of column 11, for *cyprinella* read *cypri-nellus*.

Page 503, lines 8, 14, and 17, for *cyprinella* read *cyprinellus*.

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\* For additional errata see page 247.