ON A THIRD COLLECTION OF FISH FROM IRAQ

By

M. A. S. MENON

Offg. Scientific Assistant, Zoological Survey of India, Calcutta

(With 2 Text-figures and 1 Plate)

CONTENTS

I—INTRODUCTION

Our recent knowledge about the ichthyfauna of Iraq is derived mainly from the papers of Hora and Misra (1943) and Misra (1947). Reporting on the two previous collections received by the Zoological Survey of India in the years 1941 and 1943 from Mr. Dimitry D. Belayew, Specialist in Fisheries, Directorate General of Agriculture, Baghdad, these authors recorded 13 and 19 species respectively, of which 2 were new.

During the years 1950, 1953 and 1954 three lots of fishes were receiver by the Zoological Survey of India from the Directorate General of Agriculture, Baghdad, for determination. These were accompanied by photographs of 30 species and a list of the Arabic names of most of them. These fishes, collected from the Persian Gulf and from the Hors and Rivers Shatt-al-Arab, the Tigris and the Euphrates, are reported in the present paper.

I am grateful to Dr. M. L. Roonwal, Director and Dr. K. S. Misra, Assistant Superintendent, for going through the manuscript of this paper. The drawings were done by Sri R. C. Bagchi, Artist.

The following 41 species[1] are represented in the collection under report :

Class ELASMOBRANCHII
Subclass *SELACHII*
Order EUSELACHII
Family Galeidae
1. *Carcharhinus menisorrah* (M. H.)
Class PISCES
Subclass *ACTINOPTERI*
Order ISOSPONDYLI
Family Chirocentridae
2. *Chirocentrus dorab* (Forsk.)
Family Clupeidae
3. *Hilsa ilisha* (Ham.)
Family Dorosomidae
4. *Nematalosa nasus* (Bl.)
Family Engraulidae
5. *Thrissocles malabaricus* (Bl.)
Order OPISTHOMI
Family Mastacembelidae
6. *Mastacembelus haleppensis* (Bl. Schn.)
Order EVANTOGNATHI
Family Cyprinidae
7 *Barbus esocinus* (Hckl.)
8. *Barbus kersin* Hckl.
9. *Barbus subquincunciatus* Gthr.
10. *Barbus xanthopterus* (Hckl.)
11. *Barbus belayewi* sp. nov.
12. *Puntius luteus* (Hckl.)
13. *Varicorhinus trutta* (Hckl.)
Order NEMATOGNATHI
Family Tachysuridae (=Ariidae)
14. *Tachysurus thalassinus* (Rupp.)
Order INIOMI
Family Synodontidae
15. *Saurida tumbil* (Bl.)
Order CYPRINODONTES
Family Cyprinodontidae
16. *Aphanius dispar* (Rupp.)
Order HETEROSOMATA
Family Bothidae
17. *Pseudorhombus arsius* (Ham.)
Family Cynoglossidae
18. *Cynoglossus sealarki* Reg.
Order PERCOMORPHI
Family Sphyraenidae
19. *Sphyraena obtusata* V
Family Scombridae
20. *Scomberomorus commersoni* (Lac.)
Family Trichiuridae
21. *Trichiurus haumela* (Forsk.)
Family Stromateidae
(= Pampidae)
22. *Apolectus niger* (Bl.)
Family Carangidae
23. *Alectis indicus* (Rupp.)
24. *Atule kalla* (C. V.)
25. *Atule mate* (C. V.)
26. *Caranx malabaricus* (Bl. Schn.)
27. *Scomberoides lysan* (Forsk.)
Family Rachycentrida
28. *Rachycentron canadus* (L.)
Family Epinephelidae
29. *Epinephelus stoliczkae* (Day)
Family Lutianidae
30. *Lutianus fulvus* (Bl. Schn.)
Family Theraponidae
31. *Therapon theraps* C. V.
Family Nemipteridae
32. *Nemipterus bleekeri* (Day)
Family Gerridae
33. *Gerres filamentosus* C.
Family Sciaenidae
34. *Johnius osseus* (Day)
35. *Pseudosciaena aneus* (Bl.)
Family Ephippidae
36. *Ephippus orbis* (Bl.)
Family Drepanidae
37. *Drepane punctata* C. V.
Order CATAPHRACTI
Family Dactylopteridae
38. *Dactyloptena orientalis* (C. V.)
Order GOBIOIDEA
Family Periophthalmidae
39. *Boleophthalmus dentatus* C. V.
Order PLECTOGNATHI
Family Triacanthidae
40. *Triacanthus brevirostris* Schgl.
Family Tetraodontidae
41. *Lagocephalus lunaris* (Bl. Schn.)

[1]Classified after Jordan (1923).

II—Systematic Account

The Arabic name of the species is mentioned in italics alongside the scientific name.

1. **Carcharhinus menisorrah** (M. H.) : *Kossetch*

1841. *Carcharias (Prionodon) menisorrah* Muller and Henle, *Syst. Beschr. Plagiostomen*, p. 46, pls. 17, 19, fig. 7. (Type-locality : Java.)

A single specimen from the Persian Gulf ; total length 547 mm.

2. **Chirocentrus dorab** (Forsk.) : *Hoff*

1775. *Clupea dorab* Forskal, *Descript. Animal.*, pp. xiii ; 7. (Type-locality : Djedda, Red Sea.)

A single specimen from the Persian Gulf ; total length 522 mm.

3. **Hilsa ilisha** (Ham.) : *Sbour*

1822. *Clupanodon ilisha* Hamilton, *Fish. Ganges*, pp. 243, 382, pl. 19, fig. 73. (Type-locality : Ganges estuaries.)

A single specimen from Habanian ; total length 238·5 mm.

4. **Nematalosa nasus** (Bl.) : *Yaffoud*

1795. *Clupea nasus* Bloch, *Naturg. ausland. Fische*, 9, p. 116, pl. 339 fig. 1. (Type-locality : Malabar.)

Two specimens from the Hor-el-Hammar Lake ; total length 197 and 183 mm.

5. **Thrissocles malabaricus** (Bl.) : *Siha demer*

1795. *Clupea malvbaricus* Bloch. *Naturg. ausland. Fische*, 9, p. 115, pl. 432. (Type-locality : Tranquebar).

Two specimens from the Persian Gulf ; total length 225 and 245 mm.

6. **Mastacembelus haleppensis** (Bl. Schn.) : *Saebouh Abou Siyan*

1801. *Rhynchobdella haleppensis* Bloch & Schneider, *Syst. Ichthyol.*, p. 480. (Type-locality : Aleppo.)

Two specimens from the Tigris ; total length 197 and 423 mm.

Hora and Misra (1943), in their specimen of 495 mm. total length found " the dorsal and anal fins somewhat shorter (D. XXXI-73 ; A. III-73)" and the pectoral fins "stumpy" being "either deformed or diseased" In the two specimens under report the dorsal and anal fins are a little longer (D. XXXIII-85 ; A. III-85) and the pectoral fins normally developed.

7 **Barbus esocinus** (Heckel) : *Biz*

1841. *Luciobarbus esocinus* Heckel, in Russegger's *Reise in Europa, Asien und Africa*, 1, p. 1054, pl. 4, fig. 2. (Type-locality : River Tigris, near Mossul.)

Single specimen from the Tigris ; total length 390 mm.

8. **Barbus kersin** Heckel ; *Shissan*

(Pl. 2, fig. 2 & Text-fig. 1 *c—f*)

1841. *Barbus kersin* Heckel, in Russegger's *Reise in Europa, Asien und Africa*, 1, p. 1049 and 2, p. 211, pl. 14, fig. 2. (Type-locality : Aleppo.)

D. 3/4/8 ; A. 3/5 ; P. 1/17 ; V. 1/8 ; L. 1.53-58 ; L. tr. 10/7 ; C. 21.

Three specimens from the Tigris ; total length 367, 451, and 701 mm. In the largest example length of the head and depth of body 4·0 times in standard length ; lateral line scales 56 on the left side and 55 on the right side ; lips very thick, broad, continuous at the angles of the jaw with the transverse fold of the lower lip interrupted in the middle. In the two smaller specimens head length 4·50 times and depth of the body 3·25 to 3·75 times in standard length ; lateral line scales 58 in the example measuring 451 mm. in total length ; in the other one of 367 mm. in total length 53 scales on the right side and 57 on the left side ; lips only moderately thick in these two examples.

9. **Barbus subquincunciatus** Gthr. : *Abou Khazzama*

(Pl. 2, fig. 1 & Text-fig. 1, *a*, *b*)

1868. *Barbus subquincunciatus* Gunther, *Cat. Fish Brit. Mus.*, 7. p. 86. (Type-locality : Mesopotamia ?.)

Single specimen from Baghdad ; total length 338 mm. The species is redescribed here with a view to amplify Gunther's (1868) account, which was based on a " skin 15 inches long"

D. 3/8 ; A. 3/5 ; P. 1/13 ; V. 1/7 ; L. 1.82-85 ; L. tr. 17/11-12 ; C. 19.

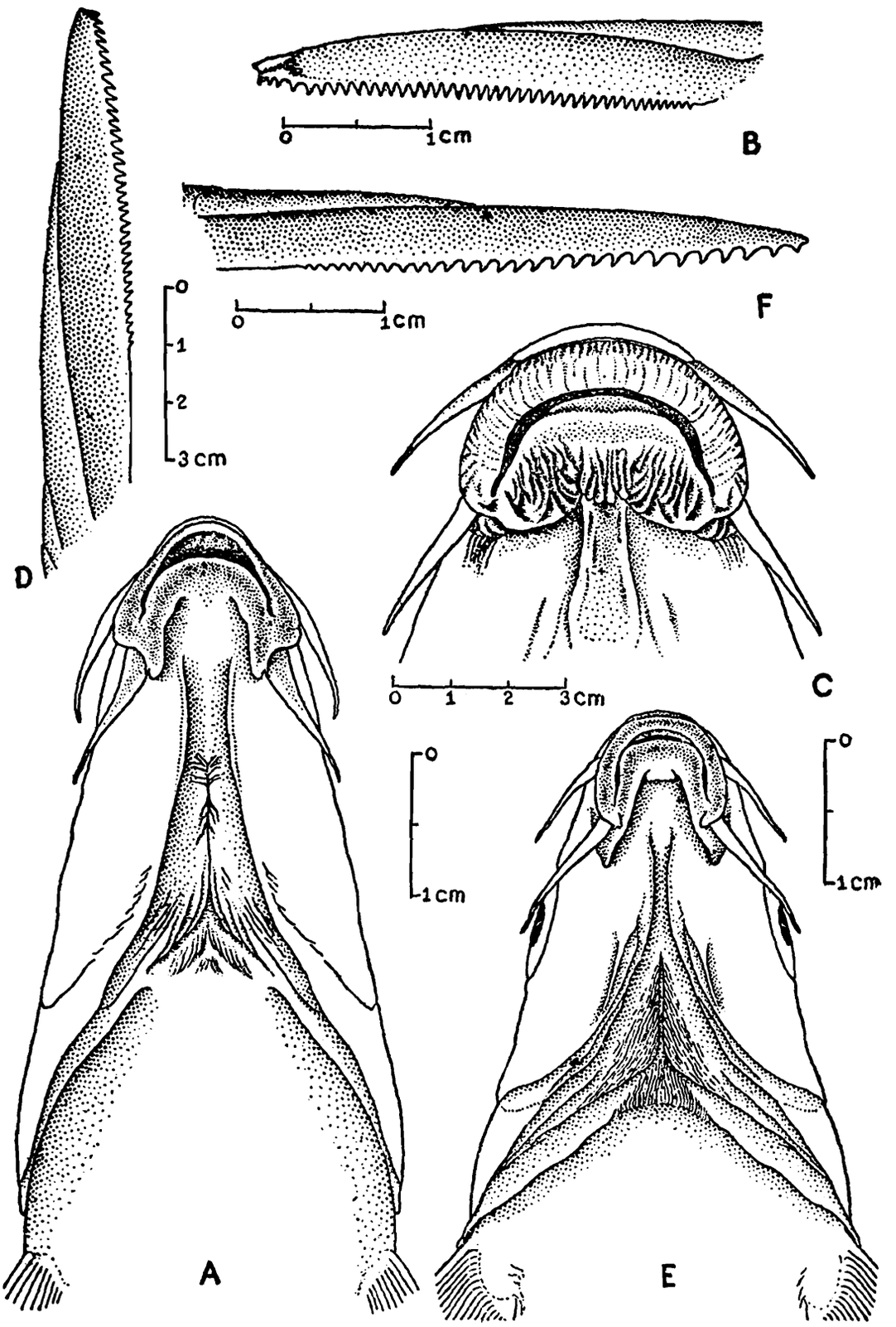
Body elongate, rather compressed ; dorsal profile more elevated anteriorly than the ventral profile Snout produced and acute ; eye in the middle of the head length. Barbels four, about 2 eye-diameters in length. Mouth inferior, gape about half of the snout length. Lips somewhat fleshy and continuous at the angles of the jaw ; upper lip thinner than the lower ; lower lip with an interrupted fold in the middle.

Length of head nearly equals depth of body ; 5·03 times in total length and 4·16 times in standard length. Depth of body 5·17 times in total length and 4·28 times in standard length. Diameter of eye 5·92 times in length of head, 2·46 times in length of snout and 1·84 times in interorbital width. Least height of caudal peduncle 1·90 times in its length.

Scales moderate ; 83 scales on left side and 85 on right, in longitudinal series along lateral line ; 17 on either side in transverse series Between lateral line and base of dorsal fin, and 12 on left side and 11 on right, between lateral line and pelvic base.

Dorsal origin slightly behind pelvic origin and nearer to base of caudal than to end of snout. Last dorsal spine very strong, bony and serrated; its length 1·11 times in length of head and depth of body. Pectorals

and pelvics shorter than head and separated by a considerable distance. Anal fin short, twice as high as long. Caudal deeply forked.



TEXT-FIG. 1.—(*a*) and (*b*). *Barbus subquincunciatus* Gthr.; (*c*)—(*f*). *Barbus kersin* Hckl.

(*a*). Ventral view of the head of *Barbus subquincunciatus* Gthr. (*b*). Serrated dorsal spine of the same. (*c*). Ventral view of the anterior part of the head of *Barbus kersin* Hckl., measuring 701 mm. in total length. (*d*). Serrated dorsal spine of the same. (*e*). Ventral view of the head of *Barbus kersin* Hckl., measuring 367 mm. in total length. (*f*). Serrated dorsal spine of the same.

Colour in spirit pale brownish ; back, sides, head, snout and fins with irregularly arranged black spots, each as large, or half as large as eye.

Measurements in millimetres, and scale counts of Barbus subquincunciatus *Gthr.*

Total length	388·0
Standard length	321·0
Length of head	77·0
Width of head	40·0
Height of head	49·0
Diameter of eye	13·0
Length of snout	32·0
Interorbital width	24·0
Depth of body	75·0
Width of body	48·0
Length of third dorsal spine	67·0
Length of dorsal fin	79·0
Length of pectoral fin	62·0
Length of pelvic fin	56·0
Length of anal fin	59·0
Length fo caudal peduncle	61·0
Least height of caudal peduncle	32·0
No. of scales along lateral line	82-85
No. of scales between L. l. and base of dorsal, and between L. l. and base of pelvics	17/12 : 17/11

10. Barbus xanthopterus (Heckel) : *Gattan* or *Nobbash*

1841. *Luciobarbus xanthopterus* Heckel, in Russegger's *Reise in Europa, Asien und Africa*, **1**, p. 1053, pl. iv, fig. 1. (Type-locality : Tigris near Mossol.)

Single specimen 404 mm. total length.

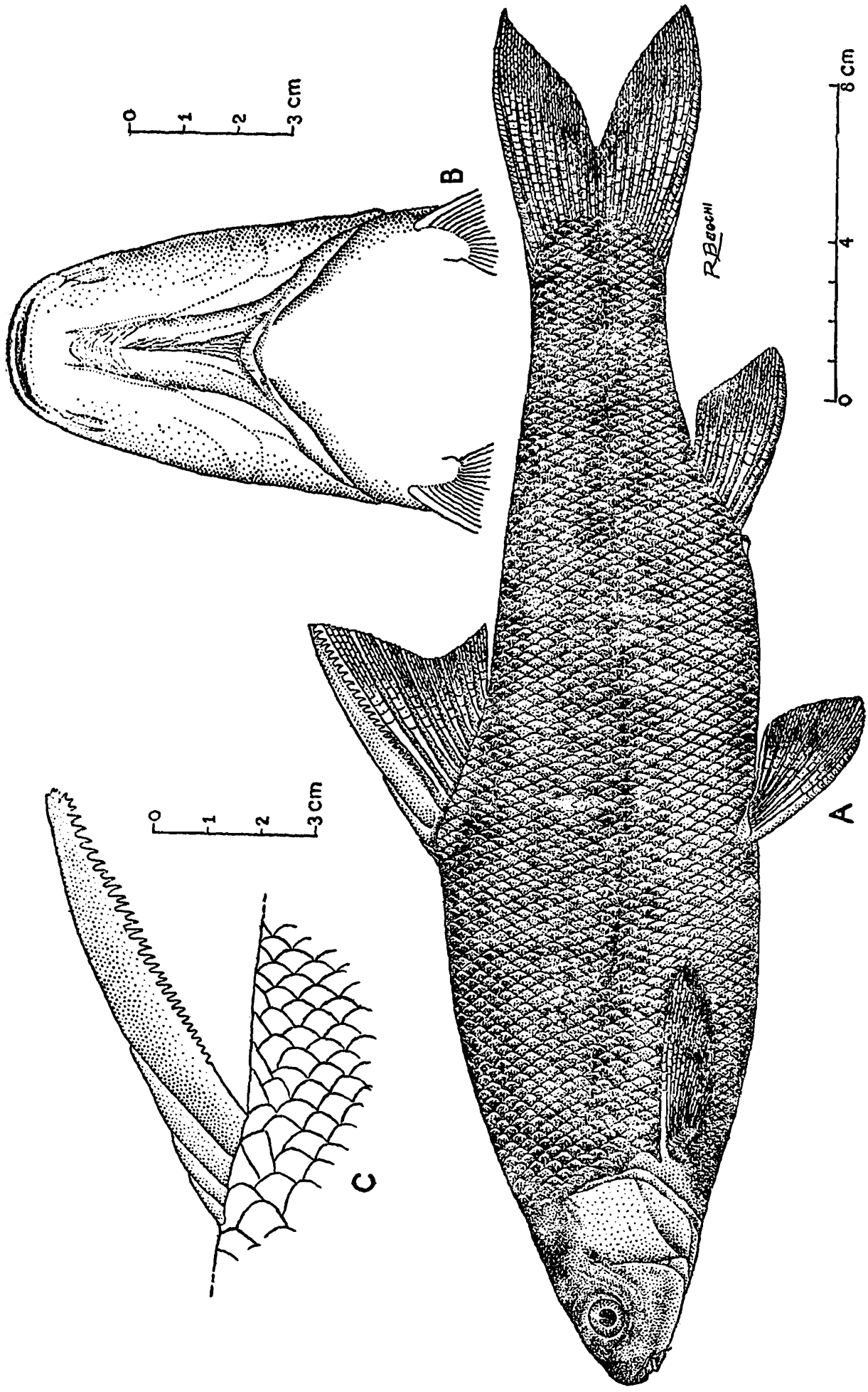
11. Barbus belayewi[1], sp. nov. : *Bartin* : *Tin* or *Tonoueni*

(Text-fig. 2)

D. 3-4/8 ; A. 3/5 ; P. 1/14 ; V. 1/6 ; L. l. 77-81 ; L. tr. 14-16/12-13, C.20.

Body moderately elongate ; dorsal and ventral profiles more or less equally convex. Snout rather short and obtuse, eye almost in anterior

[1]Named after Mr. D. D. Belayew of the Directorate General of Agriculture, Baghdad, Iraq, through whose courtesy the material under report was obtained.



TEXT-FIG. 2.—*Barbus belayewi*, sp. nov.

(*a*). Lateral view of the holotype. (*b*). Ventral view of the head of the paratype. Serrated dorsal spine of the paratype.

one-third of head length, about an eye-diameter away from end of snout. Barbels two, nearly an eye-diameter in length. Mouth inferior, somewhat transverse; its width almost equal to length of snout. Lips very thin.

Length of head a little greater than half depth of body, 6·13 to 6·40 times in total length and 5·18 to 5·22 times in standard length.

Depth of body 4·05 to 4·34 times in total length and 3·45 to 3·51 times in standard length. Eye from 5·00 to 5·28 times in length of head, 1·27 to 1·57 times in length of snout and 2·09 to 2·35 times in interorbital width. Least height of caudal peduncle 1·16 to 1·38 times in length of caudal peduncle.

Scales moderate; 77-81 in the longitudinal series along lateral line; 14-16 in transverse series between lateral line and base of dorsal fin, and 12-13 between lateral line and base of pelvic fin.

Origin of dorsal fin slightly in advance of origin of pelvic fins, nearer to end of snout than to base of caudal fin. Last dorsal spine very strong, bony, serrated; its length 1·20 times in depth of body, slightly longer than head length. Pectoral and pelvic fins nearly as long as head, widely separated. Anal fin about twice as high as long. Caudal fin rather deeply forked.

Colour; in spirit, uniform pale brown, with fins somewhat deeply tainted.

Holotype.—Regd. No. F. 1046/2, in the Zoological Survey of India, Calcutta.

Paratype.—Regd. No. F. 1047/2, in the Zoological Survey of India, Calcutta.

Type-locality.—Tigris, Baghdad, Iraq.

Barbus belayewi, sp. nov., is closely related to *Barbus plebejus* C. V. from Italy and Dalmatia; but the two can be distinguished by the following table of characters:

Barbus belayewi	*Barbus plebejus*
1. Lateral line scales in the longitudinal series 77-81.	1. Lateral line scales in the longitudinal series 66-75.
2. Scales in the transverse series between the lateral line and the base of pelvic fin 14-16.	2. Scales in the transverse series between the lateral line and the base of pelvic fin 8-9.
3. Snout short, obtuse.	3. Snout moderately produced.
4. Dorsal spine very strong, bony, deeply serrated.	4. Dorsal spine moderately strong, finely serrated.

Measurements in millimetres, and scale counts of Barbus belayewi, *sp. nov.*

	Holotype	*Paratype*
Total length	352·0	354·0
Standard length	285·0	387·0
Length of head	55·0	74·0
Width of head	40·0	51·0
Height of head	49·0	62·0
Diameter of eye	11·0	14·0
Length of snout	14·0	22·0
Interorbital width	23·0	33·0
Depth of body	81·0	112·0
Width of body	39·0	62·0
Length of last dorsal spine	67·0	89·0
Length of dorsal fin	72·0	96·0
Length of pectoral fin	53·0	65·0
Length of pelvic fin	47·0	56·0
Length of anal fin	50·0	66·0
Length of caudal peduncle	47·0	56·0
Least height of caudal peduncle	24·0	48·0
No. of scales along lateral line	81·79	78·77
No. of scales between L.l. and base of dorsal, and between L. l. and base of pelvics	16/13 : 15/12	14/12

12. **Puntius luteus** (Heckel)

Binni Hamour ; Binni Hamri or *Binni* or *Shifatha*

1841. *Systomus luteus* Heckel, in Russegger's *Reisen in Europa, Aiien und Africa*, **1**, p. 1016, pl. 6, fig. 1. (Type-locality : Orontes and Tigris.)

Two specimens from the Tigris ; total length 152 and 302 mm.

13. **Varicorhinus trutta** (Heckel)

1841. *Scaphiodon trutta* Heckel, in Russegger's *Reisen in Europa, Asien und Africa*, **1**, p. 1056, pl. 4, fig. 3. (Type-locality : Syria.)

D. 3/8 ; A. 1/7 ; P. 1/16 ; V 1/7 ; L. l. 77-84 ; L. tr. 17/12 ; C. 21.

Two specimens from the Tigris ; total length 263 and 301 mm. Length of head about 6·6 times in depth of body, 5 times in standard length. Dorsal fin slightly higher than depth of body ; dorsal spine strong, bony, deeply serrated, nearly as long as depth of body. Scales 80-84 in the longitudinal series along lateral line ; 17 in transverse series between lateral line and base of dorsal fin ; 12 between lateral line and base of pelvic fin. Two barbels.

14. **Tachysurus thalassinus** (Rupp.) : *Tchim*

1835. *Bagrus thalassinus* Ruppell, *Neue Wirbelt. Fische*, p. 75, fig. 2. (Type-locality : Massaua, Red Sea.)

Three specimens from the Hor-el-Hammar Lake ; total length 396, 438 and 508 mm. As noted by Misra (1947) they differ from the *forma typica* in having a rather, pointed snout, shorter maxillary, outer and inner mandibular barbels and in the presence of granulations on the snout.

15. **Saurida tumbil** (Bl.)

1795. *Salmo tumbil*, Bloch, *Nat. ausland Fische*, 9, p. 112, pl. 430. (Type-locality : not known.)

Single specimen from the Persian Gulf ; total length 391 mm.

16. **Aphanius dispar** (Rupp.)

1828. *Lebias dispar* Ruppell, *Atl. Fische*, p. 66, pl. 18, figs. 1, 2. (Type-locality: Abyssinia.)

Single specimen from Lake Bahroul Melch ; total length 69 mm.

17. **Pseudorhombus arsius** (Ham.) : *Mislak Malbahr*

1822. *Pleuronectes arsius* Hamilton, *Fish. Ganges*, p. 128. (Type-locality: estuaries of Ganges.)

Single specimen from the Persian Gulf ; total length 224 mm.

18. **Cynoglossus sealarki** Regan : *Lessanet Tor*

1908. *Cynoglossus sealarki* Regan, *Trans. Linn. Soc. (Zool.)*, **12**, p. 235, pl. 26, fig. 1. (Type-locality : Saya de Malha Bank, over 123 fms.)

Single specimen from the Persian Gulf ; total length 215 mm.

19. **Sphyraena obtusata** C. V.

1803. *Sphyraena obtusata* Cuvier and Valenciennes, *Hist. Nat. Poissons*, **3**, p. 324, pl. 10, fig. 2. (Type-locality : Pondicherry.)

Single specimen from the Persian Gulf ; total length 228 mm.

20. **Scomberomorus commersoni** (Lac.) : *Habbat*

1800. *Scomber commersoni*, Lacepede, *Hist. Nat. Poissons*, **2**, pp. 598, 600, pl. 20, fig. 1. (Type-locality : not known.)

Single specimen from the Persian Gulf : total length 270 mm.

21. **Trichiurus haumela** (Forsk.)

1775. *Clupea haumela* Forskal, *Descript. Animal.*, p. 72. (Type-locality: Mocha, Red Sea.)

Single specimen from the Persian Gulf ; total length 690 mm.

22. **Apolectus niger** (Bl.) : *Halfai*

1795. *Stromateus niger* Bloch, *Nat. ausland. Fische*, **9**, p. 93, pl. 422. (Type-locality : "Malaisch"=Malaya.)

Two specimens from the Persian Gulf ; total length 392 and 484 mm.

23. **Alectis indicus** (Rupp.)

1828. *Scyris indicus* Ruppell, *Atlas, Fische Rothen Meeres*, p. 128, pl. 33, fig. 33, fig. 1. (Type-locality : Djedda, Red Sea.)

Single specimen from the Persian Gulf ; total length 182 mm.

24 **Atule kalla** (C. V.) : *Hamam*

1831. *Caranx kalla* Cuvier and Valenciennes, *Hist. Nat. Poissons*, **9**, p. 37. (Type-locality : Pondicherry.)

Single specimen from the Persian Gulf ; total length 134 mm.

25. **Atule mate** (C.V.)

1833. *Caranx mate* Cuvier and Valenciennes, *Hist. Nat. Poissons*, **9**, p. 54. (Type-locality : Pondicherry.)

Single specimen from the Persian Gulf ; total length 267 mm.

26. **Caranx malabaricus** (Bl. Schn.)

1801. *Scomber malabaricus* Bloch and Schneider, *Syst. Ichth.*, p. 31. (Type-locality : Tranquebar.)

Single specimen from the Persian Gulf ; total length 223 mm.

27. **Scomberoides lysan** (Forsk.) : *Zila*

1775. *Scomber lysan* Forskal, *Descript. Animal.*, p. 54. (Type-locality : Djedda.)

Single specimen from the Persian Gulf ; total length 344 mm.

28. **Rachycentron canadus** (L.)

1766. *Gasterosteus canadus* Linnaeus, *Syst. Nat.*, ed. 12, p. 491. (Type-locality : Carolinas.)

Single specimen from the Persian Gulf ; total length 483 mm.

29. **Epinephelus stoliczkae** (Day) : *Hamour*

1878. *Serranus stoliczkae* Day, *Fish. India*, p. 11, pl. 1, fig. 3. (Type-locality: Coast of Sind.)

Two specimens from the Persian Gulf ; total length 237 and 476 mm.

30. **Lutianus fulvus** (Bl. Schn.)

1801. *Holocentrus fulvus*, Bloch and Schneider, *Syst. Ichth.*, p. 318. (Type-locality : Tahiti.)

Single specimen from the Persian Gulf ; total length 244 mm.

31. **Therapon theraps** C. V.

1829. *Therapon theraps* Cuvier and Valenciennes, *Hist. Nat. Poissons*, **3**, p. 129, pl. 53. (Type-locality : Java.)

Single specimen from the Persian Gulf ; total length 153 mm.

32. **Nemipterus bleekeri** (Day)

1878. *Synagris bleekeri* Day, *Fish. India*, p. 92, pl. 24, fig. 1. (Type-locality : Madras.)

Single specimen from the Persian Gulf : total length 195 mm.

33. **Gerres filamentosus** C.

1829. *Gerres filamentosus* Cuvier, *Regne Animal.*, **2**, ed. 2, p. 188. (Type-locality : Vizagapatam ; on *Wodowaha* Russell.)

Single specimen from the Persian Gulf ; total length 158 mm.

34. **Johnius osseus** (Day) : *Shmay*

1878. *Sciaena osseus* Day, *Fish. India*, p. 193, pl. 46, fig. 3. (Type-locality : Malabar coast.)

ningle specimen from the Persian Gulf ; total length 401 mm.

35. **Pseudosciaena aneus** (Bl.)

1793. *Johnius aneus* Bloch, *Naturg. ausland Fische*, **7**,p. 135, pl. 257. (Type-locality : Malabar.)

Single specimen from the Persian Gulf ; total length 196 mm.

36. **Ephippus orbis** (Bl.)

1788. *Chaetodon orbis* Bloch, *Ichthyologie*, **6**, p. 59, pl. 202. fig. 2. (Type-locality : East Indies.)

Single specimen from the Persian Gulf ; total length 162 mm.

37. **Drepane punctata** C. V : *Mysht el Gavvi*

1831. *Drepane punctata* Cuvier and Valenciennes, *Hist. Nat. Poissons*, **7**, p. 99 (132), pl. 179. (Type-locality : Malabar.)

Three specimens from the Persian Gulf ; total length 158, 181 and 192 mm.

38. **Dactyloptena orientalis** (C. V.)

1829. *Dactylopterum orientalis* Cuvier and Valenciennes, *Hist. Nat. Poissons*, **4**, p. 98 (134), pl. 76. (Type-locality : Mauritius.)

Single specimen from the Persian Gulf ; total length 130 mm.

39. **Boleophthalmus dentatus** C. V. : *Triton*

1837. *Boleophthalmus dentatus* Cuvier and Valenciennes, *Hist. Nat. Poissons*, **12**, p. 208, pl. 355. (Type-locality : Bombay.)

Single specimen from Shatt-al-Arab ; total length 175 mm.

40. **Triacanthus brevirostris** Schlegel : *Tchelb Mal Daon*

1842. *Triacanthus brevirostris* Schlegel, *Faun. Japonica, Pisces*, p. 294, pl. 129, fig. 2. (Type-locality : Nagasaki.)

Three specimens from the Persian Gulf ; total length 193, 205 and 213 mm.

41. **Lagocephalus lunaris** (Bl. Schn.) : *Farial*

1801. *Tetrodon lunaris* Bloch and Schneider, *Syst. Ichth.*, p. 505. (Type-locality : Malabar.)

Single specimen from the Persian Gulf ; total length 113 mm.

III—KEY FOR THE IDENTIFICATION OF THE IRAQ FISHES SO FAR RECEIVED IN THE ZOOLOGICAL SURVEY OF INDIA FOR DETERMINATION[1]

1.	Gill-slits covered by gill-cover : body without placoid scales	**2.**
	Gill-slits naked, without gill-cover : body with placoid scales	Fam. Galeidae [*Carcharhinus menisorrah* (M.H.)].
2.	Body symmetrical : eyes on either side of head	**3.**
	Body asymmetrical : eyes on one side of head .	**41.**
3.	With long, 4-8 barbels : body totally naked	**4.**
	Without barbels (except in some Cyprinids where barbels are short) : body scaly (except in Trichiuridae in which scales are absent) or scales rudimentary (as in Chirocentridae and Scombridae) or body armoured (as in Triacanthidae, Tetraodontidae and Dactylopteridae)	**6.**
4.	Anal fin very long (about 80 rays) : barbels four : adipose dorsal absent	Fam. Siluridae [*Silurus triostegus* (Heckl.)].
	Anal fin short (15-20 rays) : barbels six or eight : adipose dorsal present	**5.**
5.	Barbels six : posterior nostrils with a valve	Fam. Tachysuridae (= Aridae) [*Tachysurus thalassinus* (Rupp.)].
	Barbels eight : posterior nostrils without a valve ..	Fam. Bagridae [*Mystus haleppensis colvillii* (Gthr.)].
6.	Pelvic fins united together and disc-like	Fam. Periophthalmidae, (*a*)-(*b*).
	(*a*). Dorsal fins connected by membrane at their bases	*Boleophthalmus dentatus* C.V.
	(*b*). Dorsal fins not connected by membrane at their bases	*Boleophthalmus dussumieri* C.V.
	Pelvic fins separate and not disc-like, or absent or reduced or as spines	**7.**
7.	Both the jaws very much produced and bill-like	Fam. Belonidae [*Strongylura strongylura* (v. Hass.)].
	Both the jaws normal, neither produced nor bill-like	**8.**
8.	Body very elongate, eel-like or cutlass-like	**9.**
	Body neither very elongate, eel-like or cutlass-like ..	**11.**

[1] This artificial key is applicable mainly to the species dealt with in this paper.

9.	Body eel-like, cylindrical : with 30-33 stumpy dorsal spines	Fam. Mastacembelidae [*Mastacembelus haleppensis* (Bl. Schn.)].
	Body cutlass-like, laterally compressed : without any stumpy dorsal spines	**10.**
10.	Snout pointed : tail tapering to a point : dorsal fin very long	Fam. Trichiuridae [*Trichiurus haumela* (Forsk.)].
	Snout not pointed : tail forked ; dorsal fin short	Fam. Chirocentridæ [*Chirocentrus dorab* (Forsk.)].
11.	Head cuirassed and bony : pectoral fins long and wing-like ..	Fam. Dactylopteridae [*Dactyloptena orientalis* (C. V.)].
	Head neither cuirassed nor bony : pectoral fins neither long nor wing-like ..	**12.**
12.	Head broad, depressed and armed with spines	Fam. Platycephalidae [*Platycephalus indicus* (L.)].
	Head neither broad nor depressed nor armed with spines.	**13.**
13.	Adipose dorsal fin present ..	Fam. Synodontidae [*Saurida tumbil* (Bl.)].
	Adipose dorsal fin absent	**14.**
14.	Two detached pre-anal spines ..	Fam. Carangidae, (*a*)-(*d*).
	(*a*). Lateral line armed with scutes	(*b*).
	Lateral line not armed with scutes ..	*Scomberoides lysan* (Forsk.).
	(*b*). Dorsal spines reduced and not connected by membrane ..	*Alectis indicus* (Rupp.).
	Dorsal spines well developed and connected by membrane	(*c*).
	(*c*). Eyes without adipose lids : anterior part of soft dorsal and anal fins elevated : breast scaleless..	*Caranx malabaricus* (Bl. Schn.).
	Eyes with adipose lids : anterior part of soft dorsal and anal fins not much elevated : breast scaly ..	(*d*).
	(*d*). Dorsal and ventral profiles equally convex : last dorsal and anal ray detached or finlet-like..	*Atule mate* (C. V.).
	Ventral profile more convex than the dorsal profile : last dorsal and anal ray not detached or finlet-like	*Atule kalla* (C. V.).
	No detached pre-anal spines ..	**15.**
15.	Finlets (9-10) behind the dorsal and anal fins : caudal lobes keeled ..	Fam. Scombridae [*Scomberomorus commersoni* (Lac.)].
	No finlets behind dorsal and anal fins : caudal lobes not keeled	**16.**

16.	Dorsal and anal fins elevated anteriorly : pelvic fins absent (in the adult) ..	Fam. Stromateidae, (*a*)-(*b*).
	(*a*). Last portion of lateral line keeled	*Apolectus niger* (Bl.).
	Last portion of lateral line not keeled ..	(*b*).
	(*b*). Free spines before dorsal and anal fins : lower caudal lobe longer ..	*Chondroplites chinensis* (Euphr.).
	No free spines before dorsal and anal fins : caudal lobes of about equal length ..	*Pampus argenteus* (Bl.).
	Dorsal and anal fins not elevated anteriorly : pelvic fins present	**17.**
17.	Single dorsal fin or no distinct spinous and soft parts in the dorsal fin ..	**18.**
	Two dorsal fins or distinct spinous and soft parts in the dorsal fin	**23.**
18.	Abdomen keeled and serrated ..	**19.**
	Abdomen neither keeled nor serrated	**21.**
19.	Last dorsal ray prolonged into a filament	Fam. Dorosomidae [*Nematalosa nasus* (Bl.)].
	Last dorsal ray not prolonged into a filament	**20.**
20.	Upper jaw prominent, projecting over lower jaw : maxillaries much elongated ..	Fam. Engraulidae, (*a*)-(*b*).
	(*a*). Height of body $3\frac{3}{4}$ times in total length : lower gill-rakers 21-25	*Thrissocles malabaricus* (Bl.).
	(*b*). Height of body $4\frac{1}{4}$ to $4\frac{1}{2}$ times in total length : lower gill-rakers 11	*Thrisocles purava* (Ham.).
	Upper jaw neither prominent nor projecting over lower jaw : maxillaries not elongated ..	Fam. Clupeidae, (*a*)-(*b*).
	(*a*). Upper jaw with a distinct median notch : anal rays 18-22	*Hilsa ilisha* (Ham.).
	(*b*). Upper jaw without a distinct median notch : anal rays 46-50 ..	*Ilisha filigera* (C. V.).
21.	Dorsal fin in the posterior half of body and spineless	**22.**
	Dorsal fin not in the posterior half of body and often with a spine	Fam. Cyprinidae, (*a*)-(*k*).
	(*a*). Anal fin short, with 8 rays : dorsal fin opposite to pelvics : abdomen not compressed behind pelvics	(*b*).
	Anal fin long, with 13-19 rays ; dorsal fin behind pelvics : abdomen compressed behind pelvics	(*j*).
	(*b*). Mouth transverse : anterior edge of jaw sharp and covered with a horny, brown layer	*Varicorhinus trutta* (Hckl.).
	Mouth arched : anterior edge of jaw neither sharp nor covered with a horny, brown layer ..	(*c*).

	(*c*). Lateral line scales 28-38 : dorsal spine smooth	(*d*).
	Lateral line scales 53-85 : dorsal spine serrated ..	(*f*).
	(*d*). Lateral line scales 28-31 : lower labial fold interrupted	(*e*).
	Lateral line scales 38 : lower labial fold continuous ..	*Tor grypus* (Hckl.).
	(*e*). Barbels present : 2½ rows of scales between the lateral line and the base of pelvic fin : L. l. scales 28	*Puntius luteus* (Hckl.).
	No barbels : 3½ rows of scales between the lateral line and the base of pelvic fin : L. l. scales 28-31	*Puntius sharpeyi* (Gthr.).
	(*f*). Lateral line scales 53-60 ..	(*g*).
	Lateral line scales 76-85	(*h*).
	(*g*). Snout acute : lateral line scales 60	*Barbus xanthopterus* (Hckl.)
	Snout obtuse : lateral line scales 53-58 ..	*Barbus kersin* Hckl.
	(*h*). Lateral transverse scales 14-17/11-13 : L. l. scales 77-85	(*i*).
	Lateral transverse scales 12/7-8 : L. l. scales 76-78	*Barbus esocinus* Hckl.
	(*i*). Snout produced, acute : eyes in the middle of the length of head : back and sides with black spots : L.l. scales 82-85	*Barbus subquincunciatus* Gthr.
	Snout short, obtuse : eye in the anterior-third of the length of head : back and sides not spotted : L.l. scales 77-81 ..	*Barbus belayewi*, sp. nov.
	(*j*). Both the jaws equal : L.l. scales 50	*Abramis caeruleus* (Hckl.).
	Lower jaw longer, projecting beyond the upper : L.l. scales 70-96	(*k*).
	(*k*). Lateral line scales 96 : L. tr. scales 18/10	*Aspius vorax* Hckl.
	Lateral line scales 70-72 : L.tr. scales 11/7	*Alburnus scheitan* Hckl.
22.	Pelvic fins present : body covered with scales	Fam. Cyprinodontidae [*Aphanius dispar* (Rupp.)].
	Pelvic fins absent : body covered with dermal spines ..	Fam. Tetraodontidae [*Lagocephalus lunaris* (Bl. Schn.)].
23.	Body fusiform : first dorsal fin reduced to a few (8) stumpy spines	Fam. Rachycentridae [*Rachycentron canadus* (L.)].
	Body not fusiform : first dorsal fin not reduced to stumpy spines	24.
24.	Spinous dorsal widely separated from the soft dorsal ..	25.
	Spinous dorsal continuous with the soft dorsal	29.
25.	With 2 strong pelvic spines : without pelvic fins ..	Fam. Triacanthidae [*Triacanthus brevirostris* Schgl.].

	Without pelvic spines : with pelvic fins ..	**26.**
26.	Pectoral fin with (4-7) free, elongated rays at its base	Fam. Polynemidae [*Eleutheronema tetradactylum* (Shaw)].
	Pectoral fin without any free, elongated rays at its base	**27.**
27.	Soft dorsal (9-10 rays) and anal (9-12 rays) fins short : spinous dorsal with 4-5 spines	**28.**
	Soft dorsal (21-24) and anal (23-24) fins long : spinous dorsal with 10-11 spines	Fam. Sillaginidae [*Sillago sihama* (Forsk.)].
28.	Cleft of mouth very deep : teeth in jaws large and cutting : 5 weak dorsal spines	Fam. Sphyraenidae [*Sphyraena obtusata* V.].
	Cleft of mouth narrow: teeth in jaws small, or absent and not cutting : 4 strong dorsal spines	Fam. Mugilidae, (*a*)-(*b*).
	(*a*). Lateral line scales 46-49 : L. tr. scales 15-16 ..	*Mugil* (*Liza*) *abu* (Hckl.)[1] (= *Mugil* (*Liza*) *hishni* Misra).
	(*b*). Lateral line scales 26-28 : L. tr. scales 10	*Mugil* (*Liza*) *oligolepis* (Blkr.).
29.	Anal spines 1 or 2 : muciferous system on head well developed	**30.**
	Anal spines 3 : muciferous system on head not well developed	**31.**
30.	Lower jaw more prominent than the upper jaw : canine teeth present	Fam. Otolithidae [*Otolithes ruber* (Bl. Schn.)].
	Lower jaw not more prominent than the upper jaw : no true canine teeth ..	Fam. Sciaenidae, (*a*)-(*c*).
	(*a*) Mouth terminal ; gape of mouth oblique : snout pointed : upper jaw not overhanging the lower jaw ..	(*b*).
	Mouth inferior ; gape of mouth rather horizontal : snout more or less obtuse : upper jaw overhanging the lower jaw	(*c*).
	(*b*) Lateral transverse scales 8/14	*Pseudosciaena sina* (C.V.).
	Lateral transverse scales 8-9/18 ..	*Pseudosciaena aneus* (Bl.).
	(*c*) Eye diameter 3½ to 3¾ of the length of head : 2nd anal spine 2¼ in the length of head	*Johnius belengeri* (C. V.).
	Eye diameter 1/5 of the length of head : 2nd anal spine ¼ as long as head	*Johnius osseus* (Day).
31.	Body abruptly elevated from the snout end end very much compressed	**32.**

[1] Dr. K. S. Misra is now of the opinion that *Mugil* (*Liza*) *hishni* is synonymous with *Mugil* (*Liza*) *abu* (Hckl.).

	Body neither abruptly elevated from the snout end nor very much compressed .	**33.**
32.	Some of the anterior dorsal spines flexible and elongated : pectoral fins short ..	Fam. Ephippidae [*Ephippus orbis* (Bl.)].
	None of the dorsal spines flexible or elongated : pectoral fins long and falciform	Fam. Drepanidae [*Drepane punctata* (L.)].
33.	A median longitudinal groove behind the chin	Fam. Pomadasyidae [*Pomadasys argyreus* (C. V.)].
	No median longitudinal groove behind the chin ..	**34.**
34.	Mouth very protractile : second dorsal spine very much prolonged ..	Fam. Gerridae [*Gerres filamentosus* C.].
	Mouth not very protractile : second dorsal spine not prolonged	**35.**
35.	Dorsal and anal spines weak	Fam. Nemipteridae [*Nemipterus bleekeri* (Day)].
	Dorsal and anal spines strong	**36.**
36.	Teeth in jaws molariform ..	**37.**
	Teeth in jaws not molariform .. .	**38.**
37.	Dorsal profile abruptly arched	Fam. Sparidae [*Acanthopagrus berda* (Forsk.)].
	Dorsal profile gradiently arched	Fam. Denticidae [*Petrus belayewi* Misra].
38.	Opercle with prominent spines : preopercle not notched	**39.**
	Opercle without prominent spines ; preopercle notched	Fam. Lutianidae [*Lutianus fulvus* (Bl. Schn.)].
39.	Dorsal fin notched : maxila not extending to hind border of eye	Fam. Theraponidae [*Therapon theraps* C.].
	Dorsal fin not notched : maxilla extending to hind border of eye	Fam. Epinephelidae [*Epinepheles stoliczkae* (Day)].
40.	Preopercular margin free, not hidden by the skin and scales of the head : lower jaw more prominent than the upper jaw	Fam. Bothidae [*Pseudorhombus arsius* (Ham.)].
	Preopercular margin not free, hidden by the skin and scales of the head : lower jaw prominent ..	**41.**
41.	Vertical fins confluent: eyes on left side	Fam. Cynoglossidae [*Cynoglossus sealarki* Regan].
	Vertical fins not confluent : eyes on right side ..	Fam. Soleidae [*Synaptura orientalis* (Bl. Schn.)].

IV—SUMMARY

1. The present paper is a report on the third collection of Iraq fishes—freshwater and marine—received in the Zoological Survey of India, for determination, from the Directorate General of Agriculture, Baghdad.

2. The collection representing 41 species, 36 genera and 30 families, is of considerable interest inasmuch as a few of the freshwater species had been obtained from their respective type-localities and as one of them, *Barbus belayewi*, sp. nov., has proved to be new.

3. Further, opportunity has also been taken to amplify the earlier descriptions of two of Heckel's and one of Günther's species on the basis of the topotype specimens in the material under report.

4. Finally, an artificial key for the identification of the freshwater and marine fishes so far received in the Zoological Survey of India for determination from the Directorate General of Agriculture, Baghdad, is also added at the end of the paper.

V—REFERENCES

HORA, S. L. and MISRA, K. S. 1943. On a small collection of fish from Iraq.—*J. Roy. Asiat. Soc. Bengal, (Sci.)*, Calcutta, **9**, pp. 1-15.

JORDAN, D. S. 1923. *Classification of Fishes.*—Stanford University, California.

MISRA, K. S. 1947. On a second collection of fish from Iraq.—*Rec. Indian Mus.*, Delhi, **45**, pp. 115-127.