

NOTES AND DESCRIPTIONS OF INDIAN FISHES.

BY

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The following fishes were submitted to me for examination by Mr. James Hornell, late Director of Fisheries, Madras, India, in the summer of 1922. All are labelled Calicut and were sent from the Research Laboratory, West Hill, Calicut, South Malabar. I am, therefore, greatly indebted to Mr. Hornell for this opportunity to study these interesting species. One is described as new and notes are given for the others, of which but few are represented in American museums.

CLUPEIDÆ.

Sardinella longiceps Valenciennes. "Mathi."

Head $2\frac{7}{8}$ to 3; depth $4\frac{1}{8}$ to $4\frac{1}{4}$; D. iv, 13 or 14; A. ii, 13; scales 46 or 47 in lateral series to caudal base and 5 more on latter; 12 or 13 scales transversely at dorsal fin; 14 to 16 predorsal scales.

Body strongly compressed, slenderly ovate, deepest about midway in pectoral. Head strongly compressed, width $2\frac{1}{5}$ to $2\frac{1}{3}$ its total length. Snout conic, width $1\frac{1}{6}$ to $1\frac{2}{5}$ its length, which $3\frac{7}{8}$ in head measured from snout tip. *Eye*—moderate, high, front pupil edge at first third in length of head, diameter $1\frac{1}{3}$ to $1\frac{2}{3}$ in length of snout, 1 in interorbital, $5\frac{1}{8}$ to $5\frac{1}{3}$ in head. Adipose eyelid well developed. Mouth small, superiorly terminal, closed mandible slightly protruding and upper jaw with slight median notch. Maxillary extends about first third in eye, expansion $1\frac{1}{3}$ to $1\frac{2}{3}$ in eye, length $2\frac{2}{3}$ to $2\frac{3}{4}$ in head. No teeth. Interorbital broadly convex. Branch of arborescent striæ or venules from preorbital to preopercle above, venules also spreading out horizontally on opercle above and branch extends forward to supraorbital; cluster spreads over cheek; cluster radiating also at lower angle of preopercle; humeral venules well developed over at least 3 scales. *Gill-rakers*— 158×200 , finely lanceolate, little longer than gill-filaments, equal eye. Notch above and below bony knob along inner edge of gill-opening. *Scales*—firmly adherent, narrowly imbricated; 2 to 4 incomplete or more or less broken vertical parallel striæ and dozen or more irregular horizontal apical marginal lines, mostly connected or obsolete; circuli vertically parallel, fine.

Fins—dorsal origin little nearer mandible tip than caudal base, first branched ray $2\frac{2}{3}$ to $2\frac{3}{4}$ in total head length. Anal inserted about midway between base of last dorsal ray and caudal base, first branched ray about long as eye. Caudal peduncle well compressed, least depth $1\frac{1}{5}$ to $1\frac{1}{4}$ its length or $4\frac{1}{2}$ in head. Caudal well forked, slender lobes pointed, $1\frac{3}{5}$ to $1\frac{2}{3}$ in head. Pectoral small, pointed, 2 in head, reaches $1\frac{3}{5}$ to ventral. Ventral opposite middle of depressed dorsal, 4 in head, $2\frac{3}{4}$ to ventral. *Colour*—back slaty, sides and lower surface pale to whitish. Fins all pale. Two examples, 157 and 166mm.

Sardinella dayi Regan. "Tholiquan Mathi."

Head 3; depth $2\frac{2}{3}$; D. iii, 13 or 14; A. iii, 17; scales 38 in lateral series to caudal base and 4 more on latter; 13 scales transversely at dorsal fin; 12 predorsal scales; abdominal scutes 16 or 17×12 to 14.

Body strongly compressed, rather deeply ovoid, deepest at dorsal origin, profiles about evenly convex; predorsal scales extend forward nearly to occiput. Head strongly compressed, deep, width $2\frac{1}{3}$ to $2\frac{2}{3}$ its total length. Snout obtuse, compressed, width 1 to $1\frac{1}{6}$ its length, latter 4 in

head measured from upper jaw tip. *Eye*—moderate, high, hind edge about midway in head length; 4 in head. Adipose eyelid broad. Mouth small, terminal, lower jaw slightly projecting and upper jaw with slight median notch. Maxillary small, reaches first third to midway in eye, expansion $1\frac{1}{2}$ to $1\frac{3}{4}$ in eye, length $2\frac{1}{8}$ to $2\frac{1}{3}$ in head. No teeth. Interorbital broadly convex, median ridge pronounced. Branch of arborescent striæ or venules from preorbital to preopercle above, spreading backward above over opercle horizontally; large cluster on cheek; small wider-set venules radiate down flange of preopercle and few along humeral edge of gill-opening horizontally. *Gill-rakers*— 68×90 , finely lanceolate, about long as eye. Gill-filaments $\frac{3}{5}$ length of gill-rakers. Inside edge of gill-opening with single notch below. *Scales*—firmly adherent, narrowly imbricated; 2 vertical wide-spaced parallel striæ; about 20 to 25 marginal striæ apically; circuli fine, vertically parallel.

Fins—Dorsal origin midway between mandible tip and base of last anal ray, first branched ray $1\frac{4}{5}$ to $1\frac{7}{8}$ in total head length. Anal low, begins entirely behind dorsal or little nearer caudal base than dorsal origin, first least depth 4 in head. Caudal peduncle strongly compressed, long as deep or least depth $2\frac{7}{8}$ in head. Caudal strongly forked, slender lobes pointed, slightly less than head. Pectoral reaches $\frac{7}{8}$ to ventral, $1\frac{3}{4}$ to $1\frac{7}{8}$ in head. Ventral inserted slightly before dorsal origin, reaches $2\frac{1}{8}$ to $2\frac{1}{4}$ to anal, length $2\frac{1}{2}$ to $2\frac{3}{4}$ in head. *Colour*—Back slaty-brown. On level from upper eye edge till nearly opposite end of depressed dorsal, 5 or 6 short obsolete vertical dark streaks; sides of lower surface, pale to whitish. Dorsal and caudal tinted grayish, tip of former dusky, other fins whitish. Three examples, 105 to 106 mm.

Sardinella melanura (Bleeker). "Chooda."

Head 4; depth 3; D. iii, 12 or 13; A. iii, 15 or 16; scales 35 to 37 in lateral series to caudal base and 4 more on latter; abdominal scutes 15 to 18×11 or 12.

Body with lower profile more convex forward than upper. Head strongly compressed, width $2\frac{1}{10}$ to $2\frac{1}{2}$ in its total length. Snout obtuse, very short, width equals its length, which 4 to $4\frac{1}{8}$ in head measured from its own tip. *Eye*—with hind edge midway in head; adipose-lids wide; diameter $3\frac{1}{8}$ to $3\frac{1}{3}$ in head. Mouth small, superior, mandible well protruded, without median notch above. Maxillary reaches first third in eye, expansion $1\frac{1}{3}$ to $1\frac{2}{3}$ in eye. No teeth. Interorbital broadly convex, $4\frac{1}{8}$ to $4\frac{7}{8}$ in head. Preopercle vertical. Opercle smooth. *Gill-rakers*— 16×28 , finely lanceolate, slightly less than gill-filaments or 2 in eye. *Scales*—rather firmly adherent, with 3 or 4 vertical parallel striæ, well spaced, fine circuli vertically parallel.

Fins—Dorsal origin midway between mandible tip and caudal base, first branched ray $1\frac{2}{3}$ in head measured from mandible tip. Anal begins midway between dorsal origin and caudal base, or entirely behind depressed dorsal, first branched ray $2\frac{2}{3}$ to $2\frac{7}{8}$ in head. Caudal peduncle well compressed, least depth equals its length or $2\frac{1}{10}$ to $2\frac{1}{3}$ in head. Caudal strongly forked, lobes sharply pointed, lower slightly longer, 3^1 to $3\frac{2}{3}$ in combined head and trunk. Pectoral reaches $\frac{3}{4}$ to ventral, length $1\frac{1}{4}$ to $1\frac{1}{5}$ in head. Ventral inserted very slightly before dorsal origin, reaches $\frac{2}{3}$ to anal, length 2 to $2\frac{1}{4}$ in head. *Colour*—Pale uniform brown with silvery reflections. Narrow dusky median streak down back. Fins pale, caudal tinted dusky terminally, especially near end of each lobe. Side of head and iris silvery-white. Edges of jaws sprinkled with few rather large dusky blotches. Inside gill-opening dusky. Three examples, 97 to 111 mm.

Day does not give the number of gill-rakers. He simply says they are "numerous, closely set and about $\frac{1}{3}$ as long as the eye." The related *Harengula klunzei* (Bleeker) appears to differ chiefly in its pale caudal. Its gill-rakers are given as 38 on the lower branch of the outer arch, according to Day.

Ilisha indica (Swainson). "Kamma Mathi."

Head $3\frac{1}{5}$; depth $2\frac{3}{4}$; D. iii, 10 or 11; A. iii, 34; scales 38 in lateral series to caudal base and 4 more on latter; 13 scales transversely at dorsal fin; 14 predorsal scales; abdominal scutes 19 or 20×10 .

Body strongly compressed, deeply ovoid, lower profile little more convex and predorsal keel distinct to occiput. Head deep, strongly compressed, width $2\frac{1}{3}$ to $2\frac{1}{2}$ its total length. Snout obtuse, rather swollen each side forward, length $\frac{4}{5}$ its width or 4 to $4\frac{1}{3}$ in head measured from snout tip. Eye—large, high, center midway in total head length, diameter $2\frac{1}{2}$ to $2\frac{2}{3}$ in head measured from upper jaw tip. Mouth small, superior, terminal, lower jaw protruding well in front, upper without distinct median notch. Maxillary extends about first third in eye, expansion 2, length 2 to $2\frac{1}{10}$ in head. Teeth obsolete or absent, only row of very indistinct ones along lower maxillary edge. Interorbital slightly convex, narrow, less than half of eye. Suborbital branch of rather coarse venules or striae extend from preorbital to postocular; few striae on flange of preopercle below; opercle with 2 or 3 weak radiating striae. Gill-rakers— 12×22 , slender, lanceolate, $2\frac{1}{3}$ in eye. Gill-filaments $\frac{3}{4}$ length of gill-rakers. Notch above and below broad bony knob in inner edge of gill-opening. Scales—firmly adherent, narrowly imbricated; 6 vertical evenly spaced parallel striae, half of which may be broken medianly; 23 to 25 marginal striae apically; circuli fine, vertically parallel.

Fins—Dorsal origin midway between mandible and caudal base, first branched ray $1\frac{5}{8}$ to $1\frac{1}{3}$ in total head length. Anal origin opposite base of last dorsal ray first branched ray 3 to $3\frac{1}{2}$ in head. Caudal peduncle strongly compressed, length $\frac{4}{5}$ its least depth, which $2\frac{1}{3}$ to $3\frac{1}{10}$ in head. Caudal strongly forked, lobes slender, pointed, long as head. Pectoral pointed, reaches nearly far as depressed ventral end, $1\frac{1}{4}$ in head. Ventral inserted little before dorsal origin, reaches $2\frac{1}{4}$ to $2\frac{1}{2}$ to anal, length $1\frac{3}{4}$ to 2 in eye. Colour—Back pale brownish, with median pale dusky streak. Dorsal and caudal slightly pale brown, other fins whitish. Sides and lower surface silvery-white, also iris. Two examples, 93 to 110 mm.

My examples with fewer dorsal and anal rays than Day gives.

Opisthopterus tartoor (Cuvier). "Ambatta."

Head 4 to $4\frac{1}{8}$; depth $3\frac{1}{8}$ to $3\frac{2}{5}$; D. iii, 9; A. iii, 50 or 51; scales 40? in lateral series to caudal base and 3 more on latter; abdominal scutes 27 to 30.

Body very strongly compressed, lower profile more convex forward than upper. Head strongly compressed, width $2\frac{3}{4}$ to $2\frac{7}{8}$ in its total length. Snout very short, obtuse, length about $\frac{4}{5}$ to equal its width or 4 to $4\frac{1}{8}$ in head measured from its own tip. Eye—large, hind pupil edge very slightly before centre in head length, diameter $2\frac{3}{4}$ to $2\frac{7}{8}$ in head. Mouth small, superior, mandible vertically inclined and protrudes, upper jaw without median notch. Maxillary reaches about first third in eye, expansion $1\frac{1}{2}$ to 2 in eye. Teeth very minute, single row in jaws and along entire lower maxillary edge. Interorbital convexly elevated, 2 to $2\frac{1}{2}$ in eye. Preopercle slightly inclined forward. Opercle smooth. Gill-rakers— 10×22 , finely lanceolate, little longer than gill-filaments or 2 in eye. Scales—very caducous, all fallen from trunk, rather small and narrowly imbricated.

Fins—Dorsal midway between pectoral origin and caudal base, about over first third in anal base, fin uniformly low, first branched ray about $1\frac{3}{8}$ to 2 in eye. Caudal peduncle strongly compressed, length $\frac{3}{4}$ to 1 in its least depth, which 1 to $1\frac{1}{5}$ in eye. Caudal small, forked, $1\frac{2}{5}$ to 2 in total head length. Pectoral long, droops vertically, reaches $\frac{4}{5}$ to vent, length 1 to $1\frac{1}{8}$ in head. Colour—Pale uniform brown. Dusky-brown median streak downback. Fins pale. Pectoral and caudal with few dull dusky dots. Iris and side of head silvery-white. Top of head and ends of jaws sprinkled with dusky dots. Three examples, 69 to 74 mm.

DUSSUMIERIIDÆ.

Dussumieria hasseltii (Bleeker.) "Kolachi."

Head $3\frac{1}{4}$ to $3\frac{3}{5}$; depth 5 to $5\frac{1}{2}$; D. iv, 16; A. iii, 12; scales 45 in lateral series to caudal base and 4 more on latter; 12 scales transversely at dorsal fin; 24 predorsal scales.

Body well compressed, slender, long, edges all rounded convexly. Head attenuated, compressed, width $2\frac{2}{5}$ to $2\frac{3}{5}$ its total length. Snout conic, width $1\frac{3}{4}$ to $1\frac{4}{5}$ in its length, which 3 to $3\frac{1}{10}$ in head. *Eye*—large, midway in head length, $1\frac{1}{8}$ to $1\frac{1}{6}$ in snout or $3\frac{2}{5}$ to $3\frac{3}{4}$ in head measured from snout tip. Adipose eyelid moderate. Mouth terminal, moderate, lower jaw well protruded or equals half of head, measured from mandible tip. Upper jaw without median notch. Maxillary about reaches front eye edge, expansion 3 in eye, length 3 to $3\frac{1}{5}$ in head measured from upper jaw tip. Row of rather long slender uniform teeth in each jaw, also extending along each maxillary edge on palatines and down tongue medianly. Interorbital broadly convex, width $\frac{4}{5}$ of eye. Opercle and sides of head smooth. *Gill-rakers*— 12×26 , finely lanceolate, slightly longer than gill-filaments or 2 in eye. *Scales*—very caducous; 3 or 4 vertical parallel striæ; 8 to 11 basal radiating striæ; 15 to 20 apical marginal striæ; circuli fine.

Fins—Dorsal origin midway between eye centre and caudal base, first branched ray 2 in total head length. Anal inserted well behind depressed dorsal or about midway between ventral origin and caudal base, first branched anal ray 4 in head. Caudal peduncle well compressed, least depth 1 to $1\frac{1}{3}$ its length or $2\frac{7}{8}$ to $3\frac{1}{4}$ in head. Caudal well forked, slender lobes pointed, equal, 1 to $1\frac{1}{8}$ in head. Pectoral low, reaches 2 to $2\frac{1}{5}$ to anal, 2 to $2\frac{1}{10}$ in head. Ventral inserted little behind dorsal origin, reaches $1\frac{3}{4}$ to $1\frac{7}{8}$ to anal, fin $2\frac{1}{5}$ to $2\frac{2}{3}$ in head. *Colour*—Pale brownish, back dusky above, also dusky line from shoulder to caudal base medianly. Iris and side of head silvery. Fins pale. Dorsal lobes dusky terminally. Two examples, 95 to 97 mm.

DOROSOMIDÆ.

Anodontostoma charunda (Buchanan-Hamilton). "Kondati Mathi."

Head $3\frac{1}{4}$ to $3\frac{1}{3}$; depth $1\frac{1}{10}$ to $2\frac{1}{4}$; D. iii, 15, i; A. ii, 16, i or ii, 17, i; scales 37 to 40 in lateral series to caudal base and 3 more in latter; 12 scales transversely at dorsal fin; 10 or 11 predorsal scales; abdominal scutes 17×11 or 12.

Body strongly compressed, deeply ovoid, predorsal keel distinct. Head deep, strongly compressed, width $1\frac{7}{8}$ to 2 in its length. Snout obtuse, convex, length $\frac{1}{2}$ to $\frac{3}{5}$ its width or $4\frac{1}{5}$ to $4\frac{1}{3}$ in head. *Eye*—moderate, hind edge little before middle in head; diameter $3\frac{1}{3}$ to $3\frac{7}{8}$ in head. Adipose eyelid wide, extends well back over side of head. Mouth inferior, broad, rami forming obtuse angle. Maxillary extends about first third of eye. No teeth. Interorbital convexly elevated, width 3 to $3\frac{1}{8}$ in head. Many radiating venules on cheek, opercles, postocular and humeral regions. *Gill-rakers*—about 65×83 , finely lanceolate, $2\frac{1}{2}$ in gill-filaments, which $1\frac{1}{4}$ in eye. *Scales*—firmly adherent, narrowly imbricated; 5 or 6 vertical parallel striæ, only most apical one complete, others interrupted medianly; apically edges of scales with about 26 weak crenulations, points more or less extended, though narrow and tips rounded; circuli fine, concentric. Caudal largely scaly and broad basal band of scales along dorsal and anal.

Fins—Dorsal origin little nearer snout tip or midway between same and base of last anal ray; first branched ray $1\frac{1}{4}$ in head; last branched ray $2\frac{1}{5}$ to $2\frac{2}{3}$ in first. Anal entirely behind depressed dorsal, about midway between ventral origin and caudal base, first branched ray $3\frac{1}{2}$ to 4 in head. Caudal peduncle compressed, least depth 2 to $3\frac{1}{3}$ in head, length $\frac{2}{3}$ its least depth. Caudal

strongly forked, lobes sharply pointed. Pectoral low, reaches slightly beyond ventral origin, $1\frac{1}{5}$ in head. Ventral inserted opposite first third in dorsal base, fin reaches $\frac{3}{5}$ to anal, $1\frac{4}{5}$ to $1\frac{7}{8}$ in head. *Colour*—Brownish above, sides and below whitish. Dark slaty humeral blotch about size of eye in depth, only width narrower. Iris shows through adipose eyelid largely slaty. Fins pale. Three examples, 145 to 155 mm.

ENGRAULIDIDÆ.

Engraulis dussumieri (Valenciennes). "Chala Mathi," "Cheruman Anku."

Head $3\frac{3}{4}$ to $3\frac{4}{5}$; depth $3\frac{1}{2}$; D. iii, 9, i or iii, 10, i; A. iii, 29 or 30; scales 37 or 38 in lateral series to caudal base and 2 more on latter; 9 scales transversely at dorsal fin; 16 or 17 predorsal scales; abdominal scutes 15 or 16×7 or 8.

Head strongly compressed, width $2\frac{1}{2}$ to $2\frac{4}{5}$ its length. Snout conic, short, length $\frac{2}{3}$ its width or 5 to $5\frac{1}{5}$ in head. *Eye*—with hind edge about first $\frac{2}{5}$ in head; lids not free; diameter $3\frac{4}{5}$ to 4 in head. Mouth large, upper jaw projecting about half snout length. Maxillary slender, greatly prolonged, nearly reaching ventral origin. Teeth very fine, close-set, even, uniserial in jaws, extend along maxillary to its hind end. Interorbital convex, equals eye. Preopercle ridge oblique. Opercle smooth. *Gill-rakers*— 16×16 , slender, equal gill-filaments or $1\frac{1}{6}$ in eye. *Scales*—caducous, narrowly imbricated; 9 or 10 vertical parallel striæ; circuli fine, also vertically parallel.

Fins—Dorsal origin little nearer snout tip than caudal base, first branched ray $1\frac{1}{3}$ in head. Anal begins close behind dorsal base, $1\frac{5}{8}$ to 2 in head. Caudal peduncle strongly compressed, length $\frac{3}{4}$ its least depth, which $2\frac{1}{5}$ to $2\frac{1}{3}$ in head. Caudal deeply forked, slender pointed lobes equal, 1 to $1\frac{1}{5}$ in head. Pectoral reaches little beyond ventral origin, $1\frac{2}{5}$ in head. Ventral inserted before dorsal, reaches $\frac{2}{3}$ to anal, 2 to $2\frac{1}{3}$ in head. *Colour*—Pale brownish above, sides silvery white, without pale lateral band. Fins pale, edges of caudal lobes slightly dusky. Humeral venules slightly dusky and with obsolete dusky band crossing predorsal anteriorly to opposite humeral membrane. Five examples, 105 to 116 mm.

These examples differ a little from Day's account in that the caudal lobes are equal and the fin rays slightly fewer.

Engraulis purava (Buchanan-Hamilton). "Kavuchalla".

Head $3\frac{3}{4}$ to $3\frac{4}{5}$; depth 3 to $3\frac{1}{4}$; D. iii, 10, i or iii, 11, i; A. iii, 35, 1 to iii, 39, i; scales 35 to 40 in lateral series to caudal base and 3 more on latter; abdominal scutes 15 or 16×9 .

Head strongly compressed, width $2\frac{1}{2}$ to $2\frac{3}{5}$ in its length. Snout obtusely conic, short, but very little projecting beyond mandible, width $\frac{4}{5}$ its length or 4 to $4\frac{1}{4}$ in head. *Eye*—with hind edge very slightly before centre in head length; lids not free; diameter $3\frac{1}{3}$ to $3\frac{3}{4}$ in head. Mouth large, upper jaw protrudes about $\frac{1}{3}$ snout length. Maxillary slender, prolonged slightly beyond gill-opening, not reaching pectoral. Teeth very small, uniserial in jaws, extend along maxillary to its hind end. Interorbital convex, equals eye. Preopercle well inclined. Opercle smooth. *Gill-rakers*— 16×17 , twice length of gill-filaments; $1\frac{1}{3}$ in eye. *Scales*—very caducous; 9 or 10 vertical parallel striæ, often incomplete, apical usually closer and even with few annectant branches; circuli fine, vertically parallel.

Fins—Dorsal origin midway between snout tip and caudal base, first branched ray $1\frac{1}{6}$ to $1\frac{2}{5}$ in head. Anal origin opposite sixth dorsal ray base, first branched ray $1\frac{4}{5}$ to $1\frac{7}{8}$ in head. Caudal peduncle well compressed, length $\frac{3}{4}$ to 1 in least depth, which $2\frac{1}{4}$ to 3 in head. Caudal deeply forked, slender pointed lobes equal, 1 to $1\frac{1}{5}$ in head. Pectoral reaches $\frac{3}{4}$ to ventral, $1\frac{1}{5}$ to $1\frac{1}{3}$ in head. Ventral inserted well before dorsal, reaches $1\frac{2}{3}$ to $1\frac{3}{4}$ to anal, $2\frac{1}{3}$ to $2\frac{2}{3}$ in head. *Colour*—Pale brownish generally. No silvery lateral band. Sides of head with silvery sheen. Fins pale, dorsal and pectoral dusted with dusky terminally, also

caudal edges behind. Small dusky blotch at crown and several pale dusky specks at snout tip. Humeral venules dusky. Iris silvery-white. Three examples, 79 to 96 mm.

Differs slightly from Day's figure and description in the shorter maxillary, he showing it nearly reaching pectoral base. Day gives a few more anal rays.

Engraulis hornelli, new species. "Cheruman Anku."

Head 4; depth $4\frac{1}{8}$; D. iii, 11, i; A. iii, 34, i; p. i, 12; v. i, 6; scales (fallen) 43 in lateral series from gill-opening above to caudal base medianly and 3 more on latter; 12 scales transversely between dorsal and anal origins; abdominal scutes 18×10 .

Body elongately fusiform, profiles alike, deepest at dorsal origin, edges but slightly trenchant. Caudal peduncle strongly compressed, least depth equals its length or 3 in head. Abdominal scutes moderate, sharply pointed.

Head strongly compressed, moderately attenuated, flattened sides rather narrowly constricted below, width $2\frac{3}{4}$ its length. Snout short, obtusely conic, only about front fourth its length protruding beyond mandible; width $4\frac{1}{2}$ its length which 5 in head. Eye—with hind edge at first $\frac{2}{3}$ in head, diameter 4. Eye covered with adipose-lid, edges free. Mouth large, little inclined. Maxillary slender, prolonged beyond head until slightly beyond pectoral origin, expansion about $1\frac{2}{3}$ in eye. Teeth small, slender, uniserial, well spaced, even in jaws, extend whole length of lower maxillary edge. Single median row of teeth on tongue. Tongue small knob, adnate, forward in jaws. Nostrils small, adjoining, about last fourth in snout, before and level with upper edge of eye. Interorbital convex, equals eye. Preopercle oblique. Opercle smooth.

Gill-opening extends forward opposite front edge of pupil, connecting gill-membranes very short. Gill-rakers— 10×15 , slender, $\frac{1}{3}$ longer than gill-filaments or $1\frac{1}{2}$ in eye. Isthmus narrow trenchant keel.

Scales—very caducous, with 14 or 15 vertical parallel striae; circuli very fine, also vertically parallel. Scales (fallen) form basal sheaths to dorsal and anal. Caudal base scaly. Axillary pectoral scale $\frac{2}{3}$ of fin, ventral scale about half of fin. Humeral venules moderate.

Fins—Dorsal origin about midway between front eye edge and caudal base, depressed fin $2\frac{1}{4}$ to latter, first branched ray $1\frac{2}{5}$ in head. Anal origin directly below last dorsal ray base, fin low, first branched ray $1\frac{9}{10}$ in head. Caudal deeply forked slender pointed lobes equal, $1\frac{1}{5}$ in head. Pectoral low, pointed, reaches first third in ventral, fin $1\frac{2}{5}$ in head. Ventral inserted before dorsal, fin $2\frac{2}{3}$ to anal or $2\frac{2}{3}$ in head.

Colour dull brownish generally, back slightly purplish gray. No silvery lateral band. Sides of head silvery white. Caudal with edges narrowly dusky, none of other fins dusted with dusky. Humeral venules dusky.

Length 130 mm.

One from Calicut.

Three others, same data, at "Namanangu", are simply younger. They show the following: Head $3\frac{2}{3}$ to $3\frac{3}{4}$; depth $3\frac{2}{3}$ to $4\frac{1}{6}$; D. iii, 11 or 12; A. iii, 31 to 36; scales about 38 or 39 in lateral series from gill-opening above to caudal base medianly and 2 or 3 more on latter; abdominal scutes 17 to 19×10 or 11; head width $2\frac{1}{2}$ to 3 in its length; snout $4\frac{1}{4}$ to 5; eye $3\frac{1}{3}$ to $3\frac{3}{4}$; gill-rakers 12×14 ; length 80 to 90 mm.

Related to *Engraulis setirostris* (Broussonet), but according to Weber and Beaufort that species has the maxillary reaching beyond the ventrals, often to the anal, but 12 gill-rakers in the lower branch and the scales with only 10 to 12 vertical striae.

(Named after Mr. James Hornell, Director of Fisheries, Madras.)

(to be continued).



Fowler, Henry W. 1924. "Notes and descriptions of Indian fishes." *The journal of the Bombay Natural History Society* 30, 36–41.

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