Serpa turneri new species

Depth 4 4/5 to 5; head 3 1/3 to 3 3/5, width 2 2/5 to 2 3/5. Snout 4 4/5 to 6 in head from snout tip; eye 3 1/2 to 3 4/5, greater than snout, subequal with interorbital; maxillary extends little less than eye diameter behind eye though not quite to oblique hind preopercle edge, slender, length 1 1/2 to 1 3/5 in head from snout tip; interorbital 3 2/3 to 4, slightly convex. Gill rakers 3 + 10, lanceolate, slender, 1 2/5 in eye; gill filaments 3/5 gill rakers.

Scales 35 in lateral line to caudal base, enlarged and on caudal peduncle more than half its depth; 3 above, 4 below, 12 predorsal forward to occiput. Caudal base scaly. Scales with 3 basal radiating striae; circuli fine.

Small photophore at front eye edge nearly median; small photophore eye diameter behind eye; no distinct photophore on cheek or at humeral region; 2 opercular, upper larger and on line from lower eye edge and pectoral fin origin, lower veiled behind hind maxillary end; 3 equidistant veiled branchiostegals; 5 pectorals, fourth elevated little higher than pectoral fin origin, interspaces to third or fifth much longest; 1 suprapectoral about upper 2/5 between lateral line and pectoral fin origin or but slightly behind first pectoral photophore; 2 subpectorals, first or lower slightly posterior though little nearer upper than second pectoral, upper below pectoral fin origin and opposite bases of superomedian pectoral fin rays; 4 ventrals, second elevated little above lower subpectoral and also little before first ventral; 1 supraventral close below lateral line opposite second ventral; 4 or 5 + 8 to 10 anals, anteroanals slightly arched from anal fin base, first 2 or 3 posteroanals above anal fin base; 3 supraanals, first or lowest little higher than second ventral or second supraanal and little behind third ventral, second supraanal behind fourth ventral or close before anal fin origin and third close below lateral line opposite or slightly behind first anteroanal; 2 posterolaterals first or lower little behind and well above last anteroanal, uppermost close below lateral line little before first posteroanal; 3 or 4 precaudals, first or second contiguous with posteroanals, at lower median caudal rays, second or third little elevated or last at end of lateral line. Supracaudal luminous scales 3, infracaudals 6.

D. II or III, 9, I or 10, I, first branched ray 1 1/4 to 1 1/2? in total head length; adipose fin 3 to 4; A. III, 15, I, first branched ray 1 3/4 to 2; caudal 1 1/4 to 1 1/3?, forked; least depth of caudal peduncle 3 1/3 to 3 2/3; pectoral 1 1/3 to 2; ventral 2 1/5 to 2 1/4.

Brown. Opercles and belly blackish. Iris with whitish luminous blotches. Fins pale or whitish.

Diagnosis. Apparently differs from all the species known to me in the elevated and advanced second ventral photophore, which at least higher than lower subpectoral and caudal peduncle slender.

Type. No. U. S. N. M.

D. 5497. Bantigui Island, N. 64° W., 10 miles (N. 9°7'15" E. 124°59'30"), between Leyte and Mindanao. In 960 fathoms. August 3, 1909. Length 60 and 61 mm. Type (larger) and paratype.

D. 5185. Lusaran Light, N. 23° E., 25.50 miles (N. 10°5'45" E. 122°18'30"), between Panay and Negros. In 638 fathoms. March 30, 1908. Length 34 to 39 mm. 2 examples.

D. 5125. Nogas Island (W.), S. 11° E., 24 miles (N. 10°48' E. 121°48'30"), Sulu Sea, vicinity southern Panay. In 411 fathoms. February 3, 1908. Length 42 mm.

(To Mr. Percy J. Turner, of Suva, Fiji, to whom I am indebted for interesting fishes from Fiji.)

Lampanyctus macropterus (Brauer)

Myctophum (Lampanyctus) macropterum BRAUER, Zool. Anzeiger, vol. 28, Nr. 10, Dec. 20, 1904, p. (397) 404, fig. 5. Indian Ocean; Deutsch. Tiefsee Exp. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 249, text figs. 166 and 167 (S. 10°8'2" E. 97°14'9", north of Cocos; N. 6°53'1" E. 93°33'5", Bay of Bengal; N. 7°57'9" E. 91°47'2"; N. 7°1'2" E. 85°56'5"; N. 4°56' E. 78°15'3", south of Ceylon; S. 4°5'8" E. 73°24'8", north of Chagos; S. 4°45" E. 48°58'6", between Seychelles and Zanzibar; N. 0°25'7" E. 43°37'8", off north east Africa; N. 9°6'1" E. 53°41'2"; N. 13°2'8" E. 46°41'6", Gulf of Aden). —PAPPENHEIM, Deutsch. Südpolar Exp., vol. 15, Zool. pt. 7, 1914, p. 197 (N. 0°46' W. 18°59', 3000 meters).

Lampanyctus macropterus GILBERT, Mem. Carnegie Mus., vol. 6,

Fishes
No. 2, Aug. 1913, p. 106 (near Kagoshima). --REGAN,/Brit.

Antarctic "Terra Nova" Exp., Nat. Hist. Rep., Zool., vol. 1,

No. 4, 1916, p. 140, pl. 6, fig. 5 (Spirits Bay near North

Cape, New Zealand, 3 meters). --PARR, Bull. Bingham Oceanogr.

Collection, vol. 3, art. 3, Dec. 1928, p. (88) 110, text fig.

20 (N. 22° to 23° W. 74° to 77°, 7000 to 8000 feet); vol. 2,

art. 4, Oct. 1931, p. 28, fig. 10 (note).

Depth 5 to 5 2/3; head 3 1/4 to 3 1/3, width 2 2/3 to 2 4/5. Snout 5 1/8 to 5 3/4 in head from snout tip; eye 4 to 4 1/4, greater than snout, subequal with interorbital; maxillary extends little over eye diameter behind eye though not to well inclined hind preopercle edge, slender, length 1 1/3 to 1 2/5 in head from snout tip; interorbital 4 1/4 to 4 1/3, depressed. Gill rakers 4 + 11, slender, lanceolate, 1 2/5 in eye; gill filaments subequal with gill rakers.

Scales 34 or 35 in lateral line to caudal base, not enlarged; 3 above, 4 below, 13 predorsal. Most all scales fallen.

Small antorbital photophore slightly below middle of front eye edge; humeral photophore about eye diameter behind eye or little before hind maxillary end; 2 operculars, upper little larger and in line with lower eye edge until passing between subpectorals, lower below hind maxillary end; 3 equidistant veiled branchiostegals; 5 pectorals, first interspace longest, fourth spot over and little behind fifth though slightly below level of upper subpectoral; 1 suprapectoral, close below lateral line before subpectorals or midway in first interspace of pectoral spots; 2 subpectorals, first or lower little posterior and below upper, midway between latter and second pectoral; 4 ventrals, equidistant, second little highest; 1 supraventral at upper 2/5 between first ventral spot and lateral line; 6 + 7 anals, anteroanals arched upward slightly, posteroanals behind anal fin base and not contiguous with precaudals; 3 supraanals, first lowest or little behind third ventral, second little higher and behind fourth ventral, third close below lateral line opposite anal fin origin; 2 posterolaterals, first or lower slightly below middle in line with last anteroanal and upper, which close above or below lateral line still posteriorly; 4 precaudals, first 2 low or close together at lower rudimentary caudal rays, third in line with second and fourth and little nearer second at end of lateral line. Supracaudal luminous scales 4, infracaudal 8.

D. III, 11, I, first branched ray 1 1/4 to 1 3/5 in total head length; adipose fin 4 to 5; A. III, 14, I, first branched ray 2; caudal 1 1/5; least depth of caudal peduncle 3 1/8 to 3 2/5; ventral 1 4/5 to 1 7/8; pectoral reaches middle in anal length or shorter, 2 1/2 to 2 2/3 in combined head and body to caudal base.

Brown, scale pockets mostly little darker. Iris white. Inside gill opening and mouth dusky to blackish. Fins whitish.

Atlantic, Indian and Pacific Oceans.

D. 5365. Cape Santiago Light, N. 73° W., 6.7 miles (N. 13°44'24" E. 120°45'30"), Balayan Bay, Luzan. In 214 fathoms. February 22, 1909. Length 90 to 94 mm. 2 examples.

D. 5320. China Sea vicinity of Hong Kong (N. 20°58' E. 120°3'). In 1804 fathoms. November 6, 1908. Length 27 to 35 mm. 2 examples.

D. 5280. Malavatuan Island (N.), S. 60° W., 6.1 miles (N. 13°55'20" E. 120°25'55"), China Sea, vicinity of southern Luzan. In 193 fathoms. July 17, 1908. Length 98 mm.

Serpa bensoni new species

Depth 5 2/3; head 3 2/3, width 2 2/5. Snout 6 in head from snout tip; eye 4 3/5, greater than snout, 1 1/10 in interorbital anteriorly; maxillary reaches 1 3/4 eye diameters behind hind eye edge though not quite to well inclined hind preopercle edge, slender, length 1 1/3 in head from snout tip; interorbital 4 1/4, slightly depressed. Gill rakers 6 + 11, slender, lanceolate, equals interorbital; gill filaments 2 1/3 in gill rakers.

Scales 35 in lateral line to caudal base, enlarged, especially so on caudal peduncle so depth 1 3/4 in least depth of caudal peduncle; 3? above, 4 below, 11 predorsal forward to occiput. Ventral with pointed axillary scale 3 3/5 in fin. Scales with 3 basal radiating striae; circuli fine. Scales quite caducous, mostly fallen.

At front eye edge small antorbital photophore slightly below middle; humeral photophore about eye diameter behind eye; no distinct photophores on cheek; 2 opercular, upper little larger and on line from lower eye edge passing little below lower subpectoral, lower behind hind maxillary end; 5 pectorals, first interspace longest, fourth photophore over and little behind third though not quite elevated high as upper subpectoral; 1 supra-pectoral rather close below lateral line and before upper subpectoral; 2 subpectorals, first or lower entirely behind upper though little nearer second pectoral than upper subpectoral, also entirely below pectoral fin base, upper well before bases of superomedian pectoral fin ray bases; 4 ventrals, equidistant; 1 supraventral well above pectoral fin origin or about upper third in space between lateral line and pectoral fin origin; 6 + 8 anals, anteroanals arched upward little from anal fin base, posteroanals all behind anal fin base and continuous with precaudals; 3 supraanals, first slightly above level of second, also little below level of fourth pectoral over interspace of second and third ventrals, second about opposite vent and third on lateral line opposite first anteroanal; 2 posterolaterals, first or lower behind sixth anteroanal and to which little nearer than upper posterolateral on lateral line little before first posteroanal; 4 precaudals, first or lowest 2 close together opposite lower rudimentary caudal rays, third little elevated and posterior though not in line with uppermost at end of lateral line. Infracaudal luminous scales 7, also median row before vent.

D. III, 11, first branched ray 1 1/8 in total head length; adipose fin 4 1/4; A. III, 16, I, first branched ray 1 3/5; caudal damaged, evidently forked; least depth of caudal peduncle 2 3/4; ventral 1 3/5; pectoral reaches middle of anal, length 2 2/5 in combined head and body to caudal base.

Brown, inside mouth and pharynx blackish. Scale pockets and fin bases often dark or dusky. Fins pale or whitish. Iris grayish with white luminous areas. Opercles blackish.

Diagnosis. Similar to Lampanyctus macropterus Brauer, but differing in the higher supraventral photophore, the fourth pectoral lower than upper subpectoral, first or lower posterolateral nearer last anteroanal, 8 posteroanals and pectoral fin reaching middle of anal fin.

35p. —

[Type, No. U. S. N. M.

D. 5058.

Length 115 mm.

For Mr. R. Dale Benson Jr. of Philadelphia, to whom I am indebted for many collections of American fishes.

Lampanyctus omostigma Gilbert

Lampanyctus omostigma GILBERT, Mem. Mus. Comp. Zool., vol. 26, No. 6, 1908, p. 232, pl. 5, N. Lat. 10°57'35" W. Long. 137°35'25", about 1000 miles north of Marquesas Islands. --JORDAN and JORDAN, Mem. Carnegie Mus., vol. 10, No. 1, Dec. 1922, p. 12 (reference). --PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 88 (reference). --FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 68 (part; not materials). --PARR, Proc. U. S. Nat. Mus., vol. 76, 1929, p. 22 (type); Bull. Bingham Oceanogr. Collection, vol. 2, art. 4, Oct. 1931, pp. 25, 26 (diagnosis in key).

Lampanyctus omostigma subsp. parvicauda PARR, Bull. Bingham Oceanogr. Collection, vol. 2, art. 4, Oct. 1931, p. 26, fig. 9. N.20°48'15" W. 106°11'50", 540 fathoms; N. 16°14' W. 99°36'30", 625 fathoms; N. 11°5' W. 89°20'45", 300 fathoms.

Lampanyctus septilucis BEEBE, Zoologica N. Y. Zool. Soc., vol. 13, No. 4, March 1932, p. 68, fig. 15. Seven miles south - south west of Nonsuch, Bermuda, 700 fathoms.

Depth 5; head 3 1/5, width 3. Snout 7 1/3 in head from snout tip; eye 4 1/3, greater than snout or interorbital; maxillary extends little over eye diameter beyond eye though not quite to well inclined hind preopercle edge, slender, length 1 2/5 in head from snout tip; interorbital 5?, low. Gill rakers 5 + 12, 1 1/4 in eye; gill filaments 4/5 gill rakers.

Scales 39 in lateral line to caudal base, enlarged; 3 above, 4 below. Scales very caducous, all having fallen.

Minute preorbital photophore between eye and lower part of nostril; 1 suprahumeral, before operculars; 2 operculars, upper on line from lower eye edge to upper subpectoral, large, lower slightly anterior behind hind maxillary end; 3 equidistant veiled branchiostegals; 5 pectorals, first interspace longest, fourth elevated above lower subpectoral though not quite so high as upper little posterior to third pectoral; 1 supraventral little posterior to subpectorals about midway between lateral line and pectoral fin origin; 2 subpectorals, one over other, upper little before and below pectoral fin origin and lower just below pectoral fin base though before second pectoral; 4 ventrals, second slightly anterior and over first at same level as lower subpectoral, third midway between first or second and fourth; 6 + 8 or 9 anals, first and fifth anteroanals closer to anal fin base at same distance, second well diverging, third and fourth intermediate between second and fifth, all posteroanals except first 2 behind anal fin base; 4 precaudals, first low and continuouw with last posteroanals, third midway between second and fourth which last at end of lateral line. Supracaudal luminous organs 4, infracaudals 9.

D. III, 11, I, first branched ray 1 3/5? in total head length; adipose fin 4 1/10; A. III, 15, I, first branched ray 2; caudal 1 1/4, forked; least depth of caudal peduncle 3; pectoral 1 1/4; ventral 2 1/6.

Dark brown, blackish on opercles and at bases of fins. Vertical fins with fine wavy lines due to dark pigment along line of articulation of rays.

Pacific Ocean.

75769 U; S. N. M. N. 10°57'35" W. 137°35'25" (1000 miles north of Marquesas Islands). Length 62 mm. Type.

Lampanyctus punctatissimus Gilbert

Lampanyctus punctatissimus GILBERT, Mem. Carnegie Mus., vol. 6, No. 2, Aug. 1913, p. 103. Suruga Bay, Japan, in 300 fathoms. -- PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 88 (reference); Proc. U. S. Nat. Mus., vol. 76, 1929, p. 23, fig. 10 (type).

Depth 4 1/4 to 5 1/5; head 3, width 2 3/4 to 3 1/4. Snout 5 to 6 in head from snout tip; eye 4 1/4 to 6, greater than snout or interorbital; maxillary extends 1 3/4 eye diameters behind hind eye edge but not quite to well inclined hind preopercle edge, slender, length 1 1/3 to 1 1/2 in head from snout tip; interorbital 3 to 3 3/4, low convex.

Scales 34 in lateral line. Scales very caducous, all having fallen.

Small developed photophore on middle of cheek; suprahumeral smaller, before hind maxillary end; 2 opercles, upper larger and on line with lower eye edge and lower subpectoral, lower close behind hind end of maxillary; 3 equidistant veiled branchiostegals; 5 pectorals, first interspace longest, fourth spot behind third pectoral and elevated above lower subpectoral but not quite high as upper subpectoral; 1 supraventral about upper third between lateral line and pectoral fin origin little before upper subpectoral; 2 subpectorals, first or lower below and little posterior, before and close below bases of lowest pectoral fin rays, upper close before bases of uppermost pectoral fin rays; 4 ventrals, equidistant, about same level; 1 supraventral close below lateral line, little before first ventral; 7 + 6 anals, last anteroanal slightly elevated, posteroanals behind anal fin base; 3 supraanals, first level with pectoral fin origin over interspace between second and fourth ventrals, second little lower than first and behind fourth ventral, third close below lateral line below adipose fin; 4 precaudals, 2 continuous with posteroanals, third most posterior and little elevated, fourth close below end of lateral line. In addition head and body with many small thick-set luminous dots surrounded with black pigment rings showing more or less definite arrangement; well defined series of about 15 equally spaced along outer surface of mandible and similar series on maxillary; on sides of head and body 1 to each scale arranged under tip of exposed portion; few extend out on caudal fin base. Supracaudal luminous scales 2, one before adipose fin.

D. III, 9, I, first branched ray 1 1/2 in total head length; adipose fin 3 1/8 to 3 4/5; A. III, 14, I, first branched ray 2 1/2?; caudal subequal with head, forked; least depth of caudal peduncle 3 1/8 to 3 1/4; pectoral 1 1/3 to 2 1/3; ventral 2 to 2 1/3.

Blackish brown. Fins whitish. Iris dark.

Pacific Ocean.

74469 U. S. N. M. Albatross Collection (5064). Length 25 mm. Type.

74515 U. S. N. M. Albatross Collection (5064). Length 21 mm.

74516 U. S. N. M. Albatross Collection (5058). Length 20 to 27 mm.

4 examples.

Lampanyctus jordani Gilbert

Lampanyctus jordani GILBERT, Mem. Carnegie Mus., vol. 6, No. 2, Aug. 1913, p. 104, pl. 14. Nemuro, Hokkaido, Japan; N. Lat, 42°11' E. Long. 141°57', 269 to 326 fathoms. --PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 89 (reference).

Depth 4 7/8; head 3 2/5, width 2 3/5. Snout 6 1/2 in head from snout tip; eye 4 2/5, greater than snout, 1 1/4 in interorbital; maxillary extends 1 1/4 eye diameters behind eye, not quite to well inclined hind preopercle edge, slender, length 1 2/5 in head from snout tip; interorbital 3 3/5, low, slightly convex. Gill rakers 6 + 15, lanceolate, slender, 1 1/8 in eye; gill filaments 2/3 gill rakers.

Scales 36 in lateral line, enlarged; 3 above, 4 below, 14 predorsal to occiput. Scales with 2 or 3 basal radiating striae; circuli fine, complete.

Minute preorbital photophore at middle of front eye edge; 1 on cheek in contact with upper maxillary border eye-diameter posterior to eye; distinct small photophore on shoulder slightly behind vertical of third branchiostegal; 2 operculars, upper larger and in line with lower eye edge and upper subpectoral, lower little below and behind hind maxillary end; 5 pectorals, first interspace longest of spots at same level though interspace of third and fourth subequal, fourth elevated level with upper subpectoral over and slightly posterior to third; 1 suprapectoral about upper fourth in space between lateral line and pectoral fin origin though little before upper subpectoral, also very small photophore (not seen in any other species) close above pectoral origin; 2 subpectorals, first or lower slightly posterior though before second pectoral, upper little before pectoral fin origin and about opposite middle of fin base; 4 ventrals, second little elevated though not quite high as first or lower subpectoral and remaining form equidistant at same level; 1 supraventral, close below lateral line and slightly behind ventral fin origin; 8 + 8 anals, second and third anteroanals elevated, level with first and second supraanals and eighth also well elevated though little nearer penultimate anteroanal than posterolateral, all but first posterolaterals behind anal fin base; 3 supraanals, first and second on same level as fourth pectoral and second and third anteroanals, first over and little before second ventral and second little before fourth ventral, third close below lateral line opposite vent; 1 posterolateral close below lateral line and slightly before adipose fin origin; 4 precaudals lower 3 in arc at base of lower caudal lobe below, fourth more widely separated at end or base of lateral line. Numerous minute luminous spots or dots on sides of head and body, 1 to each scale of trunk, at tip of exposed portion. Supracaudal luminous scales 2, infracaudal 9, 2 or 3 with occasional traces of 1 or 2 more before adipose fin.

D. III, 10, I, first branched ray 1 1/3 in total head length; adipose fin 3 1/5; A. III, 16, I, first branched ray 1 2/5; caudal 1 1/5, forked; least depth of caudal peduncle 2 2/5; pectoral 1 1/8; ventral 1 2/3.

Dark brown or dusky. Opercle and inside gill opening blackish. Iris gray. Fins brownish.

Pacific Ocean. The type 121 mm. long in the Carnegie Museum.

74517 U. S. N. M. N. 42°11' E. 141°57'. In 269 to 326 fathoms. Albatross Collection (5039). Length 153 mm. Paratype.

Lampanyctus stilbius Gilbert

Lampanyctus stilbius GILBERT, Mem. Mus. Comp. Zool., vol. 26, No. 6, 1908, p. 235, pl. 8. Near Nukuhiva, Marquesas Group, to 300 fathoms. --PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 89 (reference). --FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 69 (compiled). --PARR, Proc. U. S. Nat. Mus., vol. 76, 1929, p. 23 (type).

Depth 5 1/8; head 3, width 2 3/5. Snout 8 in head; eye 3 2/5, greater than snout or interorbital; maxillary extends 3/4 eye diameter behind eye though not quite to moderate inclined hind preopercle edge, slender, length 1 1/2 in head from snout tip; interorbital 5, convex.

Scales about 38 in lateral line to caudal base, enlarged; 3 above, 4 base. Caudal base scaly. Scales very caducous, all fallen.

Small antorbital photophore at lower front eye edge; 3 small spots on upper postocular close behind eye and fourth lower or little below level of pupil; small humeral photophore, high, little behind third branchiostegal; 2 operculars, upper larger and in line from lower eye edge to fourth pectoral spot, lower close behind hind maxillary end; 3 equidistant branchiostegals; 5 pectorals, first interspace longest or even greater than space between second and fifth pectorals; fourth photophore higher than lower subpectoral though lower than upper and between third and fifth pectorals; 1 suprapectoral on lateral line close before upper subpectoral; 2 subpectorals, first or lower close below pectoral fin base and slightly posterior to upper, which below pectoral fin origin close before bases of superomedian pectoral fin rays; 4 ventrals, second elevated though not quite level with upper subpectoral, over and little posterior to first; 1 supraventral on lateral line opposite ventral fin base; 7 + 4 anals, anteroanals in slight sigmoid curve, posteroanals behind anal fin base and well separated from precaudals; 3 supraanals, first or lowest little higher than second ventral, over fourth ventral, second little nearer first than third also posterior to first, third close above lateral line over and slightly behind second; 1 posterolateral close above lateral line over and slightly behind last anteroanal; 3 or 4 precaudals, 2 lower close, near rudimentary lower caudal rays, upper close above end of lateral line, sometimes third intermediate may be present. Supracaudal luminous scales 4, infracaudal 4. Luminous scales likely present at front dorsal and anal ray bases, also ventral fin bases. Minute scattered photophores on head and body.

D. III, 8, I, fin height 2 ? in total head length; adipose fin 4 3/5; A. III, 10, I, fin height 2 1/4; caudal 1 1/4, forked; least depth of caudal peduncle 3 7/8; pectoral 1 4/5?; ventral 2.

Brownish. Iris grayish. Fins whitish.

Pacific Ocean. The type now in very poor preservation and the photophores all gone. My account is largely from Gilbert's description and figure.

75768 U. S. N. M. near Nukuhiva, Marquesas Islands. Albatross Collection (3798). Length 20 mm. Type.

Lampanyctus pusillus (Johnson)

Scopelus pusillus JOHNSON, Proc. Zool. Soc. London, 1890, p. 457.

Madeira.

Lampanyctus pusillus TAANING, Vidensk. Medd. Dansk Naturh. Foren. Köbenhavn, vol. 86, 1928, p. 66 (North Atlantic; diagnosis in key). --PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, 1928, p. (89) 112(N. 32°24' W. 64°29', 5000 feet); Proc. U. S. Nat. Mus., vol. 76, 1929, p. 25 (note). --NORMAN, Discovery Rep., vol. 2, 1930, p. 330 (S. 33°07'40" E. 4°30'20", 2000 meters; S. 33°25' E. 6°31', 1000 meters; S. 34°5'15" E. 16°00'45", 1000 meters; S. 33°20' to 33°46' E. 15°18' to 15°08', 2000 to 2500 meters; S. 35°01' E. 10°18', 250 meters).

Lampanyctus alatus (not GOODE and BEAN) TAANING, Rep. Danish Oceanogr. Exp., No.5, vol. 2, A. 7, 1918, p. 108, figs. 42 to 43 (Mediterranean; Atlantic).

Depth 5; head 3 2/5. Snout 7 1/4 in head; eye 5, greater than snout; maxillary extends 2 eye diameters behind eye, slender, length 1 1/4 in head; interorbital low.

Small antorbital photophore little inferior on front eye edge; cheek with single median photophore; 2 operculars, upper little larger and about level with lower subpectoral; 3 branchiostegals; 5 pectorals, first interspace longest, fourth spot elevated level with lower subpectoral, and little behind third spot; 1 suprapectoral, nearly forming inclined line with subpectorals and second pectoral, close below lateral line; 2 subpectorals close, before pectoral fin base; 4 ventrals, level; 1 supraventral, not quite high as level of upper subpectoral or at lower 2/5 between lateral line and ventral fin base; anals 4 to 6 + 7 to 9, first anteroanal lower than following, posteroanals behind anal fin base; 3 supraanals, in broadly triangular series, first and second in slightly inclined series with supraventral, first spot over second ventral interval, second spot behind fourth ventral spot and third little below lateral line nearly over first anteroanal; 2 posterolaterals, in line passing little behind last anteroanal, first little nearer last anteroanal than second which little below lateral line; 2 precaudals, upper slightly advanced and little below lateral line, first little above last posteroanal.

D. II, 11, I, second branched ray 1 1/3 in head; adipose fin 4; A. II, 12, I, second branched ray 1 3/4, inserted below hind basal end of dorsal; caudal 1 1/10, forked; least depth of caudal peduncle 2 2/3; ventral 1 3/4; pectoral 2 1/2 in total length without caudal.

Length 40 mm. (Taaning.)

Mediterranean and Atlantic.

Lampanyctus ritteri Gilbert

Lampanyctus ritteri GILBERT, Proc. U. S. Nat. Mus., vol. 48, 1915, p. 318, pl. 15, fig. 3. Off San Clemente Island; Monterey Bay, California; 350 to 599 fathoms. --PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, 1928, p. 89 (diagnosis in key); Proc. U. S. Nat. Mus., vol. 76, 1929, p. 23, fig. 11 (type).

Depth 5 1/5; head 3 3/4, width 2 2/5. Snout 7 3/4 in head from snout tip; eye 4 4/5, greater than snout, 1 1/8 in interorbital; maxillary extends 1 1/2 eye diameters behind eye or not quite to hind inclined preopercle edge, slender, length 1 2/5 in head; interorbital 4, low. Gill rakers 5 + 11, slender, lanceolate, 1 1/3 in eye; gill filaments 4/5 gill rakers.

Scales 38 in lateral line to caudal base, enlarged; 4 above, 3 below, 12 predorsal to occiput. Scales very caducous, most all lost.

Antorbital luminous spot small, below axis of eye, less evident with age; 1 photophore near hind angle of cheek above hind part of maxillary; small humeral photophore at upper end of opercular cleft; 2 operculars, upper larger and slightly below line from lower eye edge to upper hind maxillary end; 3 equidistant branchiostegals; 5 pectorals, subpectoral, lower behind first interspace longest, fourth spot over and slightly posterior to third at level with pectoral fin origin; 1 suprapectoral close below lateral line over and little before upper subpectoral; 2 subpectorals; first or lower rather close below upper, which close before and slightly below pectoral fin origin; 4 ventrals, second pair most widely separated; 1 supraventral little below middle in space between lateral line and ventral fin base; 8 + 11 anals, first 7 anteroanals weakly arched upward and eighth abruptly elevated in line joining seventh with posterolateral though constantly little nearer seventh, posterolaterals behind anal fin base and contiguous with precaudals; 3 supraanals, first and second at same level as fourth pectoral, first slightly over or before third ventral, second above first anal ray base, third close below lateral line over and little before second anteroanal; 1 posterolateral close below lateral line about opposite base of second anal ray; 4 precaudals, last abruptly elevated close below lateral line near its end, penultimate slightly elevated vertically last (abnormally 4 small photophores crowded above base of lower caudal lobe). Four luminous supracaudal scales, 8 infracaudals.

D. III, 10, I, first branched ray 1 1/3 in total head length; adipose fin 4 1/5; A. III, 15, I, first branched ray 1 1/2; caudal 1 1/8, well forked; least depth of caudal peduncle 2 1/4; pectoral 2 2/3; ventral 2.

Brown, scale pockets dusky. Inside mouth and gill cavity blackish. Iris dark gray. Fins pale to whitish, bases mostly dusky or dark.

Pacific Ocean.

75807 U. S. N. M. Monterey Bay, California. In 389 to 456 fathoms. Albatross Station (4513). Length 142 mm. Type.

Lampanyctus regalis (Gilbert)

Myctophum regale GILBERT, Proc. U. S. Nat. Mus., vol. 14, 1891, p. 544. Albatross Stations 2923, 2980, 3070, Santa Barbara Channel, 603 to 822 fathoms.

Nannobrachium regale JORDAN and EVERMANN, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 563 (compiled). --TOWNSEND and NICHOLS, Bull. Amer. Mus. Nat. Hist., vol. 52, art. 1, May 16, 1925, p. 10 (south west of Santa Barbara Island, 451 fathoms; N. 33° to 34°, 534 fathoms).

Myctophum (Lampanyctus) regale BRAUER, Deutsch. Tiefsee Exp. Valdivia, vol. 5, Tiefsee-Fische, 1906, p. 167 (diagnosis in key).

Lampanyctus regalis GILBERT, Proc. U. S. Nat. Mus., vol. 48, 1915, p. 316 (off San Diego, Catalina Island, Santa Barbara Island, Monterey, California, 161 to 891 fathoms). --PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, 1928, p. 89 (diagnosis in key); Proc. U. S. Nat. Mus., vol. 76, 1929, p. 24, fig. 11 (type).

Depth 4 4/5 to 5; head 3 2/5, width 2 1/2. Snout 5 to 7 in head from snout tip; eye 4 to 5 7/8, greater than snout, greater than interorbital in young to 1 1/4 with age; maxillary extends 1 1/4 to 2 1/4 eye diameters behind eye though not quite to well inclined hind preopercle edge, slender, length 1 1/3 to 1 1/2 in head; interorbital 3 to 3 1/4, low, depressed. Gill rakers 5 + 12, of which slender, lanceolate, 1 1/5 in eye, subequal with gill filaments.

Scales 40 in lateral line to caudal base, enlarged or much deeper than others; 3 above, 3 below. Caudal base scaly. Scales very caducous, mostly all fallen.

Small antorbital photophore at lower front eye edge; cheeks, suborbital region, snout and vertex with extremely minute numerous luminous organs, in oblique definite wavy lines on cheek; somewhat larger luminous body on lower hind part of cheek; 2 opercular photophores, upper larger and on line from lower eye edge passing between subpectorals, lower below and behind hind maxillary end; 3 veiled branchiostegals, median nearer posterior; 5 pectorals, first interspace longest and second shortest, fourth spot elevated till level with upper subpectoral; 1 suprapectoral close below lateral line over and slightly forward of subpectorals; 2 subpectorals, lower below and little behind upper, rather close, upper close before pectoral fin origin; 5 ventrals, equidistant, level; 1 supraventral, at upper third in space between lateral line and ventral fin origin; 6 to 8 + 7 or 8, posteroanals behind anal fin base and contiguous with lower precaudals; 3 supraanals, first over or behind third ventral and slightly lower than level with second supraanal which about level with upper subpectoral and fourth pectoral though little behind fifth ventral, uppermost supraanal close below lateral line above and little posterior to second or over anal fin origin; 2 posterolaterals, first or lower over and little posterior to last anteroanal, upper over and little posterior to second close below lateral line; 4 precaudals, lower 3 continuous with posteroanals and arched at base of lower caudal lobe, third elevated close below or at end of lateral line. Supracaudal luminous scales 3, infracaudal 4 to 7.

D. III, 11, I, first branched ray 1 2/5 in total head length; adipose fin 3 1/5 to 5; A. III, 14, I or III, 15, I, first branched ray 1 4/5; caudal 1 1/3, well forked; least depth of caudal peduncle 2 1/2 to 2 4/5; pectoral 2 1/4 to 3 1/8; ventral 2.

Blackish, also rays and membranes of fins. Ventrals with distinct whitish blotch on inner rays. Opercles and inside gill opening blackish. Fins pale brown generally.

Pacific Ocean.

44289 U. S. N. M. Albatross Collection (2923). Length 178 mm. Type of Myctophum regale.

87559 U. S. N. M. Albatross Collection (5695). Length 74 mm.

Lampanyctus alatus (Goode and Bean)

Lampanyctus alatus GOODE and BEAN, Oceanic Ichth., 1895, p. 79, pl. 24, fig. 92. N. Lat. 28°43' W. Long. 87°14'30", 525 fathoms.--JORDAN and EVERMANN, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 559 (compiled). --BORODIN, Bull. Vanderbilt Oceanogr. Mus., vol. 1, art. 1, 1928, p. 12 (Mediterranean). --PARR, Proc. U. S. Nat. Mus., vol. 76, 1929, p. 25, fig. 12 (type). --NORMAN, Discovery Rep., vol. 2, 1930, p. 330 (S. 48°09' W. 52°50', 90 meters; S. 39°50'30" W. 36°23', 1500 meters; S. 33°50' to 34°13' E. 16°4' to 15°49', 859 to 950 meters; S. 46°56' W. 46°03', 1050 to 1350 meters; S. 35°01' E. 10°18', 250 meters; S. 00°46' E. 5°49'15", 859 to 950 meters; S. 2°13' E. 1°52', 71 meters; S. 2°43'30" W. 00°56'30", 125 to 175 meters; S. 3°06'30" W. 3°53', 125 meters; N. 3°04'45" W. 16°52', 125 to 225 meters; N. 4°33'15" W. 16°52'45", 100 to 150 meters; N. 8°12' W. 18°49', 120 meters; N. 12°8' W. 20°53'30", 163 meters).

Myctophum (Lampanyctus) alatus BRAUER, Deutsch. Tiefsee Exp. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 244, text figs. 161-162 (N. 24°43'4" W. 17°1'3", south of Canaries; N. 8°58' W. 16°27'9", off Sierra Leone; N. 5°5'3" W. 13°27'5"; N. 2°36'5" E. 3°27'5", Gulf of Guinea; S. 36°23'4" E. 17°38'1", south of Cape Colony; S. 37°31'2" E. 17°1'6"; S. 30°6'7" E. 87°50'4", north of New Amsterdam; S. 10°8'2" E. 97°14'9", north of Cocos; S. 6°19'3" E. 73°18'9", Chagos; S. 2°38'7" E. 65°59'2", between Chagos and Seychelles; S. 2°43'8" E. 61°12'6"; S. 4°34'8" E. 53°42'8", between Seychelles and Zanzibar).

Lampanyctus (Lampanyctus) alatum ZUGMAYER, Rés. Camp. Sci. Monaco, vol. 55, 1911, p. 38 (N. 43°14' E. 7°39'15", 500 meters; N. 28°4' W. 16°49'30", 1000 meters; N. 31°42' W. 42°40', 2000 meters; N. 39°36' W. 26°5', 2500 meters; N. 36°51'30" W. 1°30', 1300 meters; N. 43°31' E. 7°47', surface; N. 40°19' W. 13°11', 3000 meters; N. 36°54'30" W. 11°49', 5100 meters; N. 36°5'30" W. 9°00'30", 3660 meters). --BARNARD, Ann. South African Mus., vol. 21, pt. 1, 1925, p. 240 (off Cape Point and East London, 300 to 800 fathoms).

Lampanyctus pseudoalatus TAANING, Rep. Danish Oceanogr. Exp., No. 5, vol. 2, A. 7, 1918, p. 108. N. 20° W. 21°55'; N. 35°31' W. 55°58'; Vidensk. Medd. Dansk Naturh. Foren. Köbenhavn, vol. 86, 1928, p. 66 (diagnosis in key). --PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 90 (note).

Depth 5 to 5 4/5; head 3 1/4 to 3 3/5, width 2 3/4 to 2 4/5. Snout 6 to 7 1/2 in head from snout tip; eye 3 3/4 to 4 4/5, greater than snout, 1 1/8 to 1 1/5 in interorbital; maxillary extends 1 1/2 eye diameters behind eye though not quite to well inclined hind preopercle edge, slender, length 1 1/4 to 1 2/5 in head from snout tip; interorbital 3 1/4 to 3 1/2, low. Gill rakers 4 + 10, lanceolate, slender, 1 1/4 in eye; gill filaments 3/5 of gill rakers.

Scales 36 in lateral line, enlarged; 2 above, 3 below, 15 predorsal to occiput. Caudal base scaly. Scales with 2 basal radiating striae; circuli fine, complete.

Small antorbital photophore little inferior at front eye edge; single large photophore in middle of cheek and many more minute ones scattered about, especially below; small humeral photophore before end of maxillary though behind large photophore on middle of cheek; 2 operculars, upper larger and in line with lower eye edge and second pectoral photophore, lower below and behind hind maxillary end; 3 equidistant veiled branchiostegals; 5 pectorals, first interspace greatest, second shortest, fourth elevated level with upper subpectoral and little behind third pectoral; 1 suprapectoral, close below lateral line before subpectorals; 2 subpectorals, first or lower posterior to upper close below and before lowest pectoral fin ray bases, upper still forward of upper pectoral fin ray bases; 4 ventrals, second slightly highest; 1 supraventral, close below lateral line opposite ventral fin base; 4 to 8 + 6 to 9 anals, posteroanals all behind anal fin base; 3 supraanals, first and second nearly level or first slightly higher than second, nearly level with upper subpectoral, first over and little behind second ventral, second behind fourth ventral, third close below lateral line little before first anteroanal; 2 posterolaterals, first behind and above though closer to last anteroanal, secord or upper close below lateral line opposite adipose fin base; 4 precaudals, first 3 low, second most posterior and higher than first and second, fourth at end of lateral line. Supracaudal luminous scales 3 or 4, infracaudal 3 to 6. Luminous scale on adipose fin. Minute luminous organs scattered over head and body, especially its lower half, all smaller than prominent photophores.

D. III, 9, I or III, 10, I, first branched ray 1 2/5 to 1 4/5 in total head length; adipose fin 2 3/5 to 4; A. III, 13, I to III, 16, I, first branched ray 1 3/4 to 2 2/3; caudal 1 1/5? well forked; least depth of caudal peduncle 2 1/5 to 3; ventral 1 3/5 to 2?; pectoral reaches middle of anal or base of last anal ray, 2 to 2 4/5 in combined head and body to caudal base.

Brown, scale pockets darker. Iris gray. Fins all pale. Recent specimens more or less blackish, especially head.

Atlantic and Indian Oceans.

43769 U. S. N. M. N. 28°43' W. 87°14'30". In 525 fathoms. Albatross Collection (2393). Length 50 to 55 mm. 2 examples. Types of Lampanyctus alatus.

86126 U. S. N. M. Gulf of Mexico. March 2, 1917. Grampus Collection (10474). Length 14 to 21 mm. 2 examples.

86127 U. S. N. M. Gulf of Mexico. March 23, 1917. Grampus Collection (10482). Length 57 mm.

Lampanyctus intricarius Taaning

Lampanyctus intricarius TAANING, Vidensk. Medd. Dansk Naturh. Foren. København, vol. 86, 1928, p. 67. Bay of Cadiz; North Atlantic; diagnosis in key. --PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, 1928, p. 90 (reference), --NORMAN, Discovery Rep., vol. 2, 1930, p. 330 (S. 39°50'30" W. 36°23', 1500 meters; S. 33°53'45" E. 9°26'30", 1000 meters; S. 33°20' to 33°46' E. 15°18' to 15°08', 625 to 675 meters; S. 33°50' to 34°13' E. 16°04' to 15°49', 850 to 950 meters; S. 45°03' E. 17°03', 850 to 950 meters; S. 36°09' W. 5°33', 300 meters).

Cheek with 1 photophore; anals 9 or 10 + 8 or 9, first 2 anteroanals displaced ventrally to line through following photophores of series; second anteroanal even lower than anteroanal; first and second supraanals not in line parallel to that passing through third supraanal, supraventral and fourth pectoral; precaudals 2 + +, anterior sometimes nearer to ultimate postero-anal than second precaudal. Luminous scale on adipose fin. Luminous scales only supracaudal and infracaudal before rudimentary caudal rays.

D. 14 or 15; A. 19 or 20; pectoral very long, reaches anal.

(Taaning.)

Atlantic Ocean.

Lampanyctus crocodilus (Risso)

Serpe crocodilus RISSO, Ichth. Nice, 1810, p. 357. Nice.

Scopelus crocodilus RISSO, Mem. Accad. Sci. Torino, vol. 25, 1820, p. 265, pl. 10, fig. 1 (Nice); Hist. Nat. Eur. Mérid., vol. 3, 1826, p. 466 (Nice). --VALENCIENNES, Hist. Nat. Poiss., vol. 22, 1849, p. 447 (Nice). --MOREAU, Poiss. France, vol. 3, 1881, p. 502, fig. 202 (Nice). --VINCIGUERRA, Ann. Mus. Civico Stor. Nat. Genova, ser. 2, vol. 2, 1885, p. 461 (Genoa). --RAFFAELE, Mitth. Zool. Stat. Neapel, vol. 9, 1889, p. 184, pl. 7, fig. 10. --LÜTKEN, Kon. Dansk. Vidensk. Selsk. Skrift. Kjöbenhavn, ser. 6, vol. 7, 1892, p. 263, fig. 22 (N. 33° W. 40°). --CARUS, Prodr. Zool. Medit., vol. 2, 1893, p. 565 (compiled). --HOLT and BYRNE, Dep. Agric. Techn. Instruct. Ireland, Sci. Investig., No. 6, 1911, p. 26, pl. 1, figs. 2-7 (Irish Atlantic slope, to 1150 fathoms).

Lampanyctus crocodilus BONAPARTE, Cat. Met. Pesc. Eur., 1846, p. 36 (Mediterranean; part). --GOODE and BEAN, Oceanic Ichth., 1895, p. 79, pl. 23, fig. 86 (Nice). --JORDAN and EVERMANN, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 558 (copied). --FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1911 (1912), p. 569 (Bonaparte example). --TAANING, Rep. Danish Oceanogr. Exp. Med., No. 5, ~~1913~~, 1918, vol. 2, ~~Biology~~ A. 7, p. 112, figs. 44-45 (Mediterranean, Sea of Marmora, Messina, Atlantic). --VAILLANT, Rés. Camp. Sci. Monaco, vol. 52, 1919, p. 130 (off Morocco, 3475 meters). --TAANING, Vidensk. Medd. Dansk Naturh. Foren. Köbenhavn, vol. 86, 1928, p. 67 (North Atlantic; Mediterranean; diagnosis in key). --BORODIN, Bull. Vanderbilt Oceanogr. Mus., vol. 1, art. 1, 1928, p. 12 (Mediterranean). --PARR, Bull. Bingham Oceanogr Collection, vol. 3, art. 3, 1928, p. 90 (compiled); Proc. U. S. Nat. Mus., vol. 76, 1929, p. 27, fig. 13 (type of Lampanyctus gemmifer).

Myctophum (Lampanyctus) crocodilum BRAUER, Zool. Anzeiger, vol. 28, Nr. 10, Dec. 20, 1904, p. 397 (diagnosis in key); Deutsch. Tiefsee Exp. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 248, figs. 164-165 (on LUTKEN'S material).

Myctophum (Lampanyctus) crocodilus ZUGMAYER, Rés. Camp. Sci. Monaco, vol. 35, 1911, p. 41 (N. 37°9' W. 11°55', to 5000 meters). -- PIETSCHMANN, Sitzs. Ber. Akad. Wiss. Wien, Math.-naturw. Klasse, vol. 123, pt. 1, 1914, p. 451, pl. 5, fig. 2 (larva).

Myctophus bonapartii COCCO, Nuovi Ann. Sci. Nat. Bologna, vol. 2, 1838, p. 189, pl. 7, fig. 10. Messina.

Lampanyctus bonapartii BONAPARTE, Iconogr. Fauna Italica, Pesc. vol. 3, pt. 1, fasc. 27, 1840, description, pl., fig. 5 (Italy).

Scopelus bonapartii GÜNTHER, Cat. Fishes Brit. Mus., vol. 5, 1864, p. 414 (Mediterranean). --CANESTRINI, Fauna Italica, Pesci, 1874, p. 125 (Sicily).

Lampanyctus gemmifer GOODE and BEAN, Oceanic Ichth., 1895, p. 80, pl. 23, fig. 88. N. 39°39'45" W. 71°35'15", 538 fathoms, Grand Banks. --JORDAN and EVERMANN, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 559 (compiled). --TAANING, Vidensk. Medd. Dansk Naturh. Foren. Köbenhavn, vol. 86, 1928, p. 67 (diagnosis in key). --BORODIN, Bull. Vanderbilt Oceanogr. Mus., vol. 1, art. 1, 1928, p. 11 (Jamaica).

Myctophum (Lampanyctus) gemmifer BRAUER, Zool. Anzeiger, vol. 28, Nr. 10, Dec. 20, 1904, p. 397 (diagnosis in key); Deutsch. Tiefsee Exp. Valdivia, vol. , Tiefsee-Fische, 1906, p. 246 (part). --ZUGMAYER, Rés. Camp. Sci. Monaco, vol. 35, 1911, p. 40 (Madeira, 2286 meters). -- MURRAY and HJORT, The Depths of the Ocean, 1912, p. 613 (Azores, 1235 meters). --PAPPENHEIM, Deutsch. Südpolar Exp., vol. 15, Zool. pt. 7, 1914, p. 187 (N. 24°4' W. 32°21' north west of Cape Verde Islands, 20 meters).

Depth 5 to 6 1/3; head 3 to 3 1/2, width 2 1/5 to 3. Snout 6 1/5 to 7 1/2 in head from snout tip; eye 4 2/5 to 5, greater than snout, 1 1/8 to 1 1/4 in interorbital; maxillary reaches 1 1/2 to 2 1/5 eye diameters beyond eye though not quite to hind well inclined preopercle edge, slender, length 1 1/4 to 1 2/5 in head from snout tip; interorbital 3 1/2 to 5, level. Gill rakers 4 or 5 + 10, slender, lanceolate, 1 to 1 1/5 in eye; gill filaments 1 2/3 in gill rakers.

Scales 38 to 40 in lateral line to caudal base, enlarged, deep, narrowly imbricated; 3 above, 3 below, 14 predorsal to occiput. Caudal base scaly. Scales all very caducous, mostly lost in preserved examples.

One small infero-antorbital photophore; 3 on cheek, first rather close above middle of maxillary length, second postocular above first, third little before hind maxillary end on line with first and lower eye edge; 1 humeral, little before posterior photophore on cheek; 2 operculars, upper larger, in line with lower eye edge and second pectoral photophore, lower usually veiled, behind and below hind maxillary end; 3 veiled equidistant branchiostegals; 5 pectorals, first interspace greatest, fourth photophore little before or over third pectoral; at same level as upper subpectoral; 1 suprapectoral, rather close below lateral line and little behind first pectoral; 2 subpectorals, first or lower little behind second pectoral below pectoral fin base, upper close before bases of upper pectoral rays, all subpectorals and suprapectoral in same inclined line; 4 or 5 ventrals, usually equidistant at same level (sometimes third elevated above interspace between second and fourth though not quite so high as lower subpectoral; 1 supraventral, slightly above middle in space between ventral fin origin and lateral line; 7 + 9, anteroanals slightly arched from anal fin base, posteroanals behind anal fin base; 3 supraanals, first over or behind third ventral, second slightly higher than first ray at level with upper subpectoral and fourth pectoral over or little behind fourth ventral and [third close below lateral line over anal fin origin before first anteroanal; 2 posterolaterals, first posterior though little nearer last anteroanal than uppermost posterolateral which close below lateral line; 2 precaudals at base of lower caudal lobe, first or lower opposite though well removed from third or upper which close below end of lateral line. Supracaudal luminous plates ? 3 to 4, infracaudals 6 to 6.

D. III, 11, I, first branched ray 1 2/5 to 2 1/5 in total head length; adipose fin 4 1/4 to 5 1/2; A. III, 13, I to III, 15, I, first branched ray 1 2/3 to 2 1/8; caudal 1 1/10, forked; least depth of caudal peduncle 2 2/3 to 4; ventral 1 4/5 to 2; pectoral about 3 to 3 1/8 in combined head and body to caudal base.

Dull brownish, scale pockets dusky. Iris deep brown. Opercle and inside mouth dusky to blackish. Iris gray. Fins pale to whitish.

Atlantic and Mediterranean.

35604 U. S. N. M. N. 39° W. 71°. Albatross Collection. Length 173 mm. Type of Lampanyctus gemmifer.

40049 U. S. N. M. Nice, France. Florence Museum. Length 203 mm.

49350 U. S. N. M. Nice. M. Bellotti. Length 165 mm.

and A.N.S.P. Messina, Italy. C. L. Bonaparte Collection (467). Dr. T. B. Wilson. Length 53 to 81 mm. 2 examples. In very poor preservation. Largely agree with COCCO'S figure of Nyctophus bonapartii. This shows the pectoral fin reaching back far as last fourth in the anal base while in my specimens all damaged now probably never extended beyond the anal fin origin. In the larger specimen above from Nice the pectorals do not appear to have extended beyond the middle of the depressed ventrals.

Lampanyctus tanningi Parr

Lampanyctus tanningi PARR, Proc. U. S. Nat. Mus., vol. 76, 1929, p. 27, Exuma Sound, Bahamas.

Myctophum (Lampanyctus) gemmifer (not GOODE and BEAN) BRAUER, Deutsch. Tiefsee Exp. Valdivia, vol. 5, Tiefsee-Fische, 1906, p. 246, fig. 163 (German South Polar Expedition). --ZUGMAYER, Rés. Camp. Sci. Monaco, vol. 35, 1911, p. 40 (off Portugal). --PAPPENHEIM, Deutsch. Südpolar Exp., vol. 15, pt. , 1914, p.

Lampanyctus gemmifer TAANING, Rep. Danish Oceanogr. Exp. Med., No. 5, vol. 2, A. 7, 1918, p. 108, figs. 42-43 (Mediterranean; Atlantic); Vidensk. Medd. Dansk Naturh. Foren. Köbenhavn, vol. 86, 1928, p. 67 (North Atlantic; diagnosis in key). --PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. (90) 112 (N. 22° to 32° W. 64° to 76°, 5000 to 8000 feet).

Depth 5; head 3 3/5, width 2 1/2. Snout 5 3/4 in head; eye 4 4/5, greater than snout, 1 1/5? in interorbital; maxillary extends 1 1/2 eye diameters behind eye though not quite to hind oblique preopercle edge, slender, length 1 1/3 in head; interorbital 3 3/4, convex. Gill rakers 4 + 11, lanceolate, slender, equal eye; gill filaments 3/5 gill rakers.

Scales 34 in lateral line to caudal base, not enlarged; 3 above, 3 below. Scales very caducous, all fallen.

Small supero-anterorbital photophore; cheek with postocular photophore little less than eye diameter distant from eye, another lower before hind maxillary end; 2 operculars, upper in line with lower eye edge and upper subpectoral, close behind hind maxillary end; 3 equidistant veiled branchiostegals; 5 pectorals, first interspace longest, fourth level with upper subpectoral and little behind third; 1 suprapectoral at upper 2/5 between lateral line and pectoral fin origin, before upper subpectoral; 2 subpectorals, first or lower little below upper and close before and below lowest pectoral fin rays, upper close below pectoral fin origin; 4 ventrals, level, about equidistant; 1 supraventral, midway between lateral line and ventral fin origin; 6 or 7 + 7 anals, posteroanals behind anal fin base; 3 supraanals, first level with fourth pectoral over and behind second ventral, second or median level with first or scarcely elevated and over fourth ventral, third or uppermost over and slightly behind second or over vent on lateral line; 2 posterolaterals, first behind and above last anteroanal, third or uppermost still posterior on lateral line; 4 precaudals, first and second close, on lower rudimentary caudal rays, third still higher and posterior, fourth still posterior at end of lateral line. Supracaudal luminous scales 4, infracaudal 8.

D. III, 10, I, first branched ray 1 1/8 in total head length; adipose fin 3; A. III, 14, I, first branched ray 1 1/2; caudal 1 1/4?, forked; least depth of caudal peduncle 2 2/5; pectoral 1 1/2; ventral 1 4/5.

Dark brown, scale pockets blackish. Head and inside gill opening blackish. Iris dark gray. Fins brownish.

Atlantic Ocean. Distinguished from Lampanyctus crocodilus (RISSO) by the absence of luminous scales on the adpiose fin and by the presence of only 2 photophores on each cheek.

89715 U. S. N. M. N. 24°51' W. 76°37'30", Exuma Sound, Bahamas. Pawnee Station 26. March 17, 1927. Bingham Oceanographic Collection. Length 58 mm. Paratype.

Genus Diaphus Eigenmann and Eigenmann

Diaphus EIGENMANN and EIGENMANN, Proc. California Acad. Sci., ser. 2, vol. 3, 1890, p. 3. Type Diaphus theta EIGENMANN and EIGENMANN, orthotypic.

Aethoprora GOODE and BEAN, Oceanic Ichth., 1895, p. 86. Type Myctophum metopoclampum COCCO, designated by JORDAN, Genera of Fishes, pt. 4, 1920, p. 467.

Collettia GOODE and BEAN, Oceanic Ichth., 1895, p. 88. Type Nychtophus rafinesquii COCCO, orthotypic.

Lamprossa JORDAN and HUBBS, Mem. Carnegie Mus., vol. 10, No. 2, June 27, 1925, p. 156. Type Diaphus anteorbitalis GILBERT, orthotypic.

Panthophos JORDAN and HUBBS, Mem. Carnegie Mus., vol. 10, No. 2, June 27, 1925, p. 156. Type Diaphus glandulifer GILBERT, orthotypic.

Antorbital luminous organs 1 or 2 and sometimes 1 or 2 suborbitals, often greatly englarged. Pectoral photophores 5, penultimate always out of level of series, greatest interspace between first and second. Suprapectoral always above level of pectoral fin base. Both subpectorals in line with pectoral, oblique to base of pectoral fin. Ventrals 5, first 3 progressively elevated. Anals in 2 groups, 4 to 6 + 4 to 6. Supraanals in inclined line. One posteroanal. Precaudals always 4, separated from posteroanals. Photophores with more or less distinct dividing black septum. No luminous organs dorsally on lateral line. No precaudal luminous scales though one often at suprapectoral.

Diaphus parri Tåning

Diaphus parri TANNING, Vidensk. Medd. Dansk Naturh. Foren.,

band 94, 1932, p. 135, fig. 7 (type locality - Lat. 27°21' S.,

Long. 175°11' E., south east of New Caledonia).

D. 5185 p. 4486. Length 68 mm.

Analysis of species

a[1]. No antorbital organs (upper represented by densely pigmented black globular body, apparently no longer functional). - - - - - - - - - - - - - - - - - - urolampus.

a[2]. One antorbital each side, entirely above nostril; no supraorbital or suborbital luminous organs.

b[1]. Antorbitals very small, separated from each other by wide, median interspace.

c[1]. Upper supraanal and posterolateral in contact with or close to lateral line; supraventral nearer lateral line than ventral fin base.

d[1]. First anteroanal well elevated, nearly level with second supraanal; anals 6 or 7 + 5 or 6. agassizi.

d[2]. First anteroanal well elevated; anals 5 + 5 or 6; 2 supraanals; suprapectoral well below hind opercle angle; supraventral nearer ventral base than lateral line. - - - - - - - - - - - - gudgeri.

b[2]. Upper supraanal and posterolateral well below lateral line; supraventral little nearer lateral line than ventral fin base; first anteroanal well elevated, series crescentic; intervals between last 2 pre-caudals greater than other intervals. - - faustinoi.

b^3. Upper supraanal and posterolateral well below lateral line; supraventral midway between lateral line and ventral fin base or little nearer latter; first anteroanal not elevated.

e^1. Last anteroanal well elevated, appears as additional posterolateral; interval of last 2 precaudals not greatly more than other precaudal intervals. - - - - - gemellari.

e^2. Last anteroanal less abruptly elevated; interval between last 2 precaudals much greater than other precaudal intervals. - - - - - dofleini.

e^3. Last anteroanal not elevated; precaudals equidistant; anals 5 + 6. - - - - - - - -nipponensis.

c^2. All upper photophores far below lateral line; 1 posterosuborbital photophore; anals 3 + 3.-harveyi.

b^4. Antorbitals large, contiguous medially on snout. - microps.

a^3. One antorbital each side, extends from above nostril to below, reaching level of lower eye edge; antorbitals of two sides widely separated; no supraorbital or suborbital organs. - - - - - - - - - - - - - - - - garmani.

regani.

reidi.

a[4]. One antorbital each side, entirely above nostril; no lower antorbital, but single, distinct, simple suborbital at lower eye edge, widely separated from (upper) antorbital; no supraorbital organ.

f[1]. Anal fin origin well behind or hardly opposite end of dorsal fin base.

g[1]. Luminous scales at suprapectoral, supra-anal, posterolateral and last precaudal, usually at supraventral, fourth pectoral (elevated) and second and third ventrals, occasionally at first anteroanal and third precaudal; upper supraanal, posterolateral and last precaudal close to lateral line; supraventral much nearer lateral line than ventral fin base; antorbital extends mesad nearly to median crest; suborbital large, below or slightly behind eye center; anals 6 + 5; eye 4. - - - - - - - - - - - - - - - - - glandulifer.

g^2. Luminous scale only at suprapectoral; upper supraanal, posterolateral and last precaudal somewhat below lateral line; supraventral nearer ventral base than lateral line; anals 5 + 4 or 5; first anteroanal elevated; antorbitals of 2 sides very large, only separated by narrow median crest; suborbital small, narrow, under front half of eye; eye 3. - - - - - - - - - - - - - - - - fulgens.

g^3. Luminous scale only at suprapectoral; upper supraanal and posterolateral in contact with and last precaudal close to lateral line; supraventral nearer lateral line than ventral base; anals 8 + 5; antorbitals of 2 sides narrow and widely separated; head 3; depth 4; suborbital small, below eye center; eye 3 3/5. - vanhoeffeni.

g^4. Luminous scale only at suprapectoral; upper supraanal and posterolateral at lateral line; supraventral midway between lateral line and ventral base or nearer former; antorbitals on 2 sides small and widely separated from each other; suborbital minute, just before vertical from front edge of lens; depth 4 1/2 to 5 1/3; anals 6 to 8 + 4 to 6, first anteroanal not elevated; head 3 1/5 to 3 3/5. - dumerilii.

g^5. Luminous scale only at suprapectoral; upper supraanal 2 diameters, posterolateral 1 diameter below lateral line; last precaudal scarcely above midway between ventral profile of caudal base and end of lateral line; supraventral midway between lateral line and ventral base; antorbital very small, scarcely half large as moderate suborbital which below middle of eye; antorhitals widely separate; anals 6 + 5, first anteroabal elevated; eye 3 1/2.-hypolucens.

g[6]. Luminous scale only at suprapectoral; upper supraanal 1 diameter and posterolateral 1 diameter below lateral line; last precaudal 1 diameter below end of lateral line; supraventral nearer ventral base than lateral line; anals 4 + 4, in crescent; eye 3 1/10 to 3 1/5. - - - - - - - - boringi.

f[2]. Anal fin origin clearly before end of dorsal fin base.

h[1]. Antorbitals on 2 sides moderate, widely separate; suborbital very large, occupies nearly entire ventral edge of orbit; anal origin opposite last third of dorsal fin base; eye 3 1/2 to 4. - - - - - - - - - - - - - - - - - lutkeni.

h[2]. Antorbital on each side extends mesad to median crest of snout; suborbital moderate, somewhat behind eye center; anal origin opposite last sixth of dorsal fin base; eye 3 3/5.-suborbitalis.

a[5]. One single antorbital each side entirely above nostril; 2 suborbitals, larger anterior and small posterior organ, entirely separate or connected with each other by narrow string of black; antorbitals probably always large and narrowly separated.

i[1]. No luminous scale at suprapectoral; front suborbital organ reaches nostril; anals 4 or 5 / 4. - - - - - - - - - - - - - - - brachycephalus.

i[2]. Luminous scale at suprapectoral.

j[1]. Eye moderate, 3 in head.

k[1]. Depth 3 1/4; suborbital spot at middle of lower eye edge.-longleyi.

k[2]. Depth 4 1/3; no suborbital spot at middle of lower eye edge. - - - - - - - - - - - - - -intermedius.

j[2]. Eye large, 2 3/5 to 2 4/5; antorbitals very large, circular, only narrowly separated in median. - - rafinesquii.

a[6]. One or 2 antorbitals, upper above nostril, very small or absent; separate narrow supraorbital organ along upper eye edge; long suborbital organ or suborbital extension of lower antorbital along lower orbital edge; circumorbital organs on 2 sides widely separated from each other.

l[1]. Eye 3 4/5; upper antorbital present. - - - - - - - - - - anterorbitalis.

l[2]. Eye 4 2/3; upper antorbital absent? - - -adenomus.

a[7]. Two antorbitals on each side, both very large, of simple outlines and separated from each other by horizontal boundary line so upper organ entirely above lower; upper part of lower antorbital expanding above nostril and extending mesad to median ethmoidal crest, which barely separates organs of 2 sides; upper antorbitals also meeting at median crest; no separate supraorbital or suborbital organs.

m[1]. Supraventral nearer ventral base than lateral line. - macrophus.

m[2]. Supraventral nearer lateral line than ventral base. - - monodi.

a[8]. Two antorbitals each side, both very large, separated from each other by horizontal boundary line so upper organ entirely above lower; upper antorbital with sharply defined, small, circular, luminous body constricted somewhat over half way off from its lower lateral edge above eye; lower antorbital with narrow extension along ventral edge of orbit, ending in similar circular extension below or slightly behind eye center; upper antorbitals of 2 sides meeting at median crest; no separate supraorbital or suborbital organs. - - - - - metopoclampus.

a[9]. Two antorbitals on each side, lower very large, extend upwards above nostrils to top of snout where reaching level of upper edge of upper antorbitals or even higher; upper comparatively small, close to upper margin of orbit and separated from upper lateral corner of lower antorbital by nearly vertical septum; upper antorbitals thus widely separated from each other by upper parts of lower antorbitals, which meeting or only narrow separated in front along median ethmoidal crest; no separate supraorbital or suborbital organs.

n[1]. Eye 2 1/2 to 2 4/5; Dorsal 14 or 15; Anal 13 to 16; lower antorbital extending somewhat along lower margin of orbit. - - - - -effulgens.

n[2]. Eye 3 to 3 2/5.

o[1]. Lower antorbital with ventral extension along lower edge of eye reaching to or past vertical from its center; Dorsal 17; Anal 16. - - - - - - - - chrysorhynchus.

o^{2}. Lower antorbital entirely in advance of vertical from anterior margin of pupil; Dorsal 14 or 15; Anal 14 or 15. - - - - - - - - - - perspicillatus.

a^{10}. Two antorbital organs on each side, upper rounded, above nostril and entirely above lower antorbital, which long and narrow and usually with narrow dorsal extension between nostril and eye reaching to or nearly to ventral edge of upper antorbital; lower antorbitals of 2 sides always widely separated from each other; no supraorbital or separate suborbital organs.

p^{1}. Upper antorbitals large, circular, only separated from each other by median interspace not wider than half their diameter; lower antorbital forming angle dividing into upper and lower portion without separating one from another. - - - - lucidus.

p^2. Upper antorbitals small and widely separated from each other.

q^1. Upper supraanal, posterolateral and preopercle far below lateral line; eye 4; anals 6 + 5; supraventral nearer ventrals than lateral line; lower antorbital extending somewhat along lower edge of orbit. - -caeruleus.

q^2. Upper supraanal less than diameter below lateral line, upper posterolateral and precaudal less 1 diameter below lateral line; eye 4 1/4 to 4 1/3; anals 4 + 6; supraventral little nearer lateral line than ventral fin base.parri.

q^3. Upper supraanal and upper posterolateral 2 diameters lateral line; eye 4 2/5; anals 4 + 4; supraventral at lowest third between ventral base and lateral line. *pacificus.*

p^3. Upper supraanal and posterolateral in contact with or very near lateral line (rarely over 1 and always less than 2 diameters below).

r^1. Lower antorbital with hind ventral extension along lower edge of eye reaching to or beyond hind eye edge; supraventral midway between ventral fins and lateral line; head 3 3/5, eye 3 1/2; anals 6 or 7 + 4 or 5. - - - - *sagamiensis.*

r^{2}. No posterior
extension of
lower
antorbital.

s^{1}. Head 2 3/5; eye
4; depth 3 3/5;
supraventral
slightly nearer
ventral fin
base than
lateral line;
anals 6 + 5. -
- - - - -tanakae.

s^{2}. Head 3 1/3 to
3 9/10; eye
4 1/2 to 5 1/5;
supraventral
midway between
lateral line and
ventral fin base.
- - problematicus.

s^{3}. Head 3 1/5 to
3 4/5; eye 3 to
4 1/5.

t[1]. Depth 4 4/5 to 5 2/5; supraventral nearer lateral line than ventral fin base.

u[1]. Ventral base below or little behind dorsal fin origin; head 3 1/5 to 3 1/2. - - splendidus.

u[2]. Ventral base before dorsal fin origin; head 3 3/5. - - signatus.

t[2]. Depth 3 7/8 to 4.

v[1]. Head 3 2/5 to 3 1/2; ventral origin well before dorsal origin. senoi.

v^2. Head 3 1/2
to 3 3/5;
ventral
origin
below
dorsal
origin. -
- ehrhorni.

s^4. Head 4; eye 4 1/2;
depth 4 2/5;
ventral origin
below or
slightly behind
dorsal origin. -
- - - - - - latus.

Diaphus urolampus Gilbert and Cramer

Diaphus urolampus GILBERT and CRAMER, Proc. U. S. Nat. Mus., vol. 19, 1896, p. 408, pl. 38, fig. 1. Off Hawaii, in 295 to 310 fathoms. --GILBERT, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905), p. 591 (vicinity of Kauai, in 305 to 318 fathoms). --JORDAN and JORDAN, Mem. Carnegie Mus., vol. , No. 1, Dec. 1922, p. 12 (reference). --PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 115 (note); Proc. U. S. Nat. Mus., vol. 76, art. 10, 1929, p. 28, fig. 14 (type). --FOWLER, Occas. Pap. Bishop Mus., vol. 9, No. 18, Feb. 1932, p. 4 (reference).

Myctophum (Diaphus) urolampus BRAUER, Deutsch. Tiefsee Exp. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 164 (diagnosis in key).

Myctophum dumerili (not BLEEKER) WEBER and BEAUFORT, Fishes Indo Austral. Archipelago, vol. 2, 1913, p. 166 (part).

Diaphus dumerili FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 68 (Hawaii).

Depth 4 3/4 to 4 4/5; head 3 1/3 to 3 2/5, width 2 1/3 to 2 2/5. Snout 7 to 8 3/4 in head from snout tip; eye 3 1/5 to 3 1/4, greater than snout or interorbital; maxillary reaches well beyond eye though not quite reaching well inclined hind preopercle edge, slender, length 1 1/3 to 1 2/7 in head from snout tip; interorbital 3 1/4 to 3 1/2, nearly level. Gill rakers 7 + 14, lanceolate, 1 3/4 in eye, twice gill filaments.

Scales 29 or 30 in lateral line to caudal base and 2 or 3 more on latter, not enlarged, tubes simple, conspicuous; 4 above, ? below, 10 predorsal (pockets). Scales thin, deciduous, cycloid. Axillary ventral scale 1/3 ventral fin.

Single small well elevated preorbital photophore; 2 operculars, upper larger and on line with lower eye edge and upper subpectoral, lower minute, veiled, behind rictus; 3 veiled equidistant branchiostegals; 5 pectorals, first interspace greatest; fourth photophore elevated little above level of upper subpectoral over and behind third pectoral; 1 suprapectoral, close below lateral line behind its origin; 2 subpectorals, first or lower midway in inclined line from first pectoral and upper subpectoral, which close before bases of lowest pectoral rays; 5 ventrals, second and third elevated nearly at same level or nearly to level of upper subpectoral, last interspace longest; 1 supraventral, close below lateral line over ventral fin bases; 7 + 6 anals, first anteroanal elevated till little below level of lower supraanal close before second anteroanal and last anteroanal little elevated from fifth, posteroanals all behind anal fin base; 2 supraanals, first or lower about midway between last ventral and uppermost supraanal which close below lateral line, also first little advanced or not quite forming continuous even series from last ventral; 1 posterolateral close below lateral line over break in anals; 4 precaudals in arc on lower caudal base progressively upward, with last rather close below end of lateral line. Long supracaudal luminous plate from behind adipose fin to caudal.

D. III, 10, I, or III, 9, I, first branched ray 1 1/4 to 1 1/3 in total head length; adipose fin length 3 3/4 to 4 1/3; A. III, 10, I, to III, 12, I, first branched ray, 1 7/8 to 2; caudal subequal with head, well forked; least depth of caudal peduncle 3 1/5 to 3 1/4; pectoral 1 3/4; ventral 1 2/3.

Body dark brown, skin sprinkled with darker dots, scale pockets dusky or darker. Adherent scales, sides of head and iris silvery white, with bright iridescent tints, purplish on opercles. Fins all very light brown to whitish, articulations of rays darker.

Hawaiian Islands. This species as sketched by Parr does not agree with the types as he shows 3 supraanal photophores, the first and second surely wrongly placed. Where he indicates a second it should be slightly advanced from the plane with the last ventral and the uppermost supraanal. The first is surely an erroneous interpolation. The figure in question further omits the operculars. That the supraanals were important features in Gilbert's mind is shown in his subsequent remarks as he calls attention to "the presence of but 2 (instead of 3) supra-anals" and even goes so far as to suggest it may be the type of a new genus "distinguished by the absence of preocular photophores", a mistaken premise as Parr has shown.

47709 U. S. N. M. Albatross Collection (3472). Length 103 to 187 mm. Type (largest) and 2 paratypes.

47717 U. S. N. M. Albatross Collection (8407). Length 58 mm., caudal tips damaged.

Diaphus agassizii Gilbert

Diaphus agassizii GILBERT, Mem. Mus. Comp. Zool., vol. 26, No. 6, 1908, p. 226, pl. 2. Nukahiva, Marquesas Group, 300 fathoms. --NORMAN, Ann. Mag. Nat. Hist., ser. 10, vol. 4, Nov. 1929, p. 510, fig. 1 (Matuku, Fiji Islands, 315 fathoms). -- FOWLER, Proc. U. S. Nat. Mus., vol. 80, art. 6, 1932, p. 4 (Taiohae, Marquesas Islands).

Diaphus agassizi GILBERT, Mem. Carnegie Mus., vol. 6, No. 2, p. 85 (Suruga Bay, Japan, 300 fathoms). --PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 115 (note). -- FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 68 (compiled). -- PARR, Proc. U. S. Nat. Mus., vol. 79, art. 10, 1929, p. 30 (type).

Scopelus dumerilii (not BLEEKER) GÜNTHER, Rep. Voy. Challenger, vol. 22, 1887, p. 198 (Matuku specimen).

Japan, Oceania. The suprapectoral photophore clearly above hind angle of opercle, as shown in Gilbert's figure and still evident in his wretched minute type specimen. Also the supraventral lies about upper 2/5 or near upper 2/3 of space between lateral line and ventral fin base. Diaphus agassizi has no antorbital luminous organ other than a single superior minute antorbital photophore, though no infraorbital or antero-infraorbital.

75764 U. S. N. M. Albatross Collection. September 15, 1899. Length 21 mm., caudal tips damaged. Type.

74649 U. S. N. M. Albatross Collection (5063). Length 19 to 24 mm. 7 examples.

74650 U. S. N. M. Albatross Collection (4969). Length 17 mm.

74651 U. S. N. M. Albatross Collection (5064). Length 12 to 26 mm. 7 examples.

Diaphus gudgeri new species

Depth 4 2/5 to 4 3/4; head 3 to 3 1/8, width 2 1/2 to 2 3/4. Snout 6 to 6 3/5 in head; eye 3 1/5 to 4 1/4, greater than snout, greater than interorbital in young to 1 1/5 in interorbital with age; maxillary reaches well beyond hind eye edge, though not to well inclined hind preopercle edge, slender, length 1 1/4 to 1 1/3 in head; interorbital 3 1/8 to 3 1/2, convex. Gill rakers 6 + 14, lanceolate, equal eye; gill filaments 3/5 gill rakers.

Scales 35 in lateral line to caudal base, not enlarged, tubes simple, prominent; 3 above, 4 below. Caudal base scaly. Scales with 4 basal radiating striae; circuli moderately fine, obsolete apically.

Small antorbital luminous body at middle of front eye edge; 1 small opercular photophore, well above hind end of maxillary though slightly below line from lower eye edge to upper suprapectoral; 3 equidistant veiled large branchiostegals; 5 pectorals, second interspace longest, fourth photophore little above and between third and fifth; 1 supra-pectoral at lowest fourth between pectoral fin origin and lateral line; 2 subpectorals, form greatly inclined line from first pectoral, equidistant, upper close before bases of lowest pectoral fin rays; 5 ventrals, third elevated level with pectoral fin origin over interspace between second and fourth ventrals or little nearer last; 1 supraventral at lower 2/5 between lateral line and ventral fin origin or level with suprapectoral; 5 + 5 or 6 anals, first anteroanal elevated close before second, slightly higher than third ventral or little lower than supraventral and fifth little higher than fourth, posteroanals behind anal fin base; 2 supraanals, first little higher and behind last ventral and upper rather close below lateral line just before anal fin origin; 2 posterolaterals, first or lower forms continuous arc with last anteroanal and upper posterolateral which equally below lateral line as uppermost supraanal; arc of 4 precaudals, upper behind and little below end of lateral line. Luminous scale below supra-pectoral.

D. III, 10, I or III, 11, I, first branched ray 1 1/5 to 1 2/5 in head; adipose fin 4 to 5; A. III, 10, I to III, 12, I, first branched ray 2; caudal 1 1/8 to 1 1/5, well emarginate; least depth of caudal peduncle 2 4/5 to 3 1/2; pectoral 2 1/2 to 2 7/8; ventral 1 1/2 to 1 4/5.

Skin brown, with more or less scattered dusky specks or dots. Scales, sides of head and iris silvery white. Fins whitish.

Diagnosis. Related to Diaphus agassizii but with obsolete narrow antorbital luminous organ and the suprapectoral photophore well below the hind angle of the opercle or level with the supraventral photophore, which nearer pectoral base than lateral line.

35 8.

Type. No. U. S. N. M.

It is also greatly like Diaphus kylei Tåning, but differs in the arrangement of the photophores. In that species the small antorbital organ is shown level with the upper eye edge, first interspace of pectoral photophores longest, upper supraanal behind anal fin origin and shown well below lateral line.

D. 5544. Coronado Point, S. 37° W., 21.5 miles (N. Lat. 8°16'30" E. Long. 122°26'30"), northern Mindanao and vicinity. 759 fathoms. September 6, 1909. Length 58 mm. Type.

D.5451. East Point (Batan Island), S. 38° E., 8.2 miles (N. Lat. 13°22'22" E. Long. 124°00'48"). 380 fathoms. June 5, 1909. Length 36 mm.

D. 5416. Lauis Point Light, N. 12° E., 2.9 miles (N. Lat. 10°11'30" E. Long. 53°3"), between Cebu and Bohol. 150 fathoms. March 25, 1909. Length 40 to 46 mm. 3 examples.

Diaphus faustinoi new species

Depth 3 4/5; head 2 3/4, width 2 1/2. Snout 7 1/4 in head; eye 3 3/4, greater than snout or interorbital; maxillary extends well behind eye but not to well inclined hind preopercle edge, slender, length 1 2/5 in head; interorbital 3 1/8, low. Gill rakers 7 + 12, lanceolate, 1 1/2 eye; gill filaments 2/3 of gill rakers.

Scales 30? in lateral line to caudal base, not enlarged, tubes prominent, simple; 3 above, 3 below. Caudal base scaly. Scales very caducous, most all fallen.

Antorbital luminous organ rather long, along greater part of front eye edge; 1 opercular photophore on line with lower eye edge and pectoral fin origin; 3 equidistant veiled branchiostegals; 5 pectorals, first interspace longest, fourth photophore elevated nearly level with upper subpectoral, over third posteriorly; 1 suprapectoral, little behind pectoral origin about lowest fourth between pectoral fin origin and lateral line; 2 subpectorals, first or lower midway between first pectoral and upper subpectoral, which close below bases of lowest pectoral rays; 4 ventrals, first and second close, third well elevated or about level horizontally with upper subpectoral or midway between second and fourth; 1 supraventral about upper 2/5 between lateral line and ventral fin base; 4 + 4 anals, first elevated level with third ventrals; 3 supraanals in line from last ventral, uppermost well below lateral line or about last third between lateral line and vent; 2 posterolaterals, first or lower little behind and above last anteroanal, upper higher though well below lateral line; 4 precaudals, equidistant, last 2 arching up towards and below lateral line. Suprapectoral with pale luminous body below about twice its own diameter.

D. III, 10, I, first branched ray 1 2/5 in head; adipose fin 5; A. III, 9, I, first branched ray 2 1/5; caudal 1 1/5, well forked; least depth of caudal peduncle 3, pectoral 3 1/5; ventral 1 3/4.

Dark or dusky dots scattered over back, on head and lower sides. Sides of head, iris and adherent scales silvery white, with iridescent reflections. Fins whitish with dusky or dark lines formed at articulations.

Diagnosis. Greatly like Brauer's figure of Myctophum (Diaphus) gemmellari(COCCO) though the suprapectoral photophore slightly lower than the supraventral in Diaphus faustinoi.

Type No. , U. S. N. M.

D. 5190. Pescador Island, S. 9° E., 10.70 miles (N. Lat. 10°08'15" E. Long. 123°16'45"), Tanon Strait, east coast of Negros. 295 fathoms. April 1, 1908. Length 34 mm.

Diaphus gemellarii (Cocco)

Nycthophus gemellarii COCCO, Nuovi Ann. Sci. Nat. Bologna, ser. 1, vol. 2, 1838, p. 186, pl. 7, fig. 9. Messina.

Myctophum gemellari BONAPARTE, Iconogr. Fauna Italica, Pesc., vol. 3, pt. 1, fasc. 28, 1840, description (not figure) (Messina).

Myctophum (Nyctophus) gemellarii BRAUER, Zool. Anzeiger, vol. 28, Nr. 10, Dec. 20, 1904, p. 392 (diagnosis in key).

Myctophum (Diaphus) gemellari BRAUER, Deutsch. Tiefsee Exp. Valdivia, vol. 15, Fiefsee-Fische, 1906, p. 212, text fig. 130 (not 131) (N. 24°43'4" W. 17°1'3", south of Canaries; N. 1°27'8" W. 10°16'5", Gulf of Guinea; S. 3°55' E. 7°48'5"; S. 34°13'6" E. 80°30'9", north of New Amsterdam; S. 30°6'7" E. 87°50'4"). --MURRAY and HJORT, The Depths of the Ocean, 1912, p. 613 (N. 29°6' W. 25°2'; N. 34°59' W. 33°1', 2615 to 2865 meters; N. 36°53' W. 29°47', 3239 meters). --FAGE, Ann. Inst. Océanogr. Monaco, vol. 1, No. 7, 1910. --ZUGMAYER, Rés. Camp. Sci. Monaco, fasc. 35, 1911, p. 29, pl. 1, fig. 8 (N. 41°29' W. 15°44', 2000 meters).

Scopelus gemellari VALENCIENNES, Hist. Nat. Poiss., vol. 22, 1849, p. 445 (on BONAPARTE).

Scopelus gemellarii GÜNTHER, Cat. Fishes Brit. Mus., vol. 5, 1864, p. 415 (compiled)./--VAILLANT, Exped. Sci. Travailleur et Talisman, Poiss., 1888, p. 117 (coasts of Morocco, Canaries, Soudan, 550 to 1635 meters). --CARUS, Prodr. Fauna Medit., vol. 2, 1893, p. 564 (compiled).--CANESTRINI, Fauna Italica, Pesci, 1874, p. 126 (Sicily). --

Scopelus (Nyctophus gemellarii LÜTKEN, Kon. Dansk. Vidensk. Selsk. Skrift. Kjöbenhavn, ser. 6, vol. 7, 1892, p. 260 (Messina).

Lampanyctus gemellarii GOODE and BEAN, Oceanic Ichth., 1895, p. 80, pl. 23, fig. 87 (Messina). --FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1911(1912), p. 568 (Bonaparte example).

Diaphus gemellarii TAANING, Rep. Danish Oceanogr. Exp. Med., No. 5, vol. 2, A. 7, 1918, p. 73, figs. 27 to 28 (Mediterranean); Vidensk. Medd. Dansk Naturh. Foren. Köbenhavn, vol. 86, 1928, p. 58 (North Atlantic, Mediterranean).

Diaphus gemellari PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, 1928, p. (115) 123, figs. 21 (caudal peduncle below) 22 preanal photophores) (N. 23° to 32° W. 64° to 76°, 5000 to 8000 feet).

? Myctophum refinesquii (not COCCO) BONAPARTE, Inconogr. Fauna Italica, Pesc. vol. 3, pt. 1, fasc. 28, 1840 (not description), pl. , fig. 2.

Scopelus uraecoclampus FACCIOLA, Nat. Sicil. Anim., vol. 3, 1882, p. 151. Messina.

Depth 4 1/8; head 3 1/5; width 2. Snout 5 3/4 in head; eye 4 1/4, greater than snout, 1 1/2 in interorbital; maxillary extends 1 1/2 eye diameters behind eye though not quite to well inclined hind preopercle edge, length 1 1/5 in head; interorbital 3 1/5, convex. Gill rakers 6 + 12, lanceolate, slender, equal eye; gill filaments 3/5 gill rakers.

Scales 32 in lateral line, not enlarged; 3 above, 3 below, 12 predorsal to occiput. Scales caducous, mostly fallen. Caudal base scaly.

Small antorbital photophore at upper front eye edge; 2 operculars, upper larger and on line from lower eye edge passing between subpectorals, lower close behind hind maxillary end; 3 equidistant veiled branchiostegals; 5 pectorals, first interspace longest, fourth spot elevated level with upper subpectoral little behind third pectoral; 1 suprapectoral, at lower third or fourth between lateral line and pectoral fin origin; 2 subpectorals, first or lower midway between upper and first pectoral, upper close below and before pectoral fin base; 5 ventrals, second and third progressively higher so third about level with pectoral fin origin, though well before fourth ventral; 1 supraventral, at lower 2/5 between lateral line and pectoral fin base; 5 + 5 anals, last anteroanals arch upward and appear contiguous with posterolateral, posteroanals behind anal fin base, level; 3 supraanals, in nearly inclined line, first low and above fifth ventral, second little higher and third over front of anal fin about upper 2/5 in space below lateral line to anal fin origin; 1 posterolateral, below front of adipose fin; 4 precaudals, inclined along lower caudal lobe basally, with fourth little below end of lateral line.

D. III, 13, I, first branched ray 1 1/4 in head; adipose fin 4 2/5; A. III, 11, I, first branched ray 2?; caudal 1 1/4?, forked; least depth of caudal peduncle 2 4/5; pectoral 4 1/2; ventral 2 ?.

Brown, scale pockets darker to dusky. Muzzle, jaws and fins all pale to whitish, with caudal base dusky. Iris dark gray.

Atlantic and Indian Oceans.

44170 U. S. N. M. Messina. Dr. H. Giglioli. Length 70 mm.

Diaphus dofleini (Zugmayer)

Myctophum (Lampanyctus) dofleini ZUGMAYER, Bull. Inst. Océanogr. Monaco, No. 193, Jan. 20, 1911, p. 3. N. 34°2' W. 12°21', 4000 meters; N. 37°39' E. 0°20', 2170 meters; N. 36°17' W. 1°58', 1800 meters; Rés. Camp. Sci. Monaco, vol. 35, 1911, p. 35, pl. 1, fig. 9 (types).

Diaphus dofleini TAANING, Rep. Danish Oceanogr. Exp. Med., No. 5, vol. 2, A. 7, 1918, p. 76, figs. 29-32 (Mediterranean, Messina, Atlantic); Vidensk. Medd. Dansk Naturh. Foren. København, vol. 86, 1928, p. 58 (North Atlantic, Mediterranean). --PARR, Bull. Bingham Collection, Oceanogr. ~~Expx~~ vol. 3, art. 3, 1928, p. (115) 124 (N. 32°24' W. 64°29', 5000).

Myctophum (Diaphus) gemellari (not COCCO) BRAUER, Deutsch. Tiefsee Exp. Valdivia, vol. 15, Tiefsee-Fische, 1906 (p. 213), fig. 131. -- Fage, Ann. Inst. Océanogr. Monaco, vol. 1, No. 7, 1910, p. , pl. 1.

Depth 3 3/4; head 2 9/10. Snout 5 1/3 in head; eye 4 3/5, greater than snout; maxillary extends 1 1/4 eye diameters behind eye, slender, length 1 1/3 in head; interorbital moderate.

Small antorbital photophore on upper front eye edge; 2 operculars, upper larger and little above upper hind end of maxillary; 3 branchiostegals; 5 pectorals, first interval greatly longer than others, fourth spot elevated till nearly level with upper subpectoral over interval between third and fifth pectorals; 1 supraventral, near lower third between lateral line and pectoral fin origin, little before upper subpectoral; 2 subpectorals, in line with first pectoral, first little nearer upper subpectoral which close before bases of lowest pectoral rays; 5 ventrals, first to third progressively elevated so that third slightly above level of fourth pectoral or first supraanal; 1 supraventral, midway between lateral line or ventral base or level with suprapectoral, uppermost supraanal and posterolateral; anals 5 + 5, level, posteroanals behind anal fin base; 3 supraanals, in very slightly angular short series, equidistant, arise from similar interval behind and above last ventral, uppermost midway between lateral line and anal fin origin; 1 posterolateral, rather close above and behind last anteroanal, to which little nearer than to lateral line; 4 precaudals, progressively elevated along lower base of caudal, series slightly curved posteriorly and fourth spot highest on body or much nearer lateral line than any other.

D. IV, 11, first branched ray 1 2/3 in head; adipose fin 3 7/8; A. III, 11, first branched ray 2; caudal 1 1/6, forked; least depth of caudal peduncle 2 1/2; pectoral 2 1/5; ventral 1 2/3.

(Brauer's fig. 131.)

Diaphus nipponensis Gilbert

Diaphus nipponensis GILBERT, Mem. Carnegie Mus., vol. 6, No. 2, August 1913, p. 86. South of Kagoshima, N. Lat. 30°34' E. Long. 129°22', in 300 fathoms. --PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 116 (reference); Proc. U. S. Nat. Mus., vol. 76, art. 10, 1930, p. 31, fig. 15 (type).

Depth 3 1/4; head 2 7/8, width 2. Snout 4 in head from its tip; eye 3 3/4, greater than snout, subequal with front of interorbital; maxillary extends well beyond eye, though not quite to well inclined hind preopercle edge, slender, length 1 1/3 in head from snout tip; interorbital 3 3/4, convex. Gill rakers about 7 + 10?, lanceolate, slender, greater than gill filaments or less than half of eye.

Scales 36 in lateral line to caudal base and 2 more on latter, none enlarged, moderate, tubes distinct. Scales rather adherent, though number now fallen.

Minute preorbital photophore on orbital rim level with nostril; 1 large opercular, nearly twice its diameter above hind end of maxillary; 3 equidistant veiled branchiostegals; 5 pectorals, first interspace greatest, fourth photophore behind and above third about level with upper subpectoral; 1 suprapectoral, low, above and before pectoral fin at lowest fourth of space between lateral line and pectoral fin origin; 2 subpectorals, lower or first midway in line from first pectoral to upper subpectoral, last before lower pectoral ray bases; 5 ventrals, progressively higher from first to third with third about level with upper subpectoral and fourth pectoral; 1 supraventral about lowest third between lateral line and ventral fin origin; 5 + 6 anals, posteroanals behind anal fin base; 3 supraanals in inclined line from over and little behind last ventral, about equidistant and 3 or uppermost over first anteroanal about midway in space between lateral line and first anteroanal; 1 posterolateral little above and opposite break in anals; 4 precaudals, equidistant, inclined in arc up to last which about midway in space below end of lateral line.

D. III, 13, first branched ray 2 in total head length; adipose fin nearly long as eye; A. II, 12, first branched ray 2 3/5 in total head length; caudal damaged; least depth of caudal peduncle 2 1/2; pectoral 4; ventral 2 1/5.

Skin light brown, scale pockets all dusted darker. Side of head and adherent scales with silvery luster. Fins whitish.

Japan.

74467 U. S. N. M. Albatross Collection (4920). Length 18 mm., caudal tips damaged. Type.

Diaphus harveyi new species

Depth 3 2/3; head 3, width 2 1/8. Snout 6 3/5 in head; eye 2 7/8, greater than snout or interorbital; maxillary extends well behind eye, though not to slightly inclined hind preopercle edge, slender, length 1 2/5 in head; interorbital 3 2/5, moderately high. Gill rakers about 6 + 10, lanceolate, 1 1/2 in eye.

Scales 30 in lateral line to caudal base, enlarged; 3 above, 3 below. Caudal base scaly. Scales very caducous, most all fallen.

Single small photophore on lower hind eye edge; 2 operculars, upper in line with lower eye edge and upper subpectoral, lower veiled behind and below hind maxillary end; 3 equidistant veiled branchiostegals, more or less obscured by luminous masses; 5 pectorals, fourth little higher than upper subpectoral and over interspace of third and fifth; 1 suprapectoral, little before pectoral fin origin and at lowest fourth between same and lateral line; 2 subpectorals, first or lower midway between upper and first pectoral or little before suprapectoral, upper close before and below lowest pectoral ray bases; 5 ventrals, third little behind second and level with fourth pectoral; 3 + 3 anals, first posteroanal over base of last anal ray; 3 supraanals, first close behind and little above last ventral, second little higher and posterior and third well below lateral line and opposite anal origin; 2 posterolaterals, first little above and behind last anteroanal and second also well below lateral line; 3 close set precaudals arched up toward end of lateral line of which last little below and highest of series. Indistinct luminous plate below suprapectoral photophore.

D. III, 8, I, first branched ray 1 2/5 in head; adipose fin 3 7/8; A. III, 8, I, first branched ray 2 1/5; caudal 1 2/5, forked; least depth of caudal peduncle 27/8; pectoral 2 1/5; ventral 1 3/5.

Skin, where scales have fallen, brown. Scales silvery, also sides of head and iris, with iridescent reflections. Fins whitish.

Diagnosis. Greatly like Diaphus longleyi but with the suprapectoral photophore lower and small photophore at lower eye edge posterior or below hind edge of pupil, also only 3 precaudals present.

Type, No. , U. S. N. M. D. 5177. Escarceo Light, S. 53° E., 5.80 miles (N. 13°35' E. 120°54'36"), Manila Bay, Luzon. In 260 fathoms, TANING, March 24, 1908. Length 23 mm. Differs from Diaphus richardsoni which has well developed antorbital luminous body on upper front eye edge, long one also whole extent of lower eye edge followed by small photophore, 5 anteroanals and no luminous body below suprapectoral photophore.

For Dr. Maris Harvey.

D. 5454. Legaspi Light, S. 64° W., 5.7 miles (N. Lat. 13°12' E. Long. 123°50'30"), east coast of Luzon. 153 fathoms. June 7, 1909. Length 40 mm.

D. 5185. Lusaran Light, N. 23° E., 25.50 miles (N. Lat. 10°05'45" E. Long. 122°18'30"), between Panay and Negros. 638 fathoms. March 30, 1908. Length 10 to 14 mm. 4 examples.

D. 5422. Lusaran Point Light, S. 80° E., 9.7 miles (N. Lat. 10°31' E. Long. 122°18'45"), between Panay and Guimaras. March 30, 1909. Length 31 mm.

Diaphus microps Brauer

Myctophum (Nyctophus) microps BRAUER, Zool. Anzeiger, vol. 28, Nr. 10, Dec. 20, 1904, p. (392) 400, fig. 8. Indian Ocean.

Myctophum (Diaphus) microps BRAUER, Deutsch. Tiefsee Exp. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 216, text fig. 136(S. 4°5'8" E. 70°1'9", west of Chagos Archipelago).

Diaphus microps PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 116 (compiled).

Depth 3 5/6; head 3 1/10. Snout 6 4/5 in head; eye 4 1/2, greater than snout; maxillary extends 1 1/5 eye diameters behind eye, slender, length 1 3/5 in head; interorbital high.

Scales 37 in lateral line, cycloid.

Large superior antorbital luminous body, at upper front eye edge above nostrils; 2 opercular photophores, upper larger, in slightly inclined line with lower eye edge, upper subpectoral and fourth pectoral; 3 branchiostegals; 5 pectorals, first interval much greatest, fourth spot elevated level with interval between subpectorals, over and little posterior to third pectoral; 1 suprapectoral, slightly nearer pectoral fin origin than lateral line, close behind upper subpectoral in vertical; 2 subpectorals, in inclined line with first pectoral, first median, upper close before bases of lower pectoral rays; 4 ventrals, second nearly level with median supraanal before and slightly over third, which lower than first; 1 supra-ventral, near upper fourth between lateral line and ventral base; anals 7 + 5, first anteroanal little elevated, last less so and posteroanals behind anal fin base; 3 supraanals in slightly inclined row passing to vent, first interval half second or upper interval, median spot little above first anteroanal; 1 posterolateral, close below lateral line over last anteroanal; 4 precaudals, close, arched progressively backward along lower caudal base with uppermost or fourth close below end of lateral line. Moderate luminous body below suprapectoral photophore.

D. III, 13, first branched ray 1 1/2 in head; adipose fin 3 1/8; A.III, 14, first branched ray 1 7/8;
/caudal 1 1/6, deeply emarginate; least depth of caudal peduncle 2 3/4; pectoral 2; ventral 1 1/2.

Length 16.5 mm.

(Brauer.)

Indian Ocean.

Diaphus regani Tåning

Diaphus regani TÅNING, Vidensk. Medd. Dansk Naturh. Foren. 3d - 94, 1932, p. 139, fig. 12 (type locality - Lat. 20°53'2" S., Long. 164° 03'3" E., off New Coledonia).

D. 5263. L. 58 mm. to end of damaged caudal.

Diaphus garmani Gilbert

Diaphus garmani GILBERT, Bull. Mus. Comp. Zool., vol. 46, No. 14, April 1906, p. 258, pl. 2. Cuba. --TAANING, Vidensk. Medd. Dansk Naturh. Foren. Kobenhavn, vol. 86, 1928, p. 61 (North Atlantic; diagnosis in key). --PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. (123) 145, fig. 33 (off Green Cay; New Providence; N. 23°48' W. 76°35'; off Cat Island; off San Salvador; off Crooked Island). --NORMAN, Ann. Mag. Nat. Hist., ser. 10, vol. 4, Nov. 1929, p. 511 (Ceylon).

Diaphus malayanus WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 89, fig. 30. Habmaheira Sea, S. Lat. 0°17.6' E. Long. 129°14.5', in 1000 meters; Banda Sea, S. Lat. 3°58' E. Long. 128°20', in 2000 meters. --PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 116 (compiled).

Myctophum malayanum WEBER and BEAUFORT, Fishes Indo Austral. Archipelago, vol. 2, 1913, p. 171, fig. 65 (WEBER'S materials).

Myctophum (Diaphus) malayanum AHL, Zool. Anzeiger, vol. 81, heft 7/10, 1929, p. 196 (Sabang).

Depth 5 to 5 1/5; head 3 2/3 to 3 4/5, width 2 2/5 to 2 1/2. Snout 6 1/3 to 7 1/8 in head; eye 4 2/3 to 5, greater than snout, 1 1/5 to 1 2/5 in interorbital; maxillary extends 1 1/2 to 1 2/3 eye diameters behind eye though not quite to well inclined hind preopercle edge, slender, length 1 1/3 to 1 2/5 in head; interorbital 4 to 4 2/5, nearly level. Gill rakers 5 + 12, lanceolate, slightly clavate, 1 1/2 in eye; gill filaments nearly equal gill rakers.

Scales 35 in lateral line to caudal base, not enlarged; 4 above, 5 below, 12 predorsal. Ventral with pointed axillary scale 2 2/3 in fin. Caudal base scaly. Scales very caducous, most all fallen. Scales with 2 basal radiating striae; circuli fine, complete.

Antorbital luminous organ large, includes whole front eye edge, upper or supraorbital quite small, high, barely 1/3 diameter of pupil; 2 opercular photophores, upper larger and in line with lower eye edge and pectoral fin origin; 3 equidistant veiled branchiostegals, largely obscured by luminous masses; 5 pectorals, first interspace longest, fourth photophore over third and elevated level with pectoral fin origin; 1 suprapectoral, about lowest 2/7 in space between lateral line and pectoral fin origin, over upper subpectoral; 2 subpectorals, in oblique line with first pectoral, first or lower subpectoral median and upper close before bases of lowest pectoral fin rays; 5 ventrals, second and third progressively higher from first so third level with fourth pectoral and over fourth ventral; 1 supraventral at lowest 2/5 between lateral line and pectoral fin base though little behind its origin; 6 or 7 + 5 or 6 anals, first anteroanal elevated level with third ventral, advanced little from second anteroanal which only slightly higher than third and fifth and sixth arch up continuously to posterolateral, first or first and second postero-anals above anal fin base; 3 supraanals, in line little inclined from vertical from first or lowest little behind fifth ventral, second or median slightly higher than first anteroanal and third close below lateral line opposite anal origin; 1 posterolateral, rather close below lateral line before adipose fin; 4 precaudals, arched along base of lower caudal lobe progressively so fourth falls little below end of lateral line. Luminous organ below suprapectoral.

D. IV, 10, I to IV, 12, I, first branched ray 1 1/5 to 1 1/4 in head; adipose fin 3 to 4 1/4; A. III, 12, I or III, 13, I, first branched ray 1 2/5 to 1 2/3; caudal 1 1/10 to 1 1/8, forked; least depth of caudal peduncle 3; pectoral 2 2/5 to 2 3/5; ventral 1 1/4 to 1 1/3.

Brown, scale pockets where scales fallen darker. Side of head and scales all silvery with iridescent tints. Iris gray, with whitish luminous areas. Fins whitish, bases dusky.

Atlantic, Indian and Pacific Oceans. My materials all agree largely with Parr's figure except that the suprapectoral is lower and the ventral fins usually inserted below the dorsal origin. They all differ from both Parr's and Weber's figures in that the posterolateral photophore is well before the adipose fin so that a line to it would be oblique. The figures referred to both show it below the adipose fin.

3708, 3709. D. 5387. Bagatao Island Light (outer), S. 80° E., 27 miles (N. 12°54'40" E. 123°20'30"), between Burias and Luzon. In 209 mm. March 11, 1909. Length 113 to 120 mm.

D. 5260. Balanja Point, N. 28° W., 7.20 miles (N. 12°25'35" E. 121°31'35"), off southeastern Mindoro. In 234 fathoms. June 3, 1908. Length 72 to 86 mm. 2 examples.

17818. D. 5565. Dammi Island (N.), S. 69° W., 6 miles (N. 5°51'42" E. 120°30'30"), between Jolo and Tawi Tawi. In 243 fathoms. September 21, 1908. Length 134 mm.

1769. D. 5325. Hermanos Island (N.), 86° E., 16.75 miles (N. 18°34'15" E. 121°51'15"), off northern Luzon. In 224 fathoms. November 12, 1908. Length 145 mm.

1492. D. 5326. Hermanos Island (N.), N. 69° E., 8 miles (N. 18°32'20" E. 122°1'), off northern Luzon. In 230 fathoms. November 12, 1908. Length 144 mm.

1569, 1570. D. 5135. Jolo Light, S. 46° W., 11.90 miles (N. 6°11'50" E. 121°8'20"), vicinity of Jolo. In 161 fathoms. February 7, 1908. Length 143 to 164 mm.

3293. D. 5625. Kayoa Island (S. E.), S. 3° W., 6 miles (N. 0°7' E. 127°28'), between Gillolo and Kayoa Islands. In 230 fathoms. November 29, 1909. Length 148 mm.

2400 to 2406, 2408, 2409. D. 5589. Mabul Island (N. W.), N. 3° W. 2.8 miles (N. 4°12'10" E. 118°38'8"), Sibuko Bay, Borneo, and vicinity. In 260 fathoms. September 29, 1909. Length 117 to 146 mm.

1627. D. 5590. Mabul Island (N. W.), N. 22° W., 4.3 miles (N. 4°10'50" E. 118°39'35"), Sibuko Bay, Borneo, and vicinity. In 310 fathoms. September 29, 1909. Length 123 mm.

3160. D. 5503. Macabalan Light (Mindanao), S. 31° E., 6.6 miles (N. 8°36'26" E. 124°36'8"). In 226 fathoms. August 4, 1909. Length 167 mm.

4102. D. 5624. Makyan Island (S.), N. 67° W., 8.9 miles (N. 0°12'15" E. 127°29'30"), between Gillolo and Makyan islands. In 288 fathoms. November 29, 1909. Length 148 mm.

D. 5280. Malavatuan Island (N.), S. 60° W., 6.10 miles (N. 13°55'20" E. 120°25'55"), China Sea vicinity southern Luzon. In 193 fathoms. July 17, 1908. Length 59 to 167 mm. 18 examples.

D. 5281. Malavatuan Island (N.), S. 84° W., 4.30 miles (N. 13°52'45" E. 120°25'), China Sea, vicinity southern Luzon. In 201 fathoms. July 18, 1908. Length 120 to 150 mm. 7 examples.

2755. D. 5268. Matocot Point, S. 50° E., 5.80 miles (N. 13°42' E. 120°57'15"), Verde Island Passage and Batangas Bay. In 170 fathoms. June 8, 1908. Length 180 mm.

D. 5547. Noble Point, Tulayan Island (E.), S. 38° E., 9.5 miles (N. 6°9'20" E. 121°13'40"), Jolo Island and vicinity. In 155 fathoms. September 15, 1909. Length 56 to 130 mm. 34 examples.

1307. Polloc. May 23, 1909. Length 129 mm.

1509, 1510, 1511. D. 5592. Silungan Island (N.), N. 1° W., 6.4 miles (N. 4°12'44" E. 118°27'44"), Sibuko Bay, Borneo, and vicinity. September 29, 1909. Length 110 to 132? mm. 3 examples.

3741. D. 5371. Tayabas Light (outer), N. 43° W., 6 miles (N. 13°49'40" E. 121°40'15"), Marinduque Island, and vicinity. In 83 fathoms. February 24, 1909. Length 163 mm.

2181. D. 5374. Tayabas Light (outer), N. 9° E., 7.4 miles (N. 13°46'45" E. 121°35'8"), Marinduque Island, and vicinity. In 190 fathoms. March 2, 1909. Length 105 mm.

Diaphus glandulifer Gilbert

Diaphus glandulifer GILBERT, Mem. Carnegie Mus., vol. 6, No. 2, Aug. 1913, p. 90, pl. 11, fig. 2. Suruga Gulf, in 300 fathoms; Sagami Bay, Colnett Strait and Suruga Bay, in 300 fathoms. -- PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 117 (compiled); Proc. U. S. Nat. Mus., vol. 76, 1929, p. 32 (type).

Panthophos glandulifer JORDAN and HUBBS, Mem. Carnegie Mus., vol. 10, No. 2, June 27, 1925, p. 157 (Misaki).

Depth 4 to 4 3/5; head 3 to 3 2/5, width 2 1/4 to 2 1/2. Snout 6 to 7 in head; eye 3 3/4 to 4 1/5, greater than snout, subequal with interorbital; maxillary reaches well behind eye or not quite to inclined hind preopercle edge, slender, slight expansion 3 3/4 to 4 1/4 in eye, length 1 1/4 to 1 1/2 in head; interorbital 3 1/8 to 3 1/3, broadly convex. Gill rakers 11 to 12 + 17 or 18, lanceolate, length 1 1/4 in eye, twice gill filaments.

Scales 36 in lateral line to caudal base, enlarged; 3 above, 3 below. Caudal base well scaled. Ventral with pointed axial scale.

Small lower antorbital photophore, larger luminous organ along middle of lower eye edge; 1 opercular photophore, little above hind maxillary end; branchiostegals?; 5 pectorals, first interspace longest, fourth photophore above and little posterior to third and level with second ventral; 1 suprapectoral about lower 2/5 of space between lateral line and pectoral fin origin behind upper subpectoral; 2 subpectorals, front or lower little nearer first pectoral than upper subpectoral, which close before bases of lower pectoral rays; 4 ventrals, second over and little before third at same level as fourth pectoral; 1 supraventral at upper 2/5 in space between lateral line and ventral origin; 5 + 6 anals, first anteroanal elevated high as median supraanal close before second anteroanal, posteroanals all behind anal fin base; 3 supraanals, in slightly inclined line from first or lowest close before anal fin origin, second below middle in space to upper which close below lateral line; 2 posterolaterals, first or lower close behind and above last anteroanal, second close below lateral line; 4 precaudals, arched on caudal base with uppermost close below and behind end of lateral line. Large luminous organ below suprapectoral.

D. III, 12, I, first branched ray 1 1/5 to 1 2/5 in head; adipose fin 3 1/4 to 3 1/2; A. II, 13, I, first branched ray 1 2/3 to 2; caudal 1 1/8 to 1 1/4, well emarginate; least depth of caudal peduncle 2 3/4 to 3 1/8; pectoral 1 1/5 to 2 2/5; ventral 1 1/10 to 1 1/4.

Pale brown generally, all scale pockets darker or dusky, all more or less sprinkled with dark or dusky dots. Investing membranes black around large conspicuous infraorbital luminous organ, also less conspicuous to 2 close set antorbitals. Iris silvery white, likewise side of head and sheen of remaining scales. Fins all pale to whitish.

Pacific Ocean. The Philippine specimens, possibly due to preservation, do not show the luminous whitish bodies, one below most of photophores. The type is well illustrated by Gilbert.

D. 5260. Balanja Point, N. 28° W., 7.20 miles (N. 12°25'35" E. 121°31'35"), off southeastern Mindoro. In 234 fathoms. June 3, 1908. Length 84 mm.

D. 5365. Cape Santiago Light, N. 73° W., 6.7 miles (N. 13°44'24" E. 120°45'30"), Balayan Bay, Luzon. In 240 fathoms. February 22, 1909. Length 77 to 88 mm. 3 examples.

D. 5280. Malavatuan Island (N.), S. 60° W., 6.10 miles (N. 13°55'20" E. 120°25'55"), China Sea, vicinity southern Luzon. In 193 fathoms. July 17, 1908. Length 85 to 88 mm. 3 examples.

D. 5268. Matocot Point, S. 50° E., 5.80 miles (N. 13°42' E. 120°57'15"), Verde Island Passage and Batangas Bay. In 170 fathoms. June 8, 1908. Length 65 to 78 mm. 3 examples.

D. 5227. Point Origon, S. 44° E., 18.30 miles (N. 12°53'45" E. 121°52'30"), east of Mindoro. In 322 fathoms. May 5, 1908. Length 16 to 22 mm. 4 examples.

D. 5111. Sombrero Island, S. 41° E., 4.50 miles (N. 13°45'15" E. 120°46'30"), China Sea off southern Luzon. In 236 fathoms. January 16, 1908. Length 76 to 88 mm. 7 examples. One with third and fourth pectoral photophores abnormally close.

74472 U. S. N. M. Albatross Collection (5058). Length 69 mm. Type of Diaphus glandulifer.

74501 U. S. N. M. Albatross Collection (5058). Length 60 to 67 mm. 6 examples. Paratypes. These still show a number of the photophores each with a pale or diffuse whitish glandular spot below, though their general coloration quite dark.

74653 U. S. N. M. Albatross Collection (4926). Length 13 mm.

74654 U. S. N. M. Albatross Collection (5064). Length 12 to 21 mm. 7 examples.

74655 U. S. N. M. Albatross Collection (5063). Length 16 to 18 mm. 2 examples.

74656 U. S. N. M. Albatross Collection (5084). Length 16 mm.

Diaphus fulgens (Brauer)

Myctophum (Nyctophus) fulgens BRAUER, Zool. Anzeiger, vol. 28, Nr. 10, Dec. 20, 1904, p. 402, fig. 4. Indian Ocean.

Myctophum (Diaphus) fulgens BRAUER, Deutsch. Tiefsee Exp. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 224, text fig. 146 (S. 4°5'8" E. 70°1'9", between Chagos and Seychelles; S. 2°38'7" E. 65°59'2"; N. 0°25'7" E. 43°37'6", off north east Africa; N. 9°6'1" E. 53°41'2"). --PAPPENHEIM, Deutsch. Südpolar Exp., vol. 15, Zool. pt. 7, 1914, p. 195 (S. 32°8' W. 8°28', 1000 meters; N. 17°28' W. 29°42', 3000 meters).

Diaphus fulgens PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 117 (compiled).

Depth 4 1/8; head 3 1/3. Snout 9 1/2 in head; eye 2 9/10, greatly exceeds snout; maxillary extends 1/2 eye diameter behind eye, slender, length 1 1/2 in head; interorbital very low.

Scales 35 in lateral line, enlarged, cycloid.

Large antorbital luminous body, upper larger section over nostrils to eye, lower narrow along lower front eye edge; 2 opercular photophores, upper larger, in line with lower eye edge and fourth pectoral;3 branchiostegals; 5 pectorals, first interval greatly longest, fourth spot elevated level with pectoral fin origin over and little posterior from third pectoral spot; 1 suprapectoral, little in advance of upper subpectoral, nearly midway between lateral line and pectoral fin origin; 2 subpectorals, in inclined line with first pectoral, about equidistant; 5 ventrals, first to third in well inclined series with first interval shorter, third spot little above level of fourth pectoral, fourth and fifth side by side before vent; 1 supraventral, midway between lateral line and ventral fin base, also little lower than suprapectoral; anals 5 + 4 or 5, first and fifth anteroanals higher than others in series, posteroanals well behind anal fin base; 3 supraanals, in inclined line with last ventral, first and second equidistant from last ventral, upper interval between second and third supraanals equals space between fifth ventral and second supraanal which at same level as first anteroanal; 1 posterolateral, above and behind last anteroanal at same level below lateral line as uppermost supraanal; 4 precaudals, equidistant, arched posteriorly at caudal base so fourth rather close below end of lateral line. Luminous body below suprapectoral.

D. III, 11, first branched ray 1 7/8 in head; adipose fin 2 9/10; caudal 1 2/5, emarginate; least depth of caudal peduncle 2 3/5; pectoral 3; ventral 1 1/5.

Length 39 mm. (Brauer.)

Indian Ocean.

Diaphus vanhoeffeni (Brauer)

Myctophum (Diaphus) vanhoeffeni BRAUER, Deutsch. Tiefsee Exp. Valdivia, vol. 5, Tiefsee-Fische, 1906, p. 222, text fig. 143. German South Pole Expedition.

Diaphus vanhoeffeni PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 117 (compiled).

Myctophum (Diaphus) vanhöffeni PAPPENHEIM, Deutsch. Südpolar Exp., vol. 15, Zool. pt. 7, 1914, p. 195 (N. 0°46' W. 18°59', 3000 meters).

Depth 4 3/4; head 3 1/6. Snout 5 1/5 in head; eye 4, greater than snout; maxillary extends eye diameter behind eye, slender, length 1 2/5 in head; interorbital rather low.

Scales 38 to 40 in lateral line, cycloid.

Antorbital luminous body along front eye edge, larger above and narrowing below, also small photophore at middle of lower eye edge; 2 operculars, upper larger, and in line with lower orbital and second ventral spots; 3 branchiostegals; 5 pectorals, first interval longest, fourth spot elevated till level with third ventral, and little nearer third pectoral in interval from same to fifth pectoral; 1 suprapectoral, near upper third in space between lateral line and pectoral fin origin; 2 subpectorals, in inclined line with first pectoral, first median and second or upper close before lower pectoral ray bases, which also little behind suprapectoral; 5 ventrals, first to third in inclined line with third highest; 1 supraventral, about upper 2/5 in space between lateral line and ventral base; anals 8 + 5, level, posteroanals behind anal fin base; 3 supraanals, in broadly angular row, first and second in inclined line with last ventral, equidistant, upper or third close below lateral line and little advanced from median; 1 posterolateral, close below lateral line over last anteroanal; 4 precaudals, first 3 close, in inclined row and fourth above and slightly posterior to third rather close below end of lateral line. Luminous scale below suprapectoral photophore.

D. IV, 10, first branched ray 2 in head; adipose fin 3 1/3; A. III, 13, first branched ray 2 1/8; caudal 1 1/10, forked; pectoral 2 1/31 ventral 1 2/3.

Length 20 mm. (Brauer.)

Tropical Atlantic.

Diaphus dumerilii (Bleeker)

Scopelus dumerilii BLEEKER, Act. Soc. Sci. Ind. Néerland., No. 3, vol. 1, 1856, p. (6) 66. Manado, Celebes; No. 4, vol. 3, 1857-58, p. 8 (Manado). --GÜNTHER, Cat. Fishes Brit. Mus., vol. 5, 1864, p. 410 (compiled).

Myctophum (Scopelus) dumerili BLEEKER, Atlas Ichth. Ind. Néerland., vol. 6, 1866-77, p. 158, pl. (1) 277, fig. 2 (Manado).

Myctophum dumerili WEBER and BEAUFORT, Fishes Indo Austral. Archipelago, vol. 2, 1913, p. 166 (types; Menado, Celebes).

Diaphus dumerili PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. (115) 126, text fig. 23 (off Green Cay, New Providence, Cat Island, San Salvador, Acklin Island, N. 23° to 32° W. 64° to 77°, 5000 to 8000 feet). --FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 68 (part; not Hawaiian materials). -- PARR, Proc. U. S. Nat. Mus., vol. 76, art. , 1929, p. 31 (type of Lampanyctus lacerta). --NORMAN, Ann. Mag. Nat. Hist., ser. 10, vol. 4, Nov. 1929, p. 511 (off southwest Ireland N. 52° W. 12°). -- BORODIN, Bull. Mus. Comp. Zool., vol. 72, No. 3, Aug. 1931, p. 76 (N. 33°50' W. 63°55', 1500 meters).

Myctophum nocturnum POEY, Mem. Hist. Nat. Cuba, vol. 2, 1860, p. 426. Havana.

Collettia nocturna GOODE and BEAN, Oceanic Ichth., 1895, p. 512 (reference). --JORDAN and EVERMANN, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 567 (compiled).

Diaphus nocturnus GILBERT, Bull. Mus. Comp. Zool., vol. 46, 1906, No. 14, p. 255, pl. 1 (type; type of Lampanyctus lacerta).

Diaphus dumerili nocturnus TAANING, Vidensk. Medd. Dansk Naturh. Foren. København, vol. 86, 1928, p. 58 (diagnosis in key).

Scopelus schmitzi JOHNSON, Proc. Zool. Soc. London, 1890, p. 456. East end of Madeira.

Lampanyctus lacerta GOODE and BEAN, Oceanic Ichth., 1895, p. 81, pl. 24, fig. 89. N. 28°38'30" W. 85°52'30", 142 fathoms; N. 39°56' W. 70°14'30", 200 fathoms; N. 35°41'30" W. 74°48'30", 671 fathoms; N. 39°50'45" W. 71°43', 131 fathoms; N. 36°1'30" W. 74°47'30"; N. 39°55' W. 70°47', 224 fathoms; N. 39°50'30" W. 71°23', 182 fathoms. --JORDAN and EVERMANN, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 560 (compiled).

Myctophum (Nyctophus) lacerta BRAUER, Zool. Anzeiger, vol. 28, Nr. 10, Dec. 20, 1904, p. 392 (diagnosis in key).

Myctophum (Diaphus) lacerta BRAUER, Deutsch. Tiefsee Exp. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 214, figs. 132-135 (N. 5°5'3" W. 13°27'5", Gulf of Guinea; N. 1°27'8" W. 10°16'5"; N. 0°20'2" W. 6°45'; N. 0°26'3" W. 6°32'; N. 1°51' E. 0°31'2"; N. 2°36'5" E. 3°27'5"; N. 0°25'8" E. 7°0'3"; S. 1°56'7" E. 7°40'6"; S. 3°55' E. 7°48'5"; S. 5°6'2" E. 9°58'6"; S. 9°31' E. 9°46'; N. 7°57'9" E. 91°47'2", Bay of Bengal; N. 7°43'2" E. 88°44'9"; N. 4°56' E. 78°15'8", south of Ceylon; S. 4°5'8" E. 73°24'8", north of Chagos; S. 3°24'6" E. 58°38'1", off Seychelles; S. 4°38'6" E. 51°16'6"). --ZUGMAYER, Rés. Camp. Sci. Monaco, vol. 35, 1911, p. 31 (N. 36°5'30" W. 9°00'30", 3660 meters).

Depth 4 3/4 to 5; head 3 1/4 to 3 2/5, width 2 1/3 to 2 2/5. Snout 6 to 6 1/4 in head; eye 3 2/3 to 3 3/4, greater than snout, 1 to 1 1/5 in interorbital; maxillary reaches well beyond eye though not to hind oblique preopercle edge, slender, length 1 1/3 to 1 3/5 in head; interorbital 3 to 3 1/5, broad, little convex. Gill rakers 8 + 17, lanceolate, 1 1/3 in eye; gill filaments 1/2 gill rakers.

Scales 35 to 36 in lateral line to caudal base and 2 more on latter; 3? above, 4? below; not enlarged in lateral line, tubes large and prominent. Scales very caducous, most all fallen. Caudal base scaly.

Small antorbital luminous body somewhat above upper half of front eye edge and another below; 2 opercular photophores, upper larger on line with lower eye edge and upper subpectoral; 3 equidistant branchiostegals; 5 pectorals, with fourth elevated and above third, interspace between first and second longest; 1 suprapectoral, little nearer lateral line than pectoral fin origin and little behind lower subpectoral; 2 subpectorals, first or lower before suprapectoral and midway between first pectoral and upper subpectoral or little closer to upper subpectoral, which close below bases of lowest pectoral rays; 5 ventrals, second little elevated and posterior to first, third still higher and posterior; 1 supraventral midway or little nearer lateral line than ventral fin base; 5 or 6 + 4 to 6 anals, posteroanals all behind anal fin base; 3 supraanals nearly in vertical row or slightly inclined up from last ventral and uppermost opposite anal fin origin; 2 posterolaterals, lower close above and behind last anterolateral and upper close below lateral line, still posterior; 4 precaudals arched on lower caudal base with uppermost close below end of lateral line.

D. III, 10, I or III, 11, I, first branched ray 1 1/3 to 1 2/3 in head; adipose fin 2 2/3 to 3 1/4; A. III, 11, I, first branched ray 1 3/4 to 2 1/5; caudal 1 1/8 to subequal with head, well forked; least depth of caudal peduncle 3 to 4 2/5; pectoral 2 1/4 to 2 2/5; ventral 1 4/5 to 1 7/8.

Brown, skin and scale pockets dusky. Fin bases more or less dark. Fins whitish. Sides of head and few remaining scales with silvery luster.

Indian, Atlantic and Pacific Oceans.

28733 U. S. N. M. N. Lat. 39° W. Long. 70°. U. S. F. C. Length 60 mm., caudal tips damaged. As Myctophum lacerta, also the following:

28843 U. S. N. M. N. Lat. 39° W. Long. 71°. U. S. F. C. Steamer Fish Hawk. Length 53 to 58 mm., caudal tips damaged. 3 examples.

43771 U. S. N. M. N. 36° W. 74°. Albatross Collection (2426). Length 46 to 61 mm. 12 examples. Paratypes of Lampanyctus lacerta.

43778 U. S. N. M. N. Lat. 28° W. Long. 85°. Albatross Collection (2401). Length 64 to 67 mm., caudal tips damaged. Type (largest) and 2 paratypes of Myctophum lacerta.

43779 U. S. N. M. N. Lat. 39° W. Long. 74°. Albatross Collection (2548). Length 44 mm., caudal tips damaped.

43780 U. S. N. M. N. Lat. 35° W. Long. 74°. Albatross Collection ( ). Surface. Length 56 mm., caudal tips damaged.

43801 U. S. N. M. N. Lat. 39° W. Long. 71°. Albatross Collection (2583). Surface. Length 47 mm., caudal tips damaged.

Diaphus hypoleucens Parr

Diaphus hypoleucens PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 130, fig. 24. N. 23°58' W. 77°26', 7000 feet. Bahamas.

Depth 4; head 3. Snout 6 7/8 in head from snout tip; eye 4; maxillary extends 1 1/2 eye diameters behind eye; length 1 1/4 in head from snout tip.

Scales 36 in lateral line.

Small, rounded, upper antorbital luminous body above each nostril close to margin of eye; no lower antorbital; oval suborbital origin little less than pupil diameter, at center of lower eye edge; 2 opercular photophores, upper in line with lower eye edge and pectoral origin; 5 pectorals, first interval longest, fourth elevated over interval between third and fifth, nearly level with upper subpectoral; 1 suprapectoral, over upper subpectoral near last third between lateral line and pectoral fin origin; 2 subpectorals, in line with first pectoral, first subpectoral little nearer first pectoral than upper which close before lowest pectoral ray bases; 5 ventrals, second and third in well inclined line from first; 1 supraventral nearly midway between lateral line and ventral base; anals 6 + 5, first and last anteroanal elevated, posteroanals all behind anal fin base; 3 supraanals in slightly inclined line, equidistant, second little above first anteroanal and third well below lateral line; 1 posterolateral 1 diameter below lateral line; 4 precaudals, equidistant in crescent, last scarcely above middle to lateral line. Suprapectoral with small luminous scale.

D. 13; A. 15. Brownish black, cheek snout and mandible colorless. Length 37 mm., without caudal. (Parr.)

Diaphus boringi new species

Depth 3 2/3 to 4; head 3 to 3 1/3, width 2 to 2 2/5. Snout 7 to 7 1/3 in head; eye 3 1/10 to 3 1/5, greater than snout or interorbital; maxillary reaches well behind eye or nearly opposite slightly inclined hind preopercle edge, slender, length 1 3/5 to 1 2/3 in head; interorbital 3 1/5 to 4, very slightly convex. Gill rakers 7 + 17, lanceolate, little greater than gill filaments or 1 1/2 in eye.

Scales 34 or 35 in lateral line to caudal base and 1 or 2 more on latter, little enlarged, tubes simple, prominent; 3 above, 3 below, 15 or 16 predorsal to occiput. Ventral axillary scale large, 2 1/5 in fin. Caudal base scaly. Scales with 3 basal radiating striae; 3 or 4 feeble or imperfect radiating apical striae; circuli fine.

Anteorbital luminous organ with rather large upper section, lower section below lower front eye edge; photophore little behind middle along lower eye edge; 1 opercular, little above hind maxillary end; 3 equidistant veiled branchiostegals; 5 pectorals, first interspace equals space between second and fifth, fourth photophore above and little posterior to third at same level with upper subpectoral; 1 supraventral, little below lower third between lateral line and pectoral fin origin; 2 subpectorals, first slightly nearer upper than first pectoral; 5 ventrals, second but slightly higher, fifth similar, third before fourth and at same horizontal level as fourth pectoral; 4 + 4 anals, first anteroanal higher than second or little below level of middle or second supraanal, posteroanals behind anal base; 3 supraanals in inclined row from little behind last ventral, first little nearer last ventral than second supraanal and third rather close behind lateral line over anal origin; 2 posterolaterals, first or lower close behind last anteroanals, upper rather close below lateral line opposite base of last anal ray; 4 precaudals forming arc progressively to uppermost which rather close below end of lateral line. Large luminous organ below and behind suprapectoral photophore.

D. III, 9, I, first branched ray 1 1/2 to 2 in head; adipose fin 3 1/4; A. III, 10, I, first branched ray 2 4/5 to 3; caudal 1 1/3 to subequal with head, well emarginate; least depth of caudal peduncle 2 1/2 to 2 4/5; pectoral 1 3/4 to 2 3/4; ventral 1 1/5 to 1 4/5.

Brown, pockets all dusky where scales have fallen. Scales, sides of head and iris silvery, with iridescent reflections. Fins whitish.

Diagnosis. In this species the photophores are arranged as in Diaphus hypolucens PARR. The upper antorbital is similar and the lower very different or on the lower front edge of the eye, also always a marginal lower or infraocular photophore midway on lower eye edge. The latter is apparently a character shared with Diaphus metopoclampus (COCCO).

For Dr. Alice Boring of Yeng Shing University, Peiping, China.

D. 5497. Bantigui Island, N. 64° W., 10 miles (N. Lat. 9°07'15", E. Long. 124°59'30"), between Leyte and Mindanao. 960 fathoms. August 3, 1909. Length 30 mm.

D. 5270. Escarceo Light, S. 9° E., 4.25 miles (N. Lat. 13°35'45" E. Long. 58°30"), Verde Island Passage and Batangas Bay. 235 fathoms. June 8, 1908. Length 26 mm.

D. 5233. Limasaua Island (S.), S. 70° E., 19.50 miles (N. Lat. 10°00'22" E. Long. 124°45'06"), between Bohol and Leyte. May 7, 1908. Length 50 to 53 mm. 3 examples. Type, largest.

D. 5246. Luban Island (N.), S. 58° W., 4.6 miles (N. Lat. 6°29'15", E. Long. 126°18'45"), Pacific Ocean east of Mindanao. May 15, 1908. Length 43 to 45 mm. 3 examples.

D. 5422. Lusaran Point Light, S. 80° E., 9.7 miles (N. Lat. 10°31' E. Long. 122°18'45"), between Panay and Guimaras. March 30, 1909. Length 29 mm.

D. 5500. Macabalan Point Light, (Mindanao), S. 20 E., 7.9 miles (N. Lat. 8°37'45", E. Long. 124°36'45"). 267 fathoms. August 4, 1909. Length 38 mm.

D. 5227. Point Origon, S. 44° E., 18.30 miles (N. Lat. 12°53'45", E. Long. 121°52'30"), east of Mindoro. 322 fathoms. May 5, 1908. Length 19 or 20 mm. 2 examples.

D. 5287. Sombrero Island, N. 68° E., 11.25 miles (N. Lat. 13°37'40", E. Long. 120°39'), China Sea, vicinity southern Luzon. 379 fathoms. July 20, 1908. Length 49 mm., snout damaged.

Diaphus lutkeni (Brauer)

Myctophum (Nyctophus) lutkeni BRAUER, Zool. Anzeiger, vol. 28, Nr. 10, Dec. 20, 1904, p. (393) 400. Indian Ocean.

Myctophum (Diaphus) lutkeni BRAUER, Deutsch. Tiefsee Exp. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 221, text figs. 141-142 (S. 4°5'8" E. 70°1'9", west of Chagos Archipelago; S. 5°12'5" E. 46°32'3", off Zanzibar; N. 0°25'7" E. 43°37'8", N. 9°6'1" E. 53°41'2", north east coast of Africa).

Diaphus luetkeni TAANING, Vidensk. Medd. Dansk Naturh. Foren. Kobenhavn, vol. 86, 1928, p. 59 (diagnosis in key).

Diaphus lutkeni PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 118 (compiled). --PAPPENHEIM, Deutsch. Sudpolar Exp., vol. 15, Zool. pt. 7, 1914, p. 195, (N. 0°46' W. 18°59', 3000 meters.

Depth 4 1/8; head 3 1/4; Snout 6 1/3 in head from snout tip; eye 3 1/4, greater than snout; maxillary extends 1 7/8 eye diameters behind eye, slender, length 1 1/3 in head from snout tip, interobital rather low.

Scales 36 in lateral line, cycloid.

Moderately large antorbital luminous body, flask formed at upper front eye edge above nostrils, larger lower all along lower front eye edge; 2 opercular photophores, upper larger and in inclined line from lower eye edge to pectoral fin origin; 3 branchiostegals; 5 pectorals, first interval much longest, fourth spot level with upper subpectoral close behind in vertical from fourth pectoral; 1 suprapectoral, about lower third between lateral line and pectoral fin origin, little behind upper subpectoral; 2 subpectorals, in inclined line with first pectoral, first spot midway and upper close before bases of lowest pectoral rays; 4 ventrals, second elevated level with median supraanal, rather close before third ventral; 1 supraventral, near upper 2/5 between lateral line and ventral fin base; anals 6 or 7 + 5, first and last anteroanals elevated to slightly inclined line with second ventral, posteroanals behind anal fin base; 3 supraanals, in inclined line passing behind last ventral, first and second much closer than latter and third which little below lateral line; 1 posterolateral, above and little posterior to last anteroanal, little closer to lateral line than interval above uppermost supraanal to lateral line; precaudals 4, first 3 close with third little higher and fourth still posterior close below end of lateral line. Rather large luminous organ below suprapectoral photophore.

D. III, 13, first branched ray 1 3/4 in total head length; adipose fin 3; A. III, 13, I, first branched ray 2; caudal 1 9/10, emarginate; least depth of caudal peduncle 2 3/4; pectoral 3 1/4; ventral 1 3/4.

Length 53 mm. (Brauer.)

Indian Ocean. Brauer figures a variation in which the median supraanal photophore is slightly posterior in its inclination with the other 2 spots. He also shows 7 anteroanals with the first 3 forming an inclined line to the uppermost supraanal, thus the first anteroanal is above the level of the median supraanal which is thus more nearly level with the second anteroanal.

Diaphus suborbitalis Weber

Diaphus suborbitalis WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 90. S. 7°35.4' E. 117 28.6', 521 meters, Bali Sea; S. 3°32.5' E. 124°15.5', 1500 meters, Banda Sea; S. 5°53.8' E. 132°48.8', 560 meters, Arafura Sea. --PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 118 (compiled).

Myctophum suborbitale WEBER and BEAUFORT, Fishes Indo Austral. Archipelago, vol. 2, 1913, p. 167 (WEBERS material.

?Diaphus termophilus TAANING, Vidensk. Medd. Dansk Naturh. Foren. København, vol. 86, 1928, p. 59. North Atlantic (diagnosis in key).

Depth 4 1/2 to 5; head 3 1/2. Snout 2 1/2 in eye; eye 3 1/3 to 5 3/5 in head, greater than snout, 1 1/6 in interorbital; maxillary extends eye diameter behind eye, slender, length 1 1/4 in head; interorbital moderately high.

Scales 38 in lateral line, cycloid.

Somewhat pear shaped antorbital luminous body above nostril with long axis horizontal and its point extending forward to median crest of snout; large rounded suborbital luminous body little behind middle of pupil on lower border of orbit, dorsal border extends to level with iris and bordered black, lower silvery half reaches maxillary; 2 opercular photophores above each other, smaller lower one behind upper jaw; 3 branchiostegals; 5 pectorals, fourth above and somewhat behind third, first interval largest; 1 suprapectoral nearly midway between pectoral origin and lateral line; 2 subpectorals, in oblique line, first anterior below, second near or close before pectoral base or in vertical with suprapectoral; 5 ventrals, second and third outside series, third higher than second which close before fourth in vertical; 1 supraventral, near upper third in space between lateral line and ventral fin base; anals 6 + 5 or 6, first and last anteroanals elevated, first level with median supraanal, posteroanals behind ventral fin base; 3 supraanals, in slightly inclined line from vent, median little nearer lower than upper, which close below lateral line; 1 posterolateral close below lateral line slightly behind last anteroanal; 4 precaudals, 3 anterior low and close, fourth posterior and close below end of lateral line. Suprapectoral with large luminous scale.

D. 15, origin close behind ventral origin; A. 14, below last third of dorsal base; least depth of caudal peduncle 2 3/4 in head; pectoral 1 7/8; ventral .

Length 95 mm. (Weber and Beaufort.)

East Indies.

Diaphus brachycephalus Taaning

Diaphus brachycephalus TAANING, Vidensk. Medd. Dansk Naturh. Foren. Köbenhavn, vol. 86, 1928, p. 59. North Atlantic (diagnosis in key).

Dorso-nasal luminous organ separated from ventro-nasal (suborbital) luminous organ; 2 suborbital luminous organs, posterior behind hind edge of lens, anterior organ reaching nostril; photophores large, intervals between small; anals 4 or 5 + 4; third supraanal and posterolateral placed low, about equidistant from lateral line and ventral row of photophores. Supra-pectoral spot without luminous scale.

D. 13 or 14; A. 13 or 14. (Taaning.)

North Atlantic. Form short.

Diaphus longleyi new species

Depth 3 1/4; head 2 3/5, width 2 1/4. Snout 7 2/3 in head; eye 3, greater than snout or interorbital; maxillary extends well beyond eye though not quite to slightly inclined hind premaxillary edge, slender, length 1 2/5 in head; interorbital 3 7/8, moderately high and convex. Gill rakers 10 + 13, lanceolate, uppermost 3 rudimentary, others 1 2/3 in eye or twice gill filaments.

Scales 29 in lateral line to caudal base and 2 more on latter, little enlarged; 3 ? above, 3 below, 10 ? predorsal to occiput. Rather large pointed scale in ventral fin axil 1/3 of fin. Few small scales on caudal base.

Rather large luminous organ along lower front eye edge, also supraorbital veiled photophore and one on medio-inferior eye edge; 2 opercular, upper larger and in line with lower eye edge and pectoral fin origin, lower veiled behind lower hind maxillary end; 3 veiled branchiostegals; 5 pectorals, first interspace longest, fourth photophore higher than upper subpectoral or opposite interspace between third and fifth pectorals; 1 suprapectoral over second pectoral about level with supraventral, little behind pectoral fin origin; 2 subpectorals, nearly equidistant in inclined series including first pectoral, with upper close before bases of lowest pectoral rays; 5 ventrals, second and third progressively higher, third about same level as fourth pectoral, first indistinctly within pectoral base; 1 supraventral at lower 2/5 in space between lateral line and first ventral; 4 + 3 anals, posteroanals behind anal fin base; 3 supraanals in inclined line from first to third or uppermost, first but little elevated from fifth ventral, second midway in series to third, which well below lateral line or over anal fin origin or little before first anteroanal; 2 posterolaterals, form continuous arch with last anteroanals, uppermost at same level below lateral line as upper superoanal; 4 precaudals, arched along lower border of caudal lobe basally, equidistant, uppermost at same level below lateral line as uppermost supraanal and posterolateral. Infracaudal luminous plate extends from anal base to caudal. Small white luminous blotch below suprapectoral photophore.

D. III, 8, I, first branched ray 2 in head; adipose fin length 4 1/3; A. III, 9, I, first branched ray 4 1/5; caudal 1 1/2, well forked; least depth of caudal peduncle 3 1/8; pectoral 2 3/4; ventral 1 2/3.

Brown, skin where scales have fallen dusted finely with dusky. Adherent scales with silvery white reflections and iridescent tints. Iris and sides of head similar. Fins whitish, bases of dorsal and caudal blackish.

Diagnosis. Related to Diaphus intermedius Borodin but differs in the larger lower antorbital luminous body and but 3 postanal photophores in place of 5.

Type -- No. U. S. N. M.

Diaphus diadematus Taning resembles this species in its luminous orbital organs, though it has 5 + 5 anal photophores, its suprapectoral over or before the pectoral origin and well before the second pectoral photophore. D. 5229. Talong Island (E.), S. 17° W., 5.75 miles (N. Lat. 10°48'45" E. Long. 124°21'15"), between Cebu and Leyte. In 290 fathoms. May 7, 1908. Length 38 mm.

Diaphus intermedius Borodin

Diaphus intermedius BORODIN, Proc. New England Zool. Club, vol. 11, Jan. 10, 1930, p. 89. N. 33° W. 64°, 1200 meters; Bull. Mus. Comp. Zool., vol. 72, No. 3, Aug. 1931, p. 75 (type and paratype listed).

Depth 4 1/3; head 3, width 2. Snout 6 1/3 in head; eye 3, greatly exceeds snout, greater than interorbital; maxillary extends half an eye diameter behind eye though not quite to little inclined hind preopercle edge, slender, length 1 1/2 in head; interorbital 3 2/5, slightly convex. Gill rakers 8 + 15, lanceolate, slender, 1 1/2 in eye; gill filaments 2/5 gill rakers.

Scales (pockets) 33 in lateral line to caudal base, little enlarged; 3 ? above, 4 ? below, 10 predorsal forward to occiput. Caudal base scaly. Scales very caducous, most all fallen.

Small antorbital luminous organ, faces forward, supraorbital, nearly 1/3 of pupil; long antero-infraorbital luminous organ at front half of eye, narrowing posteriorly; 2 opercular photophores, upper larger, in line with lower eye edge and pectoral fin origin, lower photophore close behind hind maxillary end; 3 equidistant veiled branchiostegals, largely obscured by large luminous bodies; 5 pectorals, first interspace longest, fourth photophore little behind and over third or elevated level with upper subpectoral; 1 suprapectoral, slightly below middle in space between lateral line and pectoral fin origin; 2 subpectorals, in oblique line with first pectoral, first or lower subpectoral little nearer upper, which also little before suprapectoral close before bases of lowest pectoral fin rays; 5 ventrals, second and third progressively higher from first, third about level with upper subpectoral and fourth pectoral; 1 supraventral, slightly below middle in space below lateral line to ventral fin base; 6 + 4 anals, first anteroanal elevated until little below median supraanal, close before second anteroanal, posteroanals behind anal fin base; 3 supraanals in inclined line from close behind last ventral, first or lowest little nearer last ventral than median, uppermost close below lateral line opposite front of anal; 1 posterolateral, above and close behind last anteroanal; 4 precaudals, in slight arc at bases of lower rudimentary caudal rays with fourth little above middle below lateral line. Small luminous body below suprapectoral photophore.

D. III, 10, I, first branched ray 2 1/8? in head; adipose fin 4; A. III, 10, I, first branched ray 3 1/5?; caudal damaged, forked; least depth of caudal peduncle 3; pectoral 3 4/5; ventral 1 1/2.

Brown, edges of body and few remaining scales blackish, with purplish or violaceous tints. Iris dusky to blackish. Fins pale to whitish.

89906 U. S. N. M. N. Lat. 33° W. Long. 64°. Iselin Cruise 1929. Station 322. Museum of Comparative Zoology. Length 70 mm. Paratype. Agrees in all the photophores with Diaphus boringi except the lower infraorbital. There are, however, 2 luminous antorbital bodies, the upper section a small one above the nostril and the lower a much larger triangular one along lower front eye edge.

Diaphus rafinesquii (Cocco)

Nyctophus rafinesquii COCCO, Nuovi Ann. Sci. Nat. Bologna, vol. 2, 1838, p. 180, pl. 7, fig. 7. Messina.

Scopelus rafinesquii VALENCIENNES, Hist. Nat. Poiss., vol. 21, 1849, p. (compiled). --GÜNTHER, Cat. Fishes Brit. Mus., vol. 5, 1864, p. 410 (Mediterranean; Messina). --CANESTRINI, Fauna Italica, Pesci. 1874, p. 125 (Sicily). --RAFFAELE, Mitth. Zool. Stat. Neapel, 1889, p. 183, pl. 7, fig. 7. --CARUS, Prodr. Fauna Medit., vol. 2, 1893, p. 564 (compiled). --

Scopelus rafinesquii HOLT and BYRNE, Dep. Agric. Techn. Instruct. Ireland, Sci. Investig., 1910, No. 6(1911), p. 22, fig. 6 (Irish Atlantic Slope, 730 fathoms).

Collettia rafinesquei GOODE and BEAN, Oceanic Ichth., 1895, p. 88, pl. 26, fig. 100 (West Atlantic; Messina). --BORODIN, Bull. Vanderbilt Oceanogr. Mus., vol. 1, art. 1, 1928, p. 11(Panama, Pacific).

Myctophum (Nyctophus) rafinesquei BRAUER, Zool. Anzeiger, vol. 28, Nr. 10, Dec. 20, 1904, p. 393 (diagnosis in key).

Myctophum (Diaphus) rafinesquei BRAUER, Deutsch. Tiefsee Exp. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 223, text figs. 144-145 (Messina). --MURRAY and HJORT, The Depths of the Ocean, 1912, p. 613, fig. 461 (N. 36°52' W. 39°55'; N. 48°4' W. 32°25').

Diaphus rafinesquei TAANING, Rep. Danish Oceanogr. Exp., No. 5, vol. 2, A. 7, 1918, p. (27) 83, figs. 33-34 (Mediterranean and Atlantic); Vidensk. Medd. Dansk Naturh. Foren. København, vol. 86, 1928, p. 60 (diagnosis in key). --PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. (119) 131, text figs. 25 (photophores), 26 (profile) (N. 23° to 32° W. 64° to 77°, 7000 to 1000 feet; Proc. U. S. Nat. Mus., vol. 76, art. 10, 1929, p. 32 (types of Diaphus nanus, Diaphus theta, Myctophum protoculus). --FOWLER, Occas. Pap. Bishop Mus., vol. 9, No. 18, Feb. 1932, p. 4 (reference).

Diaphus theta EIGENMANN and EIGENMANN, Proc. California Acad. Sci., ser. 2, vol. 3, March 1890, p. 4. Point Loma, San Diego, California. --GOODE and BEAN, Oceanic Ichth., 1895, pp. 89, 512 (reference). --JORDAN and EVERMANN, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 564 (off Point Arena, California, in 455 fathoms).

Myctophum (Nyctophus) theta BRAUER, Zool. Anzeiger, vol. 28, Nr. 10, Dec. 20, 1904, p. 393 (diagnosis in key).

Myctophum (Diaphus) theta BRAUER, Deutsch. Tiefsee Exp. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 165 (diagnosis in key).

Myctophum protoculus GILBERT, Proc. U. S. Nat. Mus., vol. 13, July 1890, p. 52. Off Washington coast, in 584 fathoms.

Diaphus nanus GILBERT, Mem. Mus. Comp. Zool., vol. 26, No. 6, 1908, p. 224, pl. 1. Near Nukuhiva, Marquesas Islands, 300 fathoms; Mem. Carnegie Mus., vol. 6, No. 2, Aug. 1913, p. 87 (off Kiusiu and Hondo, in 300 fathoms). --FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 68 (types).

Diaphus holti TAANING, Rep. Danish Oceanogr. Exp. Med., No. 5, vol. 2, A. 7, 1918, p. (27) 88, figs. 35-36. Mediterranean and Bay of Cadiz; Vidensk. Medd. Dansk Naturh. Foren. Kobenhavn, vol. 86, 1928, p. 60 (North Atlantic and Mediterranean; diagnosis in key).

Diaphus mollis TAANING, Vidensk. Medd. Dansk Naturh. Foren. Kobenhavn vol. 86, 1928, p. 60. North Atlantic; diagnosis in key.

Depth 3 3/4 to 4 1/4; head 3 to 3 1/4, width 2 to 2 1/5. Snout in profile 7 1/2 to 9 1/2 in head; eye 3 to 3 2/5, greater than snout or interorbital; maxillary reaches well beyond eye though not quite to oblique hind preopercle edge, slender, length 1 2/5 to 1 2/3 in head; interorbital 3 1/2 to 3 2/3, convex. Gill rakers 5 to 7 + 13 to 16, lanceolate, 1 1/3 to 1 1/2 in eye; gill filaments 2/5 gill rakers.

Scales 36 in lateral line to caudal base and 2 more on latter, enlarged or not, narrowly imbricated, simple tubes well developed though little exposed; 3 above, 3 below, 9 to 11 predorsal forward to occiput. Scales adherent, firm. Caudal base scaly. Ventral axillary scale? 3 1/4 in fin. Scales with 3 basal radiating striae and 5 or 6 irregular marginals apically; circuli rather fine.

Antorbital luminous organ small or large, with lower section much larger and extending along first half of lower eye edge, followed by small photophore just behind eye center, also smaller photophore above upper section of antorbital luminous organ; 2 opercular photophores, upper much larger, conspicuous and on inclined line from lower eye edge and pectoral fin origin or upper subpectoral; lower opercular veiled, opposite or behind rictus; 3 equidistant veiled branchiostegals, 5 pectorals, first interspace longest, second interspace shortest, fourth photophore over or little behind third and nearly or even little above same level as upper subpectoral or pectoral fin origin; 1 suprapectoral, over pectoral fin origin, midway to lower third between lateral line and pectoral fin origin; 2 subpectorals, first or lower about midway in inclined line from first pectoral to upper subpectoral, which close before lowest pectoral fin ray bases; 5 ventrals, progressively higher from first to third which attains level of fourth pectoral or upper opercular; 1 supraventral, about midway to lower 2/5 between lateral line and ventral fin base; 5 + 5 or 6 anals, first anteroanal sometimes little elevated, posteroanals all behind anal fin base; 3 supraanals, in inclined plane or arc from last ventral, first and second equidistant or equidistant with last ventral, third supraanal sometimes little more separated or higher, though well below lateral line or falling over anal fin origin; 1 posterolateral over and behind last anteroanal at same level as uppermost supraanal; 4 precaudals arched progressively from firsy or lowest with last behind end of lateral line at same level as uppermost supraanal and posterolateral. Small rounded luminous organ below suprapectoral photophore.

D. IV, 9, I or III,/I, first branched ray 1 2/5? to 1 2/3 in head; adipose fin 3 1/3 to 3 3/4; A. III, 10, I, or III, 11, I, first branched ray 2 1/4 to 2 2/5; caudal (damaged) forked; least depth of caudal peduncle 2 3/5 to 3; pectoral 2 to 2 2/5; ventral 1 3/4 to 2.

Skin brown, scale pockets darker. Fins pale, evidently whitish.

Atlantic and Pacific Oceans.

10170 U. S. N. M. No data. Length 87? mm.

33550 U. S. N. M. N. 37° W. 68° Albatross Station. Length 68 to 78 mm. 2 examples.

40058 U. S. N. M. Messina. Florence Museum. Length 51 to 83 mm. 8 examples.

41914 U. S. N. M. Point Loma, California. Dr. C. H. Eigenmann. Length 37 to 53 mm. Type (larger) and paratype of Diaphus theta.

41922 U. S. N. M. San Diego, California. Dr. C. H. Eigenmann. Length 37 to 58 mm., caudal tips damaged. Paratypes of Diaphus theta. Very poorly preserved.

44290 U. S. N. M. Albatross Collection ( ). Length 67 mm., caudal tips damaged. Type of Myctophum protoculus.

49382 U. S. N. M. Messina. M. Bellotti. Length 81 mm.

60277 U. S. N. M. Albatross Collection (4267). Length 60 mm., caudal tips damaged.

74644 U. S. N. M. Albatross Collection (5063). Length 12 to 33 mm., caudal tips damaged. 4 examples.

74647 U. S. N. M. Albatross Collection (451). Length 11 to 41 mm. 6 examples.

75765. Albatross Collection (3998). Length 14 mm. Type of Diaphus nanus.

4 examples with 33503 U. S. N. M. N. 39°44'30" W. 71°4', 1022 fathoms. Albatross Collection (2090). September 21, 1883. Length 32 to 42 mm. As Myctophum mülleri.

1 example with 49357 U. S. N. M. Messina, Italy. M. Bellotti. Length 70 mm.

Diaphus anteorbitalis Gilbert

Diaphus anteorbitalis GILBERT, Mem. Carnegie Mus., vol. 6, No. 2, Aug. 1913, p. 92, pl. 12, fig. 1. N. Lat. 33°24'50" E. Long. 135°38'40", in 253 fathoms (off Shiro Misako). -- PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec.1928, p. 119 (compiled); Proc. U. S. Nat. Mus., vol. 76, 1929, p. 41 (type).

Lamprossa anteorbitalis JORDAN and HUBBS, Mem. Carnegie Mus., vol. 10, No. 2, June 27, 1925, p. 156 (Misaki).

Depth 4 1/4 to 4 1/3; head 3 2/5 to 3 1/2, width 2 to 2 1/5. Snout 5 to 6 1/5 in head; eye 3 2/5 to 3 4/5, greater than snout, 1 to 1 1/8 in interorbital; maxillary reaches well beyond eye, not quite opposite well inclined hind preopercle edge, slender, length 1 2/7 to 1 4/5 in head; interorbital 3 2/3 to 3 3/4, convex. Gill rakers 5 + 11, lanceolate, 1 1/3 in eye, twice gill filaments.

Scales 35 in lateral line to caudal base and 1 more on latter, not enlarged, tubes simple, moderate; 4 above, 4 below, 13 predorsal to occiput. Axillary ventral scale 1/3 of fin. Caudal base scaly. Scales with 5 basal and 5 apical radiating striae; circuli moderate.

Antorbital luminous organs as long narrow supraorbital along front half of eye above with small anterior section above nostril, along front and lower orbital edges another similar narrow one with its front upward extension still narrower; 2 opercular photophores, upper larger and on line with lower eye edge and upper subpectoral, lower veiled and close behind hind end of maxillary; 3 equidistant veiled branchiostegals; 5 pectorals, first interspace greatest, fourth photophore behind and above third or almost level with upper subpectoral; 1 suprapectoral, midway between lateral line and pectoral fin origin, little before upper subpectoral or little behind lower subpectoral; 2 subpectorals, first or lower in line midway between first pectoral and upper subpectoral, which close before bases of lowest pectoral fin rays; 5 ventrals, progressively higher from first to third which about same level as fourth pectoral, interspace between third and fourth greatest; 6 + 5 or 6 anals, first and sixth anteroanals elevated, posteroanals all behind anal fin base; 3 supraanals in inclined line from first or lowest behind last ventral, second supraanal little higher than first anal though little nearer first or lower supraanal than upper, most of which below lateral line over anal fin origin; 1 posterolateral, above and behind last anteroanal though below lateral line; 4 precaudals in arc progressively from first or lower just before caudal origin and uppermost little more distant than others below and behind end of lateral line.

Skin brown, sprinkled with minute dark dots, especially where scales have fallen and scale pockets all darker. Sides of head and adherent scales with silvery tints and iridescent reflections. Orbital luminous organs yellowish. Fins whitish, dorsal and caudal dark basally, articulations of fin rays finely dusky.

Japan.

74471 U. S. N. M. Albatross Collection (4968). Length 109 mm., caudal damaged. Type.

74502 U. S. N. M. Albatross Collection (4968). 2 examples. Length 96 to 108 mm. caudal damaged. Paratypes.

Diaphus adenomus Gilbert

Diaphus adenomus GILBERT, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905), p. 592, pl. 68, fig. 1. Kaiwi Channel between Oahu and Molokai, in 335 to 350 fathoms; off southern Oahu, in 265 to 280 fathoms; near Kauai, in 318 to 362 fathoms. --JORDAN and JORDAN, Mem. Carnegie Mus., vol. 10, No. 1, Dec. 1922, p. 12 (reference). --PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 119 (compiled). --FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 68 (Hawaii). --PARR, Proc. U. S. Nat. Mus., vol. 76, 1929, p. 41 (type).

Depth 4 to 4 1/2; head 3 1/5 to 3 2/3, width 2 to 2 1/2. Snout 6 to 9 in head from snout tip; eye 4 to 4 3/4, greater than snout, 1 1/4 to 1 1/2 in interorbital; maxillary reaches well beyond eye though not quite to well inclined hind preopercle edge, slender, length 1 1/4 in head from snout tip; interorbital 2 7/8 to 3 1/2, convex. Gill rakers 5 + 13, lanceolate, 1 1/4 in eye; gill filaments 3/5 of gill rakers.

Scales 35 or 36 in lateral line to caudal base, not enlarged; 4 above, 5 below, 14 predorsal forward to occiput. Scales very caducous, all fallen. Caudal base apparently scaly.

Antorbital luminous organs large, upper section large and lower section similar, occupies whole front 3/5 of lower eye edge; 2 opercular photophores, upper little larger, on line with lower eye edge and upper subpectoral; branchiostegals veiled, as 3 large, luminous areas, second little nearer third; 5 pectorals, first interspace longest, fourth photophore elevated on line with upper subpectoral and third ventral; 1 suprapectoral over pectoral fin origin or about lower 2/5 in space between lateral line and pectoral fin origin; first or lower subpectoral midway in line between first pectoral and upper subpectoral, last close before bases of lowest pectoral rays; 5 ventrals equidistant; 1 supraventral, midway between ventral fin base and lateral line; 6 + 5 anals, first and sixth anteroanals elevated, second and fifth less so, thus form complete arc to posterolateral; 3 supraanals in vertical inclined line from behind fifth ventral, first or lowest and second closest, though median little higher than first anteroanal and third or uppermost close below lateral line little before anal fin origin; 1 posterolateral, little behind and above last anteroanal, interspace greater than between fifth and sixth anteroanals; 4 precaudals in arc at lower caudal base, uppermost about 2/5 in space below lateral line. Large white luminous body below and behind suprapectoral. Female with 4 infracaudal luminous scales. Caudal fin with rather large whitish luminous area at base of each caudal lobe.

D. III, 11, I, first branched ray 1 2/5 in total head length; adipose fin 3 1/8 to 3 1/4; A. III, 12, I, first branched ray 2 to 2 1/3?; caudal (damaged) subequal with head; least depth of caudal peduncle 2 4/5 to 2 7/8; pectoral 2 7/8 to 3; ventral 1 2/5 to 1 3/5.

Dark brown, scale pockets and fin base dusky or darker. Iris gray, evidently silvery white in life. Interorbital blackish, with rather large diffuse median whitish area. Blackish bar over narrow infraorbital area.

Hawaiian Islands.

51515 U. S. N. M. Albatross Collection (4106). Length 73 mm. Paratype.

51588 U. S. N. M. Albatross Collection (4106). Length 150 mm., to ends of broken caudal tips. Type.

Diaphus macrophus Parr

Diaphus macrophus PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 136, fig. 27, N. 24°11' W. 75°35'; 7500 feet, Bahamas.

Depth 4 1/8; head 3 2/5. Snout 5 1/2 in head; eye 2 1/2, greater than snout; maxillary extends 1/2 eye diameter behind eye, length 1 1/4 in head; interorbital high.

Antorbital luminous organs large, upper circular, lower extends above nostril and along lower eye edge before pupil; 2 operculars, upper level with lower eye edge; 5 ventrals, first interval longest, fourth elevated close below level of upper subpectoral and over interval between third and fifth pectorals; 2 subpectorals in line with first pectoral, equidistant; 5 ventrals, in inclined line from first to third; 1 suprapectoral, nearer pectoral origin than lateral line; 1 supraventral little nearer ventral fin base than lateral line; anals 6 + 5, first anteroanal level with median supraanal, last anteroanal little elevated, posteroanals behind anal base; 3 supraanals in slightly inclined line, first and second closer and third 2 eye diameters below lateral line; 1 posterolateral 2 diameters below lateral line; 4 precaudals arched at caudal base, upper close below end of lateral line. Suprapectoral with luminous scale.

D. 15; A. 15; pectoral 11; ventral 8. Length 27 mm. without caudal. (Parr.)

Bahamas.

Diaphus monodi new species

Depth 3 3/4 to 4; head 2 4/5 to 3 2/5, width 2. Snout 6 to 7 inhead; eye 4 to 4 1/4, greater than snout, 1 1/3 to 1 2/5 in interorbital; maxillary reaches well behind eye not reaching well inclined hind preopercle edge, slender, length 1 2/5 to 1 1/2 in head; interorbital 3, convex and convexly elevated. Gill rakers 6 + 12, lanceolate, equal eye; gill filaments 2/3 gill rakers.

Scales 30 in lateral line, not enlarged, with prominent tubes; 3 above, 4 below. Ventral with pointed axillary scale 1/2 fin length. Caudal base well scaled. Scales very caducous, all fallen.

Large antorbital organ well above upper eye edge; 2 opercular photophores, lower opposite hind terminal end of maxillary; 5 pectorals, first interspace longest, fourth spot close behind third and slightly above upper subpectoral; 1 suprapectoral, midway between lateral line and pectoral fin origin; 2 subpectorals, first or lower but little below upper or midway between first pectoral and upper subpectoral, which close before lower median pectoral ray bases; 5 ventrals, third over second and little above level of upper pectoral fin edge, fourth little behind and midway in line with third and fifth; 1 supraventral, about upper third in space between lateral line and ventral base; 5 to 6 + 4 or 5 anals, first anteroanal close before second or slightly below level of second supraanal, posteroanals all behind anal fin base; 3 supraanals, first low and close before anal origin, second slightly below middle of first supraanal and third or uppermost which close below lateral line; 2 posterolaterals, first or lower close behind and above last anteroanal and upper close behind and below lateral line; 4 precaudals in slight arc progressively on base of lower caudal lobe, upper moderately below end of lateral line. Large luminous organ close below and behind suprapectoral.

D. III, 12, I, first branched ray 1 1/4 to 1 2/5 in head; adipose fin 3 to 3 1/5; A. III, 13, I, first branched ray 1 3/5 to 2; caudal 1 1/8 to 1 1/5, well forked; least depth of caudal peduncle 3 to 3 1/4; pectoral 2 2/5 to 2 7/8; ventral 1 3/5 to 1 2/3.

Skin brown, where scales have fallen pale, scale pockets darker. Preorbital and pectoral luminous organs cream white. Iris dary gray, likely silvery in life. Fins whitish.

Diagnosis. Greatly like Diaphus metopoclampus (Cocco), known only from the Mediterranean and Atlantic. It differs, however, in much fewer postanal photophores, my examples with but 4 or 5 on each side.

Type No. U. S. N. M.

D. 5497. Bantigui Island, N. 64° W., 10 miles (N. 9°7'15" E. 124°59'30"), between Leyte and Mindanao. In 960 fathoms. August 3, 1909. Length 42 mm.

D. 5504. Macabalan Point Light (Mindanao), S. 39° E., 6 miles (N. 8°35'30" E. 124°36'), northern Mindanao. In 200 fathoms. August 5, 1909. Length 75 mm.

D. 5190. Pescador Island, S. 9° E., 10.70 miles (N. 10°8'15" E. 123°16'45"), Tanon Strait, east coast of Negros. In 295 fathoms. March 31, 1908. Length 75 to 78 mm. 2 examples.

Diaphus metopoclampus (Cocco)

Nyctophus metopoclampus COCCO, Giorn. Sci. Let. Art. Sicil., vol. 26, No. 77, 1829, p. 144. Messina; Nuovi Ann. Sci. Nat. Bologna, vol. 2, 1838, p. 24, pl. 5, fig. 8.

Myctophum metopoclampum COCCO, Iris, vol. 24, 1831, p. 1342 (Messina).

--BONAPARTE, Iconogr. Fauna Italica, Pesc., vol 3, fasc. 27, 1840, description, pl. fig. 3 (Italy).

Myctophum (Nyctophus) metopoclampum BRAUER, Zool. Anzeiger, vol. 28, 1904, p. 394 (diagnosis in key).

Myctophum (Diaphus) metopoclampum BRAUER, Deutsch. Tiefsee Exp. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 225, fig. 147 (Messina).

Scopelus metopoclampum VALENCIENNES, Hist. Nat. Poiss., vol. 22, 1849, p. 442 (Messina; Algeria).

Scopelus metopoclampus GÜNTHER, Cat. Fishes Brit. Mus., vol. 5, 1864, p. 409 (compiled). --CANESTRINI, Fauna Italica, Pesci, 1874, p. 123 (Sicily). --CARUS, Prodr. Fauna Medit., vol. 2, 1893, p. 564 (compiled).

Scopelus (Nyctophus) metopoclampus LÜTKEN, Kon. Dansk. Vidensk. Selsk. Skrift. Kjöbenhavn, vol. 7, 1892, p. 258 (BONAPARTE specimen).

Aethoprora metopoclampa GOODE and BEAN, Oceanic Ichth., 1895, p. 86, pl. 27, fig. 101 (Messina). --FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1911 (1912), p. 570 (Bonaparte specimen).

Diaphus metopoclampus TAANING, Vidensk. Medd. Dansk Naturh. Foren. Köbenhavn, vol. 86, 1928, p. 61 (North Atlantic; Mediterranean). -- PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, 1928, p. (137), fig. 28 (N. 24° to 32° W. 64° to 77°, 5000 to 10000 feet).

Diaphus metaclampus BORODIN, Bull. Mus. Comp. Zool., vol. 72, No. 3, Aug. 1931, p. 76 (N. 47°40' W. 37°20', 600 fathoms; error).

Depth 3 1/2; head 3 2/5, width 1 3/4. Snout in profile 7 1/3 in head; eye 2 3/5, greatly exceeds snout or interorbital; maxillary extends back moderately behind eye though not quite to hind preopercle edge, slender, length 1 2/7 in head; interorbital 5, convex, very declivous. Gill rakers 8 + 18, lanceolate, slender, 1 2/5 in eye, gill filaments 1 2/3 in eye.

Scales 30 in lateral line, not enlarged, tubes large and simple; 3 above, 4 below, 10 predorsal to occiput. Caudal base scaly. Scales very caducous, most all fallen.

Very large antorbital luminous organ covering whole front of very declivous snout, 2 supraorbital lobes of which inner greatly larger, lower marginal along front eye edge and posteriorly far as hind pupil edge with upper extension to nostril equally wide; 2 opercular photophores, upper level with lower eye edge, lower little smaller than upper and behind end of maxillary; 3 veiled equidistant branchiostegals; 5 pectorals, first interspace greatest and fourth photophore behind third pectoral and little above level of upper subpectoral; 1 suprapectoral, above upper fourth in space between lateral line and pectoral fin origin, white luminous organ below twice its diameter; 2 subpectorals, upper close before bases of lowest pectoral rays, first or lower midway in line from first pectoral and uppermost subpectoral; 5 ventrals, progressively higher from first to third which over and little before fourth at about same level as pectoral fin origin; 1 supraventral, over first ventral about upper third in space between lateral line and level of pectoral fin origin; 6 + 6 anals, first elevated though not quite high as median supraanal and well before second anteroanal, posteroanals behind anal fin base; 3 supraanals in inclined line from first or lowest which little behind last ventral up to uppermost little below lateral line and opposite anal fin origin, median slightly nearer lower or on same level as third ventral; 1 posterolateral, below lateral line opposite break in anals; 4 precaudals inclined upward from first which low at front of lower caudal lobe to highest little behind and below end of lateral line.

D. III, 11, I, first branched ray 1 1/10 in head; adipose fin 3 3/4; A. III, 12, I, first branched ray 1 3/4; caudal damaged, evidently forked; least depth of caudal peduncle 2 1/2; pectoral 2 1/8; ventral 1 1/2.

Skin brown, with dusky or darker scale pockets. Sides of head and adherent scales with silvery white reflections. Preorbital luminous organs yellowish. Iris silvery white. Fins whitish.

Atlantic Ocean.

44169 U. S. N. M. Messina, Italy. Dr. H. H. Giglioli. Length 53 mm.

Diaphus effulgens (Goode and Bean)

Aethoprora effulgens GOODE and BEAN, Oceanic Ichth., 1895, p. 87, pl. 27, fig. 103. From cod on Brown's Bank; N. Lat. 19°45' W. Long. 75°4', in 1639 fathoms.

Myctophum (Nyctophus) effulgens BRAUER, Zool. Anzeiger, vol. 28, Nr. 10, Dec. 20, 1904, p. 393 (diagnosis in key).

Myctophum (Diaphus) effulgens BRAUER, Deutsch. Tiefsee Exp. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 165 (diagnosis in key).

Diaphus effulgens TAANING, Vidensk. Medd. Dansk Naturh Foren. København, vol. 86, 1928, p. 62 (diagnosis in key). --PARR, Bull Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 1720 (compiled); Proc. U. S. Nat. Mus., vol. 76, 1929, p. 42, fig. 20 (type). --BORODIN, Bull. Mus. Comp. Zool., vol. 72, No. 3, Aug. 1931, p. 76 (N. 32°50' W. 64°18', 1500 meters).

Depth 3 7/8; head 3 1/4, width 1 7/8. Snout 6 3/4, 9 1/5 in profile; eye 3, greater than snout or interorbital; maxillary reaches little beyond eye though not quite to hind preopercle edge, slender, length from snout tip 1 1/2 in head, interorbital 5, convex. Gill rakers 6 + 14, lanceolate, 2 in eye, subequal with gill filaments.

Scales 37 in lateral line to caudal base and 1 more on latter, enlarged; 3 above, 4 below, 10 predorsal to occiput. Scales with 4 basal radiating striae and 6 apical less perfect; circuli fine, complete.

Two large, fused antorbital luminous organs, supero-orbital about 1/3 of infero-orbital, also with smaller outer section or supraorbital 1/4 of inner section; 2 opercular photophores, upper larger and just above line from lower eye edge and pectoral fin origin, lower minute and veiled, close behind hind maxillary end; 5 pectorals, first interspace greatest, fourth photophore behind and elevated slightly below level of upper subpectoral; 1 suprapectoral, about lower third between lateral line and pectoral fin origin, with moderate white luminous body below; 2 subpectorals, first or lower median in line with first pectoral and upper subpectoral, last close before and partly below bases of lowest pectoral fin rays; 5 ventrals, progressively higher from first to third, which little above level with fourth pectoral; 1 supraventral, about midway below lateral line and ventral fin origin; 6 + 5 anals, first slightly above level with median supraanal, second little lower and sixth little higher than fifth, posteroanals all behind anal fin base; 3 supraanals, slightly inclined in row from first or lowest close behind fifth ventral to third or uppermost well below lateral line, median little nearer first than uppermost; 1 posterolateral well below lateral line, little posterior to sixth anteroanal; 4 precaudals, progressively arched from first along lower edge of caudal base up towards, though well below end of lateral line.

D. IV, 12, I, first branched ray 1 2/5 in head; adipose fin 5 3/4; A. III, 12, I, first branched ray 2; caudal (damaged) forked; least depth of caudal peduncle 2 4/5; pectoral 2/ ventral 1 3/5.

Light brown, with traces of silvery reflections. Iris yellowish white with gray. Antorbital luminous organs buff golden. Fins pale brownish.

43770 U. S. N. M. Brown's Bank. Gloucester Donation. Length 135 mm. to end of damaged caudal.

Diaphus chrysorhynchus Gilbert and Cramer

Diaphus chrysorhynchus GILBERT and CRAMER, Proc. U. S. Nat. Mus., vol. 19, 1896, p. 409. N. Lat. 21°15'49" W. Long. 159°44'27"; Iiao Makanni. --GILBERT, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905), p. 592 (off Kannakakai, Molokai; off Honolulu; off north west Oahu, in 253 to 282 fathoms). --JORDAN and JORDAN, Mem. Carnegie Mus., vol. 10, No. 1, Dec. 1922, p. 12 (reference). -- PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 120 (compiled). --FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 68 (compiled). --PARR, Proc. U. S. Nat. Mus., vol. 76, 1929, p. 37, figs. 17-18 (type).

Myctophum (Diaphus) chrysorhynchum BRAUER, Deutsch. Tiefsee Exp. Valdivia, vol. 5, Tiefsee-Fische, 1906, p. 164 (diagnosis in key).

Myctophum fibulatum (not GILBERT and CRAMER p. 411) GILBERT and CRAMER, Proc. U. S. Nat. Mus., vol. 19, 1896, pl. 38, fig. 2 (wrongly transposed).

Depth 4 1/4 to 4 4/5; head 3 1/3 to 3 2/5, width 2 1/8 to 2 1/5. Snout 6 to 8 in head; eye 3 to 3 1/2, greater than snout or interorbital; maxillary extends well back of eye though not quite to well inclined preopercle edge, slender, length 1 1/3 to 1 2/5 in head; interorbital 4 1/8 to 4 1/2, convex. Gill rakers 7 + 15, lanceolate, slender, 2 in eye, subequal with gill filaments.

Scales 34 in lateral line to caudal base and 2 more on latter, not enlarged, tubes simple, distinct; 3 above, 4 below, 10 or 11 predorsal to occiput. Pointed axillary ventral scale 2 in fin. Caudal base scaly. Scales with 9 to 11 basal radiating striae and as many apically; circuli fine, complete.

Large antorbital luminous organ, upper section extending well over nostril and as supraorbital, lower narrower and larger extending well along most of lower front eye edge; 2 opercular photophores, upper larger and in inclined line from lower eye edge to upper subpectoral, lower veiled and behind rictus; 3 veiled branchiostegals; 5 pectorals, first interspace longest, fourth photophore over and little posterior from third and nearly level with upper subpectoral; 1 suprapectoral about upper third in space between lateral line and pectoral fin origin, little before upper subpectoral; 2 subpectorals, first or lower midway in line from first ventral and uppermost subpectoral, last close before and below lowest pectoral fin ray bases; 5 ventrals, first 3 progressively elevated in inclined plane so last about level with fourth pectoral and little before fourth ventral, last interspace greatest; 1 supraventral midway between lateral line and ventral fin origin; 6 + 5 or 6 anals, first anteroanal elevated above level of first supraanal though not quite so high as second, before first anteroanal and last anteroanal also little elevated from fifth, posteroanals all behind anal fin; 3 supraanals in slightly inclined line from behind last ventral, first and second closer and third or uppermost close below lateral line opposite vent; 1 posterolateral close below lateral line little behind last anteroanal; 4 equidistant precaudals in arc progressively higher along base of lower caudal lobe, uppermost close below end of lateral line.

D. III, 13, I or III, 14, I, first branched ray 1 1/5 to 1 1/4 in head; adipose fin 3 1/2 to 3 3/4; A. III, 12, I or III, 13, I, first branched ray 1 3/4 to 2; caudal (damaged) well forked; least depth of caudal peduncle 3; pectoral 2 1/5 to 2 2/3; ventral 1 3/5 to 1 4/5.

Body dark brown where scales have fallen, sprinkled with minute dark dots. Antorbital luminous organ brilliant golden. Adherent scales, and sides of head with silvery white tints and variously iridescent. Fins all pale brown.

Hawaiian Islands.

70219 U. S. N. M. N. 21°10'30" W. 157°48'30". Albatross Collection (3471). December 4, 1891. Length 61 to 78 mm. 2 examples.

47710 U. S. N. M. Albatross Collection. Length 78 to 98 mm. 6 examples. Type (largest) and paratypes.

Diaphus perspicillatus (Ogilby)

Aethoprora perspicillata OGILBY, Proc. Linn. Soc. New South Wales, vol. 23, 1898, p. 36. Lord Howe Island. --WAITE, Records Australian Mus., vol. 5, pt. 3, 1904, p. 149, pl. 18, fig. 1 (type).

Diaphus perspicillatus NORMAN, Ann. Mag. Nat. Hist., ser. 10, vol. 4, Nov. 1929, p. 512 (Lord Howe Island).

Myctophum (Nyctophus) elucens BRAUER, Zool. Anzeiger, vol. 28, Nr. 10, Dec. 20, 1904, p. (393) 401, fig. Indian Ocean.

? Myctophus (Diaphus) elucens BRAUER, Deutsch. Tiefsee Exp. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 219, text fig. 140 (type, from S. 0°27'4" E. 42°47'3", 638 meters).

Diaphus elucens PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. (121) 138 (discussion). --BORODIN, Bull. Mus. Comp. Zool., vol. 72, No. 3, Aug. 1931, p. 76 (N. 32°50' W. 64°18', 1500 meters).

Diaphus gigas GILBERT, Mem. Carnegie Mus., vol. 6, No. 2, Aug. 1913, p. 93, pl. 12, fig. 2. Sagami Bay. --JORDAN and THOMPSON, Mem. Carnegie Mus., vol. 6, No. 4, Sept. 1914, p. 213 (Sagami Bay).

Diaphus fragiles TANNING, Vidensk. Medd. Dansk Naturh.Foren. København, vol. 86, 1928, p. 61 (diagnosis in key).

Diaphus effulgens (not GOODE and BEAN) PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 120 (part).

Depth 3 7/8; head 3 1/6. Snout 10 2/5 in head; eye 3, greatly exceeds short snout; maxillary extends nearly eye diameter behind eye, slender, length 1 1/4 in head; interorbital moderately high.

Two antorbital luminous organs, one very small and superior on upper eye edge little anterior, other a broad mass along whole front eye edge; 2 opercular photophores, upper larger and in line with lower eye edge and fourth pectoral spot; 3 branchiostegals; 5 pectorals, first interval greatly longest, fourth spot elevated level with pectoral fin origin rather close behind third pectoral in vertical; 1 suprapectoral slightly nearer pectoral fin origin than lateral line; 2 subpectorals, in slightly inclined line with first pectoral, first median in position and second or upper close before bases of lower pectoral rays in vertical with suprapectoral; 4? ventrals, second slightly higher than either fourth pectoral or first supraanal; 1 supraventral, little nearer ventral base than lateral line; anals 6 + 4, first and last anteroanals elevated though first little lower than median supraanal, posteroanals behind anal fin base; 3 supraanals, in nearly straight inclined line passing behind last ventral, median much closer to first than to upper or third which close below lateral line; 1 postero-lateral close below lateral line behind last anteroanal in vertical; 4 precaudals, first 3 close together and low, fourth much higher posteriorly little below end of lateral line. Large luminous scale below suprapectoral.

D. III, 11, first branched ray 1 3/4 in head; adipose fin 3 3/4; A. III, 11, first branched ray 2 1/4; caudal 1 1/4, forked; least depth of caudal peduncle 2 4/5; pectoral 3; ventral 1 3/4.

Length 39 mm. (Brauer.)

Pacific and Indian Oceans.

Gilbert's type of Diaphus gigas is 172 mm. long and seems to vary only in minor characters from Brauer's account and figure. He gives scales 35 in lateral line and gill rakers 8 + 16.

Diaphus lucidus (Goode and Bean)

Aethoprora lucida GOODE and BEAN, Oceanic Ichth., 1895, p. 87, pl. 27, fig. 102. N. 19°45' W. 75°4', 1639 fathoms.

Myctophum (Nyctophus) lucidum BRAUER, Zool. Anzeiger, vol. 28, Nr. 10, Dec. 20, 1904, p. 393 (diagnosis in key).

Myctophum (Diaphus) lucidum BRAUER, Deutsch. Tiefsee Exp. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 164 (diagnosis in key).

Diaphus lucidus TAANING, Vidensk. Medd. Dansk Naturh. Foren. København, vol. 86, 1928, p. 62 (North Atlantic; diagnosis in key). --PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. (121) 141, fig. 31 (N. 23° to 24° W. 76° to 77°, 4000 to 8000 feet); Proc. U. S. Nat. Mus., vol. 76, 1929, p. 44 (type).

Depth 4 1/8; head 3 3/5, width 1 4/5. Snout 8 4/5 in head; eye 4 1/5, greater than snout, 1 1/3 in interorbital; maxillary extends 1 1/3 eye diameters behind eye though not quite to inclined hind preopercle edge, slender, length 1 1/3 in head; interorbital 3 3/4, convex. Gill rakers 5 + 12, lanceolate, slender, 1 1/2 in eye, equal gill filaments.

Scales 39 in lateral line, enlarged; 3 above, 5 below, 14 predorsal forward to occiput. Caudal base scaly. Scales very caducous, most all fallen.

Large antorbital luminous organ supraorbital, faces forward, nearly large as pupil and narrow as seen in profile; another large antorbital luminous organ along greater front eye edge; 2 opercular photophores, upper in line with lower eye edge and pectoral fin origin, lower veiled and behind hind maxillary end; 3 equidistant veiled branchiostegals; 5 pectorals, first interspace longest, third behind fourth and elevated level with pectoral fin origin; 1 suprapectoral, slightly behind pectoral fin origin about upper 2/5 in space between lateral line and pectoral fin origin; 2 subpectorals, first or lower midway between uppermost subpectoral and first pectoral, upper close before pectoral fin base medianly; 5 ventrals, second and third progressively higher with third elevated little above pectoral fin origin; 1 supraventral, about upper third between lateral line and ventral fin base; 7 + 6 anals, anteroanals bowed towards anal base with first spot slightly lower than median supraanal and last above first posteroanal, posteroanals behind anal fin base; 3 supraanals, first or lowest little above and behind fifth ventral, second at lower third between first and uppermost which close below lateral line; 1 posterolateral close below lateral line, behind last anteroanal; 4 precaudals arched along lower caudal lobe basally, first lowest and fourth rather close below end of lateral line. Rather large luminous body below suprapectoral photophore.

D. III, 14, I, first branched ray 1 1/4? in head; adipose fin 3 3/4; A. IV, 13, I, first branched ray 1 4/5?; caudal 1 1/5?, forked; least depth of caudal peduncle 3; pectoral 2 1/2?, ventral 1 3/4.

Brown, rather pale and evidently faded. Iris dark gray. Fins whitish.

Atlantic Ocean.

44084 U. S. N. M. N. 19°45' W. 75°4'. In 1639 fathoms. Albatross Collection (2127). Length 108 mm.

Diaphus caeruleus (Klunzinger)

Scopelus caeruleus KLUNZINGER, Verhandel. Zool. botan. Gesell. Wien, vol. 21, 1871, p. 592. Red Sea.

Scopelus (Nyctophus) coeruleus LÜTKEN, Kon. Dansk. Vidensk. Selsk. Skrift. Kjöbenhavn, ser. 6, vol. 7, 1892, p. 260, fig. 20 (type).

Lampanyctus coeruleus GOODE and BEAN, Oceanic Ichth., 1895, pp. 81, 512 (compiled).

Myctophum (Nyctophus) coeruleum BRAUER, Zool. Anzeiger, vol. 28, Nr. 10, Dec. 20, 1904, p. 392 (compiled; diagnosis in key).

Myctophum (Diaphus) coeruleum BRAUER, Deutsch. Tiefsee Exp. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 217, text fig. 137 (S. 0°43'2" E. 98°33'8", 371 meters, west coast of Sumatra).

Diaphus coeruleus WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 88 (Molucca Passage, in 1500 meters). --GILBERT, Mem. Carnegie Mus., vol. 6, No. 2, Aug. 1913, p. 94 (Sagami Bay; cotypes of Diaphus watasei). --MCCULLOCH, Biol. Results Endeavor, vol. 5, pt. 4, June 8, 1926, p. 160, pl. 13, figs. 1-2 (Great Australian Bight, in 200 to 450 fathoms). --PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 122 (compiled).

Diaphus caeruleus WEBER and BEAUFORT, Fishes Indo Austral. Archipelago, vol. 2, 1913, p. 168 (fig. 65 b on p. 171) (Molucca Passage, to 1500 meters). --JORDAN and THOMPSON, Mem. Carnegie Mus., vol. 6, No. 4, Sept. 1914, p. (Sagami Bay).

Scopelus engraulis GÜNTHER, Rep. Voy. Challenger, vol. 22, 1887, p. 197, pl. 51, fig. C. Philippines, in N. Lat. 6°47' E. Long. 122°28', in 250 fathoms. --ALCOCK, Ann. Mag. Nat. Hist., ser. 6, vol. 8, 1891, p. 129 (Andaman Sea, in 188 to 220 fathoms); Journ. Asiatic Soc. Bengal, vol. 65, pt. 2, 1896, p. 333 (reference); Descript. Cat. Deep Sea Fishes, Indian Mus., 1899, p. 161 (Andaman Sea materials).

Depth 4 1/2 to 5; head 3 2/5 to 3 1/2, width 2 1/5 to 2 1/4. Snout 5 1/2 to 6 in head; eye 3 4/5 to 4 1/4, greater than snout, 1 1/5 to 1 1/3 in interorbital; maxillary reaches 1 to 1 1/2 eye diameters behind eye though not quite to moderately inclined hind preopercle edge, slender, length 1 1/3 to 1 2/5 in head; interorbital 3 2/5 to 3 1/2, broadly convex. Gill rakers 9 + 13, lanceolate, slightly clavate, length 1 1/2 in eye, subequal with gill filaments.

Scales 35 or 36 in lateral line, little enlarged; 4 above, 5 below, 12 predorsal to occiput. Ventral with pointed axillary scale 1/4 fin length. Caudal base scaly. Scales all very caducous, mostly fallen.

Antorbital luminous organ large, with small supraorbital section at upper front eye edge about 1/3 diameter of pupil and above nostril, lower section broadly triangular, with greatest extent along lower front eye edge; 2 opercular photophores, upper larger and in line with lower eye edge and pectoral fin origin, lower close behind maxillary hind end and often veiled; 3 equidistant veiled branchiostegals, often obscured by extensive luminous masses; 5 pectorals, first interspace longest, nearly or quite equals space between second and fifth photophores, fourth above and little behind third or at same level as upper subpectoral; 1 suprapectoral, at lowest third to fifth between lateral line and pectoral fin origin, over pectoral fin origin and little advanced from upper subpectoral;2 subpectorals, first or lower median in line with first pectoral and upper subpectoral, which close below pectoral fin base; 5 ventrals, second and third progressively elevated from first so third elevated level with fourth pectoral though little advanced from fourth ventral; 1 supraventral, at lowest 1/3 to 2/5 between lateral line and ventral fin base; 6 + 5 anals, anteroanals arched toward anal fin base so first well elevated though anterior to second, also hind anteroanals curve up contiguously to posterolateral, posteroanals usually behind anal fin base though sometimes first spot may fall over base of last anal ray; 3 supraanals, in inclined linem with first or lowest beginning little behind fifth ventral to which nearer than to median supraanal which falls well below lateral line; 1 posterolateral, similar to uppermost supraanal, below lateral line though opposite adipose fin origin; 4 precaudals, arched along lower lobe of caudal with fourth about midway in space below end of lateral line as caudal retracted. Luminous organ below suprapectoral.

D. IV, 10, I to IV, 12, I, first branched ray 1 2/5 to 1 1/2 in head; adipose fin 4 2/3 to 4 4/5; A. IV, 11, I or IV, 12, I, first branched ray 2 1/8 to 2 1/2; caudal 1 1/3 to 1 2/7, forked; least depth of caudal peduncle 3 to 3 1/3; pectoral 2 1/2 to 2 3/5; ventral 1 1/2 to 1 3/4.

Brown, scale pockets darker. Scales and sides of head shining silvery white, with iridescent tints. Iris whitish. Inside gill opening blackish. Fins all pale brownish to whitish, bases dusky.

Indian and Pacific Oceans. My materials seem to agree in most every way with Brauer's figure.

2487. D. 5317. China Sea vicinity of Formosa (N. 21°36' E. 117°27'). In 230 fathoms. November 5, 1908. Length 115 mm.

3647. D. 5564. Dammi Island (N.), S. 85° W., 6.1 miles (N. 5°50' E. 120°31'), between Jolo and Tawi Tawi. In 236 fathoms. Septembe r 21, 1909. Length 148 mm.

4335. D. 5567. Dammi Island (N.), N. 81° W., 9 miles (N. 5°48' E. 120°33'45"), north of Tawi Tawi. In 268 fathoms. September 21, 1909. Length 158 mm.

4419. D. 5331. Hermana Menor Island (E.), N. 13° E., 7.30 miles (N. 15°36'45" E. 119°47'45"), off Western Luzon. In 178 fathoms. November 22, 1908. Length 153 mm.

1568. D. 5135. Jolo Light, S. 46° W., 11.90 miles (N. 6°11'50" E. 121°8'20"), vicinity of Jolo. In 161 fathoms. February 7, 1908. Length 155 mm.

2407, 2410. D. 5589. Mabul Island (N. W.) N. 3° W., 2.8 miles (N. 4°12'10" E. 118°38'8"), Sibuko Bay, Borneo and vicinity. In 260 fathoms. September 29, 1909. Length 118 to 143 mm.

3826, 3852. D. 5621. Makyan Island (S.), N. 54° W., 3 miles (N. 0°15' E. 127°24'35"), between Gillolo and Makyan Islands. In 298 fathoms. November 28, 1909. Length 145? to 147 mm.

1625, 1626. D. 5266. Matocot Point, S. 22° E., 7 miles (N. 13°44'36" E. 120°59'15"), Verde Island Passage and Batangas Bay. In 100 to 135 mm. June 8, 1908. Length 130 to 158 mm.

2756. D. 5268. Matocot Point, S. 50° E., 5.80 miles (N. 13°42' E. 120°57'15"). In 170 fathoms. June 8, 1908. Length 168 mm.

2180, 2993. D. 5374. Tayabas Light (outer), N. 9° E., 7.4 miles (N. 13°46'45" E. 121°35'8"), Marinduque Island and vicinity. In 190 fathoms. March 2, 1909. Length 123 to 153 mm.

Diaphus watasei Jordan and Starks

Diaphus watasei JORDAN and STARKS, Bull. U. S. Fish Comm., vol. 22, 1902 (1904), p. 580, fig. Off Atami, in Sagami Bay, in 153 fathoms; off Misaki. --PARR, Proc. U. S. Nat. Mus., vol. 76, 1929, p. 39, fig. 19 (type).

Diaphus coeruleus (not KLUNZINGER) PARR, Bull. Bingham Oceanogr. Collection, xxxxx vol. 3, art. 3, Dec. 1928, p. 122 (part).

Depth 4 7/8; head 3 2/3, width 2 1/2. Snout 7 in head; eye 3 7/8, greater than snout or interorbital; maxillary reaches well beyond eye though not quite to well inclined hind preopercle edge, slender, length 1 1/3 in head; interorbital 4 1/5, nearly level. Gill rakers 7 + 14, lanceolate, 1 1/2 in eye; gill filaments 3/4 gill rakers.

Scales 36 in lateral line to caudal base and 2 more on latter, apparently none enlarged, tubes simple, conspicuous. Scales very caducous, most all now fallen. Caudal base apparently scaly.

Large antorbital luminous organ, upper lobe moderate above nostril, lower lobe much larger and extends along lower front half of eye; 2 opercular, upper much larger and falls on line with lower eye edge and upper subpectoral, lower very small, veiled, behind end of maxillary; 3 ? veiled branchiostegals; 5 pectorals, first interspace greatest, fourth photophore little above level with upper ? subpectoral over and behind third ventral; 1 suprapectoral at lower third between lateral line and pectoral fin origin; 2 subpectorals, first or lower in line with first pectoral and upper subpectoral though nearer latter; upper subpectoral close before bases of lowest pectoral fin rays and little before supra-ventral; 5 ventrals, progressively higher from first to third, latter about level with fourth pectoral and interspace between it and fourth ventral shortest of ventral series; 1 supraventral, little nearer ventral fin base than lateral line; 7 + 5 anals, first much higher than second anteroanal though little lower than median supraanal and last 2 anteroanals rise progressively to form line with mediolateral, all equidistant, postero-anals behind ventral fin base; 3 supraanals in inclined line from first or lowest little behind and above last ventral to uppermost or third, lower interspace of series little less than upper and uppermost photophores well below lateral line; 1 posterolateral little lower than level of uppermost supraanal; arc of 4 precaudals rising from first or lowest, uppermost little more separated than others about upper third in space below lateral line. Small luminous organ below suprapectoral photophore, but little larger.

D. III, 11, I, first branched ray 1 1/5? in head; adipose fin 3 7/8; A. III, 12, I, first branched ray 2?; caudal (damaged) apparently emarginate; least depth of caudal peduncle 3 1/10; pectoral 3 1/2; ventral 2.

Skin brown. Scale pockets of lateral line all accentuated with dark brown dots. Portions of skin show numerous dusky to blackish dots. Iris silvery white. Luminous antorbital organs buff. Fins pale brownish, apparently whitish.

Japan. Parr's sketch of the type shows the infraorbital space too deep, snout too long, the slender adipose fin should begin clearly behind last anal ray base, and space behind last posteroanal and first precaudal photophores too short.

51443 U. S. N. M. Albatross Collection (3698). In 153 fathoms. Length 120 mm., caudal tips damaged. Type.

Diaphus parri new species

Depth 5 to 5 1/4; head 3 1/2 to 3 3/5, width 2 1/4 to 2 1/2. Snout 6 1/2 to 7 in head; eye 4 1/4 to 4 1/3, greater than snout, 1 in interorbital anteriorly; maxillary extends over eye diameter behind eye though not quite to well inclined hind preopercle edge, slender, length 1 1/3 to 1 2/5 in head; interorbital 4 1/8 to 4 1/3, broadly convex. Gill rakers 5 + 14, lanceolate, 1 1/4 in eye; gill filaments 2/3 gill rakers.

Scales 35 in lateral line to caudal base, scarcely enlarged, tubes simple, prominent; 3 above, 3 below. Large pointed scale in axil of ventral fin 2 1/3 in fin. Scales very caducous, most all fallen. Caudal base scaly.

Large antorbital luminous organ along most of front eye edge; 1 opercular photophore slightly below line from lower eye edge to suprapectoral; 3 veiled branchiostegals equidistant; 5 pectorals, first interspace longest, fourth slightly behind and elevated little above upper subpectoral or about level with third ventral; 1 supraventral little below middle between lateral line and pectoral origin; 2 subpectorals, first midway in inclined series from first pectoral to upper subpectoral, which little before suprapectoral or close before lower pectoral fin ray bases; 5 ventrals, third elevated till slightly higher than first or lowest supraanal and close before fourth ventral; 1 supraventral, midway between lateral line and ventral fin origin; 4 + 6 anals, first anteroanal slightly higher than second, first posteroanal over base of last anal ray; 3 supraanals in inclined line, first or lowest above and posterior from fifth ventral, second little nearer first than third or uppermost which close below lateral line over anal fin origin; 2 posterolaterals, first forms continuous arc with last anteroanal and second or upper, which little lower below lateral line than upper supraanal; 4 precaudals arched progressively along base of lower caudal lobe with fourth or last level with upper posterolateral. Moderate luminous organ below suprapectoral photophore.

D. III, 12, I, first branched ray 1 2/5 to 1 1/2 in head; adipose fin length 4 2/5 to 4 4/5; A. III, 13, I, first branched ray 1 7/8 to 2; caudal 1 1/4, well forked; least depth of caudal peduncle 2 3/4 to 3; pectoral 3 to 3 1/5; ventral 1 2/5 to 1 2/3.

Skin brown, scales pale or with silvery and iridescent reflections. Skin most everywhere sprinkled with minute dusky dots, some dots variably larger than others. Sides of head silvery white, also iris. Fins all whitish.

Diagnosis. Related to Diaphus coeruleum Klunzinger but differs chiefly in the lower position of the suprapectoral photophore, the more elevated supraventral, higher first anteroanal and line joining first and second anteroanals forming sharper angle with even curve in which all remaining anteroanals are arranged. No separation of the antorbitals as in Diaphus coeruleum.

Type No. U. S. N. M.

D. 5268. Matocot Point, S. 50° E. 5.80 miles (N. Lat. 13°42' E. Long. 120°57'15"), Verde Island Passage and Batangas Bay. In 170 fathoms. June 8, 1908. Length 100 to 128? mm. 3 examples. Type (largest) and paratypes.

D. 5393. Panganalan Point, Talajit Island, S. 59° E., 14.8 miles (N. Lat. 12°3'30" E. Long. 124°3'36"), between Samar and Masbate. In 136 fathoms. March 13, 1909. Length 69 mm. In poor condition.

D. 5391. (Destaeado Island) Tubig Point, N. 31° E., 3 miles (N. Lat. 12°13'15" E. Long. 124°05'03"), between Samar and Masbate. In 118 fathoms. March 13, 1909.

Diaphus regani Taning

Diaphus regani TÅNING, Vidensk. Medd. Dansk Naturh. Foren. København, vol. 94, p. 139, fig. 12, 1932 (type locality, off New Galedonia, S. 20°53.2' Lat., E. 164°03.3' Long.).

Diaphus pacificus Parr

Diaphus pacificus PARR, Bull. Bingham Oceanogr. Collection, vol. 2, art. 4, Oct. 1931, p. 34, fig. 14. N. 16°14' W. 99°36'30", 625 fathoms.

Depth 3 2/3; head 3 1/8, width 2 1/5. Snout 5 1/2 in head; eye 4, greater than snout; maxillary extends eye diameter behind eye, slender, length 1 2/5 in head; interorbital moderately high.

Scales 32 in lateral line.

Two antorbital luminous bodies, upper extends mesad to or somewhat beyond vertical from center of nasal organ, lower curves gently forward below nostril; 5 pectoral photophores, first interval greatly exceeds others, fourth spot elevated level with upper subpectoral over interval between third and fifth pectorals; 1 supraventral, little nearer pectoral fin origin than lateral line; 2 subpectorals, in inclined line with first pectoral, first little nearer first pectoral and second subpectoral close before lower pectoral ray bases, or close before suprapectoral; 5 ventrals, third elevated level with supraventral forming rather acute isosceles triangle with second and fourth ventrals, first to third ventrals in somewhat curved series; 1 supraventral, near lower third between lateral line and ventral fin base; anals 4 + 4, first anteroanal elevated though not quite high as median supraanal, posteroanals behind anal fin base; 3 supraanals, in inclined line passing behind last ventral, first slightly higher than last ventral, second little nearer first than third which about upper third between lateral line and anal fin origin; 1 posterolateral, level with upper supraanal; 4 precaudals, in evenly curved series, fourth little posterior to third and equally far from end of lateral line. Suprapectoral with large luminous scale below.

D. 14, I; A. 12, I, origin in vertical from basal end of dorsal; least depth of caudal peduncle 2 1/5 in head; pectoral 3; ventral origin below dorsal origin.

Length without caudal 28 mm. (Parr.)

Off western Mexico.

Diaphus sagamiensis Gilbert

Diaphus sagamiensis GILBERT, Mem. Carnegie Mus., vol. 6, No. 2, Aug. 1913, p. 96, pl. 13, fig. 2. Sagami Bay. --JORDAN and THOMPSON, Mem. Carnegie Mus., vol. 6, No. 4, Sept. 1914, p. 213 (Sagami Bay). --PARR, Bull. Bingham Ocenogr. Collection, vol. 3, art. 3, Dec. 1928, p. 122 (compiled).

Depth 4; head 3, width 2 3/4. Snout 5 1/2 in head from snout tip; eye 3 1/8, greater than snout or subequal with interorbital; maxillary reaches back nearly eye diameter beyond eye, slender, length 1 2/5 in head from snout tip; interorbital 3 1/8, convex, rather high.

Scales very caducous, most all fallen, apparently not enlarged in lateral line.

Antorbital luminous organ narrow along lower front eye edge, upper section not defined; 1 opercular photophore on level with lower eye edge and upper subpectoral, lower photophore not evident; 3 veiled equidistant branchiostegals; 5 pectorals, first interspace greatest and fourth photophore over and little behind third, about level with upper subpectoral; 1 supra-pectoral slightly below middle in space between lateral line and pectoral fin origin; 2 subpectorals, first or lower in line from first pectoral to upper subpectoral, which close before bases of lowest pectoral fin rays; 5 ventrals, progressively higher from first to third, which nearly level with fourth pectoral; 1 supraventral, midway between lateral line and pectoral fin base; 6 + 5 anals, first and sixth anteroanals little elevated, posteroanals all behind anal fin base; 3 supraanals in slightly inclined line from first or lowest which little behind fifth ventral up to third, which close below lateral line opposite anal fin origin and second little nearer first though little higher than first anteroanal; 1 posterolateral above and behind last anteroanal close below lateral line; 4 precaudals in arc on caudal base with last slightly more separated from third and rather close below and behind end of lateral line.

D. III, 13, height about 1 1/4 in total head; adipose fin length 3 1/2; A. III, 12, fin height 2 1/4; caudal (damaged) evidently forked; least depth of caudal peduncle 3 2/3; pectoral 3; ventral 2 1/5.

Skin dark brown, with dusky about scale pockets. Snout and jaws whitish. Iris silvery gray. Fins pale to whitish, caudal base dusky.

Japan. Gilbert's description was based on an example 67 mm. long in the Carnegie Museum. It is figured with the suprapectoral photophore near upper 2/5 in space between pectoral fin origin and lateral line, though the description says "its distance from lateral line but half its distance from pectoral base." In most every other respect the arrangement of the photophores is greatly like those of his figure of Diaphus anteorbitalis, only the interspaces between the median and uppermost supraanal and the last anteroanal and mediolateral slightly greater in Diaphus sagamiensis. The chief differences would seem to be the greater development of the antorbital luminous organs of Diaphus anteorbitalis, while in Diaphus sagamiensis they seem to be less extensive their general appearance is similar.

Other items supplied by Gilbert's figure and description are due to its larger size and evidently better preservation. Thus the ventral axillary scale is shown nearly 1/3 ventral fin length and caudal fin base scaly.

74648 U. S. N. M. Albatross Collection (5064). Length 16 mm.

Diaphus tanakae Gilbert

Diaphus tanakae GILBERT, Mem. Carnegie Mus., vol. 6, No. 2, Aug. 1913, p. 88. Off south coast Kiusiu in N. Lat. 31°10'30" E. Long. 131°58'30", in 300 fathoms. --PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 122 (note); Proc. U. S. Nat. Mus., vol. 76, art. 10, 1929, p. 44, fig. 21 (type).

Depth 3 1/2; head 2 2/3, width 2 3/4. Snout 6 in head; eye 3 1/2, greater than snout, about equals interorbital; maxillary extends well beyond eye though not to well inclined hind preopercle edge, slender, length 1 1/2 in head; interorbital 3 1/4, convex.

Scales 36 in lateral line, not enlarged, tubes large, distinct; 3 above. Scales all very caducous, most all fallen. Caudal base evidently scaly.

Antorbital luminous organs small, upper section close over and subequal with nostrils, lower section as narrow crescent only along front eye edge, enveloped in black pigment forming narrow border; 2 opercular photophores, upper larger and slightly above line from lower eye edge and upper subpectoral, lower behind hind maxillary end; 3 veiled equidistant branchiostegals; 5 pectorals, first interspace greatest, fourth photophore over and little posterior from third and at same level as upper subpectoral; 1 suprapectoral, about upper third in space between lateral line and pectoral fin origin, also little in advance of upper subpectoral; 2 subpectorals, first or lower median in inclined line from first pectoral to upper subpectoral, which close before bases of lowest pectoral fin rays; 5 ventrals, progressively higher from first to third, which nearly level with fourth ventral; 1 supraventral, about lower 2/5 between lateral line and ventral fin origin; 6 + 5 anals, first anteroanal little elevated, last less so, posteroanals all behind anal fin base; 3 supraanals in slightly inclined line from vertical, first or lowest and median closer and third on lateral line; 1 posterolateral on lateral line over last anteroanal; 4 precaudals in arc along base of lower caudal lobe, progressively higher with last little more separated and close below end of lateral line.

D. II, 13, first branched ray about 1 1/3 in head; adipose fin length 3; A. II, 13, first branched ray 2 1/2; caudal (damaged) evidently subequal with head; least depth of caudal peduncle 2 4/5; pectoral 2 1/3; ventral 2 1/8, inserted behind dorsal origin.

Skin dusky, nearly blackish brown. Muzzle and jaws pale to whitish. Fins whitish, caudal base blackish brown.

Japan. Only known from the specimens here listed, the above description from the type.

74470 U. S. N. M. Albatross Collection (4951). Length 20 mm. Type.

74652 U. S. N. M. Albatross Collection (4951). 2 examples. Length 14 mm. Paratypes.

Diaphus problematicus Parr

Diaphus problematicus PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 143, fig. 32. N. 24° W. 77°17', 6000 feet, Bahamas; N. 24°29' W. 77°29', 8000 feet.

Depth 4 1/4; head 3 2/5. Snout 6 in head; eye 5, greater than snout; maxillary extends 1 3/4 eye diameters behind eye, length 1 2/5 in head; interorbital high.

Scales 37 or 38 in lateral line, scales not conspicuously enlarged on tail.

Two distinct, rounded and well separated antorbitals on each side, one above and 1 below nostril connected by usual strand of black tissue; 2 operculars upper in slightly inclined line from lower eye edge to upper subpectoral;5 pectorals, first interspace longest, fourth spot over interval between third and fifth pectorals and elevated level with upper subpectoral; 1 suprapectoral near lowest third in space between lateral line and pectoral fin origin; 2 subpectorals, first little nearer first pectoral with which in line and upper spot close before bases of lowest pectoral rays; 5 ventrals, second and third elevated in little inclined with first; 1 supraventral, midway between lateral line and ventral fin base; anals 6 + 5 or 6, first and last anteroanals little elevated, posteroanals behind anal fin base; 3 supra-anals, median nearer lowest, third diameter below lateral line; 1 posterolateral 1 diameter below lateral line; 4 precaudals, equidistant in curve with fourth 1 diameter below end of lateral line. Suprapectoral with luminous scale.

D. 17; A. 18 or 19; pectoral 2 1/2 in head.

Uniform deep black on head, trunk and tail. Length 30 mm. without caudal. (Parr.)

Bahamas.

Diaphus splendidus (Brauer)

Myctophum (Nyctophus) splendidum BRAUER, Zool. Anzeiger, vol. 28, Nr. 10, Dec. 20, 1904, p. (392) 399, fig. 7. Atlantic and Indian Oceans.

Myctophum (Diaphus) splendidum BRAUER, Deutsch. Tiefsee Exp. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 218, text figs. 138-139 (S. 3°55' E. 7°48'5", Gulf of Guinea; S. 9°31' E. 9°46'; S. 10°8'2" E. 97°14'9" between Cocos and Sumatra; S. 0°58'2" E. 99°43'2"; N. 0°16'5" E. 98°7'5"; N. 5°23'2" E. 94°48'1"; N. 7°1'2" E. 85°56'5", Bay of Bengal; S. 3°26'2" E. 58°34'2", Seychelles; S. 0°27'4" E. 42°47'3", off North east Africa; N. 9°6'1" E. 53°41'2", Maurituis).

Diaphus splendidus WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 90 (Madura Sea, in 289 meters). --TAANING, Vidensk. Medd. Dansk Naturh. Foren. Kobenhavn, vol. 86, 1928, p. 60 (diagnosis in key). --PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 123 (compiled).

Myctophum splendidum WEBER and BEAUFORT, Fishes Indo Austral. Archipelago, vol. 2, 1913, p. 170 (WEBER'S material).

Depth 4 to 5; head 3 2/5 to 3 1/2, width 2 1/4 to 2 3/4. Snout 5 1/2 to 6 in head from snout tip; eye 3 3/4 to 4, greater than snout, 1 to 1 1/8 in interorbital; maxillary reaches well beyond eye though not quite to inclined hind preopercle edge, length 1 1/3 to 1 1/2 in head from snout tip; interorbital 3 3/5 to 4, convex. Gill rakers 8 + 15, lanceolate, 1 2/5 in eye, twice gill filaments.

Scales 37 in lateral line to caudal base and 2 more on latter, not especially enlarged, tubes simple and prominent; 3 ? above, 4 ? below, 15 predorsal forward to eye. Caudal base scaly. Ventral with large pointed axillary scale, nearly 1/2 fin length. Scales with 6 basal radiating striae and 8 weak apically; circuli rather fine and complete.

Antorbital luminous organs 2 in black enveloping pigment, upper on upper front eye edge, lower well anterior on lower front edge, sometimes larger; 2 opercular photophores, upper on line with lower eye edge and upper subpectoral, lower smaller; 3 equidistant branchiostegals; 5 pectorals, first interspace greatest, fourth photophore above and little behind third or on level with upper subpectoral; 1 suprapectoral midway in space between lateral line and pectoral fin origin, in large luminous organ; 2 subpectorals, lower or first before suprapectoral and midway in inclined line from first pectoral to upper subpectoral, which close before bases of lowest pectoral rays; 5 ventrals, second or second and third progressively elevated from first, when third then level with first or lowest supraanal; 1 supraventral near upper third to midway between lateral line and ventral fin base; 5 to 7 + 4 to 6 anals, first anteroanal above second and posteroanals all behind anal base; 3 supraanals in inclined or slightly curved row from last ventral, first and second closer though second level or above plane with first supraanal and third on lateral line close before anal fin origin; 2 posterolaterals, first or lower little above and close behind last anteroanal, upper on lateral line opposite adipose fin origin; 4 precaudals, last elevated close below end of lateral line.

D. III, 10, I or III, 11, I, first branched ray 1 1/4 to 1 2/3 in total head length; adipose fin 2 7/8 to 3 1/5; A. III, 11, I or III, 12, I, first branched ray 1 3/5 to 2; caudal 1 1/5 to subequal with head, well forked; least depth of caudal peduncle 2 1/3 to 3; pectoral 2 1/10 to 2 4/5; ventral 1 1/2 to 1 3/4.

Brown, dusky on skin where scales have fallen and especially so at caudal base. Scales and head largely with silvery white, also iridescent. Iris pale to silvery white. Fins pale or brownish white to white.

D. 5530. Balicasag Island (C.), N. 32° E., 4.3 miles (N. 9°26'45" E. 123°38'30"), between Siquijor and Bohol Islands. August 11, 1909. Length 17 mm.

D. 5604. Bilatu (town), N. 26° W. 8.7 miles (N. 0°22'30" E. 122°42'30"), Gulf of Tomini, Celebes. November 15, 1909. 4 examples. Length 17 to 20 mm.

D. 5319. N. 21°23' E. 117°53', China Sea, vicinity of Formosa. November 5, 1908. 2 examples. Length 19 to 52 mm.

D. 5177. Escarceo Light, S. 53° E., 5.8 miles (N. 13°35', E. 120°54'36"), Verde Island Passage. 260 fathoms. March 24, 1908. 4 examples. Length 19 to 26 mm.

D. 5234. Limasaua Island (S.), S. 70°30' E. 18.50 miles (N. 10° E. 124°46'06" E.), between Bohol and Leyte. May 7, 1908. 2 examples. Length 20 to 30 mm.

D. 5185. Lusaran Light, N. 23° E., 25.50 miles (N. 10°05'45" E. 122°18'30"), between Panay and Negros. 638 fathoms. March 30, 1908. 3 examples. Length 16 to 44 mm.

D. 5500. Macabalan Point Light, S. 20° E., 7.9 miles (N. 8°37'45" E. 124°36'45"), Mindanao. 267 fathoms. August 4, 1909. Length 20 mm.

D. 5238. Point Lambajon, S. 65° W., 4.30 miles (N. 7°34'45" E. 126°38'15"), Pacific Ocean, east coast of Mindanao. 380 fathoms. May 12, 1908. Length 33 mm.

D. 5227. Point Origon, S. 44° E., 18.30 miles (N. 12°53'45" E. 121°52'30"), east of Mindoro. 322 fathoms. May 5, 1908. 5 examples. Length 20 to 21 mm.

D. 5633. Selang Point, N. 24° W., 11.8 miles (S. 1°03'00" E. 127°44'00"), south of Patiente Strait. December 2, 1909. Length 17 mm.

D. 5583. Si Amil Island (N.) N. 88° W., 3.2 miles (N. 4°19'00" E. 118°56'20"), Sibuko Bay, Borneo, and vicinity. 447 fathoms. September 27, 1909. Length 89 mm. In poor preservation.

Diaphus signatus Gilbert

Diaphus signatus GILBERT, Mem. Mus. Comp. Zool., vol. 26, No. 6, 1908, p. 228, pl. 3. Near Nukuhiva, Marquesas Islands. --PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 123 (reference). --FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 68 (compiled). --PARR, Proc. U. S. Nat. Mus., vol. 76, art. 10, 1929, p. 45 (type).

Depth 5 to 5 2/5; head 3 1/3 to 3 3/4, width 2 2/5 to 2 3/5. Snout 7 2/5 to 7 3/4 in head from snout tip; eye 3 4/5 to 4, greater than snout, subequal with interorbital; maxillary reaches far behind eye, not expanded, apparently reaches oblique hind preopercle edge, length 1 1/3 to 1 2/5 in head; interorbital 3 to 3 1/4, little convex. Gill rakers 6 + 13, slender, 3/4 of eye.

Scales 38 in lateral line, small; 3 above, 3 below. Scales very deciduous, most all fallen.

Antorbital luminous organ slightly greater than vertical pupil diameter along front eye edge; 2 opercular photophores, upper larger; 3 veiled branchiostegals equidistant; 5 pectorals, first and second more distant than second and third and third and fifth nearest, fourth pectoral over third and slightly higher than upper subpectoral; 1 suprapectoral, above hind angle of gill cover, little nearer lateral line than pectoral origin and slightly before upper subpectoral, which close before bases of lowest pectoral rays; front or lower subpectoral lower than upper, though little closer to same than to first pectoral, also well before suprapectoral; 5 ventrals, second and third progressively elevated, second close behind first and third close before and closer to fourth; 1 supraventral, little nearer lateral line than ventral base; 6 + 5 anals, first anteroanal elevated over second, which well separated from third, which progressively inclined to sixth which well elevated from first posteroanal; 3 supraanals, first little above and behind last ventral, second still higher or little above level of first anteroanal and third close below lateral line and slightly posterior to second; 1 posterolateral, close below lateral line and little behind last anteroanal; 4 precaudals, first 3 nearly equidistant and in slightly inclined line, fourth close below lateral line at median caudal base.

D. III, 11, I, first branched ray 1 1/5 to 1 1/3 in head; adipose fin 3 1/8 to 4; A. III, 12, I, first branched ray 1 3/4 to 2?; caudal damaged, well forked; least depth of caudal peduncle 2 7/8 to 3; pectoral 2 to 2 1/3; ventral 1 1/8 to 1 2/5.

Blackish, vertical fin bases black. Vertical fins with articulations of fin rays blackish, fins otherwise whitish.

Southern and western Pacific. Although Gilbert gives "Postero-anals four in numer (five in splendidus)" his figure shows 5. The type now has but 3 anterior each side intact though there are also impressions for 2 more each side. In this species the preorbital is nearly hour-glass shape, though not clearly divided and appears as if single. Ventral inserted before dorsal origin. Caudal photophores not clearly set off from posteroanals.

D. 5497. Bantigui Island, N. 64°W., 10 miles (N. 9°7'15" E. 124°59'30"), between Leyte and Mindanao. In 960 fathoms. August 3, 1909. Length 13 to 44 mm. 11 examples.

D. 5486. Botobolo Point (Panaon Island), S. 19° W., 6 miles (N. 10°2' E. 125°19'20"), between Leyte and Mindanao. In 585 fathoms. July 31, 1909. Length 16 mm.

D. 5185. Lusaran Light, N. 23° E., 25.50 miles (N. 10°5'45" E. 122°18'30"), between Panay and Negros. In 683 fathoms. March 30, 1908. Length 47 mm.

D. 5125. Nogas Island (W.), S. 11° E., 24 miles (N. 10°48' E. 121°48'30"), Sulu Sea, vicinity southern Panay. In 411 fathoms. February 3, 1908. Length 44 mm.

D. 5227. Point Origin, S. 44° E., 18.30 miles (N. 12°53'45" E. 121°52'30"), east of Mindoro. In 322 fathoms. May 5, 1908. Length 40 mm.

1 example. Varadero Bay. July 23, 1908 (12.30 A. M. to 1.45 P. M.). Length 42 mm.

75767 U. S. N. M. Nukuhiva, Marquesas Islands. Albatross Collection (27). Length 58 mm. Type of Diaphus signatus.

75804 U. S. N. M. N. 30°8'5" W. 138°. Albatross Collection (3798). Length 31 mm.

D. 5392. Tubig Point, N. 49° E., 5 miles (N. Lat. 12°12'35" E. Long. 124°2'48"), between Samar and Masbate. In 135 fathoms. March 13, 1909. Length 55 to 111? mm. 36 examples.

Regani Taaning

Depth 3 9/10 to 4; head 3 2/5 to 3 1/2, width 2. Snout 5 4/5 to 6 1/3 in head; eye 3 1/4 to 3 2/5, greater than snout, equal to subequal with interorbital; maxillary reaches well behind eye or nearly to hind preopercle edge, slender, length 1 2/5 in head; interorbital 2 7/8 to 3, convex. Gill rakers 6 + 14, lanceolate, 1 1/4 in eye; gill filaments 2/3 of gill rakers.

Scales 36 in lateral line to caudal base, not enlarged; 3 above, 3 below, 10 predorsal to occiput. Ventral with large axillary scale 2 1/2 in fin. Caudal base scaly. Scales very caducous, most all fallen.

Antorbital luminous organ occupies most of front eye edge; 1 opercular photophore well above hind maxillary end; 5 pectorals, first interspace longest, fourth photophore slightly before and over fifth, level with upper subpectoral; 1 suprapectoral midway between lateral line and pectoral origin or slightly behind upper subpectoral; 2 subpectorals, first or lower little nearer first pectoral than upper subpectoral, which close before bases of lowest pectoral fin rays; 5 ventrals, third elevated level to little above fourth pectoral and rather close before second ventral; 1 supraventral nearly at upper fourth between lateral line and ventral origin or first ventral photophore; 5 or 6 + 6 anals, first anteroanal little before, over or slightly posterior to second, level to little higher than lower supraanal or lower posterolateral, posteroanals arch upwards toward lateral line little above middle of space below lateral line; 3 supraanals in inclined line with last ventral to uppermost which close below lateral line, first or lowest little nearer last ventral and second equidistant to upper supraanal; 2 posterolaterals, lower midway to little nearer last anteroanal and upper posterolateral, also posterior; upper less posterior and close below lateral line; 4 precaudals, lower 3 equidistant, closer, in slightly inclined line up and back so uppermost close below and behind end of lateral line. Rather large luminous organ below suprapectoral.

D. III, 12, I, first branched ray 1 1/5 to 1 1/4 in head; adipose fin 3 1/5 to 4 1/3; A. II, 13, I or III, 14, I, first branched ray 1 3/5 to 1 2/3; caudal 1 1/8 to 1 1/4, well emarginate; least depth of caudal peduncle 2 3/5 to 2 3/4; pectoral 2 to 2 1/8; ventral 1 1/4 to 1 1/3.

Skin brown where scales fallen, variably pale to dark and scale exposures often dusky to blackish. Adherent scales, sides of head and iris with silvery white sheen and iridescent reflections. Fins pale to whitish, often with dusky lines formed of minute dusky dots at articulations.

Diagnosis. Unique in the genus in that the last 2 posteroanal photophores are inclined upward above the general level of the preceding posteroanals. The antorbital single, large and as in Diaphus signatus.

D. 5493. Diuata Point (N.), N. 84° W., 5.5 miles (N. Lat. 9°04' E. Long. 125°20'), between Leyte and Mindanao. 478 fathoms. August 2, 1909. Length 42 mm.

D. 5422. Lusaran Point Light S. 80° E., 9.7 miles (N. Lat. 10°31' E. Long. 18°45"), between Panay and Guimaras. March 30, 1909. Length 13 to 30 mm. examples.

D. 5125. Nogas Island (W.), S. 11° E., 24 miles (N. Lat. 10°48' E. Long. 121°48'30"), Sulu Sea in vicinity southern Panay. 411 fathoms. February 3, 1908. Length 68 mm. Type.

D. 5227. Point Origon, S. 44° E., 18.30 miles (N. Lat. 12°53'45" E. Long. 121°52'30"), east of Mindoro. 322 fathoms. May 5, 1908. Length 39 mm.

Diaphus ehrhorni new species

Depth 3 7/8 to 4; head 3 1/2 to 3 3/5, width 2 to 2 1/5. Snout 6 to 7 3/4 in head; eye 3 1/5 to 3 4/5, greater than snout and subequal with interorbital; maxillary reaches well beyond eye but not quite to inclined hind preopercle edge, slender, length 1 2/7 to 1 2/5 in head; interorbital 3 3/4 to 4, well convex. Gill rakers 7 + 13, lanceolate, 1 2/5 in eye; gill filaments 3/4 gill rakers.

Scales 36 or 37 in lateral line to caudal base and 2 or 3 more on latter, but little enlarged, tubes simple, prominent; 3 above, 3 below, 13 or 14 predorsal to occiput. Long pointed scale in ventral axil 2 1/4 in fin. Caudal with small scales basally. Scales with 4 to 7 basal radiating striae and 5 short imperfect apicals marginally, circuli very fine.

Antorbital luminous organ along most of front eye edge, extends above nostril; 2 opercular photophores, small, upper on line with lower eye edge and upper subpectoral, lower veiled; 3 equidistant branchiostegals; 5 pectorals, first interspace longest, fourth photophore above and posterior to third, nearly at same level as upper subpectoral; 1 suprapectoral midway between lateral line and pectoral origin, over upper subpectoral; 2 subpectorals, first or lower midway between first pectoral and second or upper subpectoral, which close before bases of lowest pectoral rays; 5 ventrals, first to third inclined or third little above level of fourth pectoral, also second slightly nearer first and third but little in advance of fourth, interspace between fourth and fifth greatest; 1 supraventral, little above middle or at upper 2/5 in space between lateral line and ventral fin base; 5 or 6 + 4 or 5 anals, first anteroanal well elevated and little advanced from second or but little lower than level of second supraanal, also last anteroanal little elevated to form arch contiguous with mediolaterals, posteroanals all well behind anal base; 3 supraanals in inclined line from last ventral, first and second equidistant and uppermost close below lateral line opposite anal origin; 2 posterolaterals, first or lower well behind and nearly median in space to upper, which close below lateral line; 4 precaudals, lower front 2 at same level, third little higher and fourth little posterior and close below lateral line. Large whitish luminous organ below suprapectoral photophore.

D. III, 11, I, first branched ray 1 1/8 to 1 1/6 in head; adipose fin 3 1/4 to 3 2/5; A. III, 13, I, first branched ray 1 1/2 to 1 3/5; caudal (damaged) subequal with head, deeply emarginate; least depth of caudal peduncle 2 1/4 to 2 1/2; pectoral 1 7/8 to 2 1/10; ventral 1 1/5 to 1 1/2.

Dark brown generally, especially where scales have fallen, entire sides and lower surfaces dusted with minute dusky dots. Scales burnished with silvery white, iridescent, especially sides of head and iris. Antorbital luminous organ pale yellow with black investing membrane. Fins whitish.

Diagnosis. Close to Diaphus latus Gilbert but apparently differs in the slightly lower supraventral photophore, larger eye, longer head and more posteriorly inserted fins. This species is also suggestive of Diaphus drachmanni Taaning from the Indian Ocean, but with little different arrangement of the photophores.

Type No. U. S. N. M.

East Indies, Philippines. The material listed below is greatly suggestive of Diaphus coeruleus (Klunzinger) as figured by Brauer. Most of the specimens differ in the larger eye and longer head. The dorsal and ventrals also seem to be more posteriorly inserted. The position of the first and second supraanal photophores always holds, especially that of the first so that it often really impinges in the course of the lateral line. This is quite at variance with Brauer's figure of Myctophum (Diaphus coeruleum.

D. 5537. Apo Island (C.), S. 46° W., 8.7 miles (N. Lat. 9°11'00" E. Long. 123°23'00"), between Negros and Siquijor. 254 fathoms. August 19, 1909. Length 80 mm.

24117 to 24119. D. 5389. Bagatao Island Light (outer), N. 3° W., 14 miles (N. Lat. 12°35'45" E. Long. 123°48'18"), between Ticao Island and Luzon. 80 to 109 fathoms. March 12, 1909. Length 65 to 75 mm.

D. 5387. Bagatao Island Light (outer), S. 80° E., 27 miles (N. Lat. 12°54'40" E. Long. 123°20'30"), between Burias and Luzon. 209 fathoms. March 11, 1909. Length 54 to 78 mm. 50 examples. Type and paratypes. Two with rather large parasitic lerneans protruding from the abdomen.

D. 5365. Cape Santiago Light, N. 73° W., 6.7 miles (N. Lat. 13°44'24" E. Long. 120°45'30"), Balayan Bay, Luzon. 214 fathoms. February 22, 1909. Length 78 mm.

D. 5567. Dammi Island (N.), N. 81° W., 9 miles (N. Lat. 5°48 '00" E. Long. 120°33'45"), north of Tawi Tawi. 268 fathoms. September 21, 1909. Length 52 mm.

D. 5270. Escarceo Light, S. 9° E., 4.25 miles (N. Lat. 13°35'45" E. Long. 120°58'30"), Verde Island Passage, Batangas Bay. 235 fathoms. June 8, 1908. Length 27 to 42 mm. 2 examples.

D. 5293. Escarceo Light, N. 59° W., 6 miles (N. Lat. 13°28'15" E. Long. 121°04'30"), China Sea, vicinity of southern Luzon. 180 fathoms. July 23, 1908. Length 66 to 74 mm. 6 examples.

D. 5552. Jolo Light (E.), N. 60° E., 18.3 miles (N. Lat. 5°54'30" E. Long. 120°44'15"), Jolo Island. September 17, 1909. Length 50 mm.

3828. D. 5621. Makyan Island (S.), N. 54° W., 3 miles (N. Lat. 0°15'00" E. Long. 127°24'35"). 298 fathoms. November 28, 1909. Length 67 mm.

D. 5281. Malavatuan Island (N.), S. 84° W., 4.30 miles (N. Lat. 13°52'45" E. Long. 120°25"), China Sea, vicinity southern Luzon. 201 fathoms. July 18, 1908. Length 76 or 77 mm. 2 examples.

D. 5267. Matocot Point, S. 39° E., 5.50 miles (N. Lat. 13°42'20" E. Long. 120°58'25"), Luzon. 170 fathoms. June 8, 1908. Length 52 to 75 mm. 5 examples.

D. 5297. Matocot Point, S. 50° E., 5.10 miles (N. Lat. 13°41'20" E. Long. 120°58'). 198 fathoms. July 24, 1908. Length 45 to 70 mm. 3 examples.

D. 5298. Matocot Point, S. 38° E., 6.70 miles (N. Lat. 13°43'25" E. Long. 120°57'40"). 140 fathoms. July 24, 1908. Length 61 to 75 mm. 9 examples. One with lernean crustacean on throat.

1524. D. 5575. Mount Dromedario (Tawi Tawi), S. 16° W., 19.2 miles (N. Lat. 5°28'30" E. Long. 120°02'27"), north of Tawi Tawi. 315 fathoms. September 23, 1909. Length 52 mm.

D. 5190. Pescador Island, S. 9° E., 10.70 miles (N. Lat. 10°08'15" E. Long. 123°16'45"), Tanon Strait, east coast of Negros. 295 fathoms. April 1, 1908. Length 12 to 58 mm. 26 examples.

D. 5633. Selang Point, N. 24° W., 11.8 miles (S. Lat. 1°03'00" E. Long. 127°44'00"), south of Patiente Strait. December 2, 1909. Length 45 mm.

D. 5580. Sibutu Island peak, S. 82° E., 23.2 miles (N. Lat. 4°52'45" E. Long. 119°06'45"), vicinity of Darvel Bay, Borneo. 162 fathoms. September 25, 1909. Length 45 to 70 mm. 3 examples.

D. 5572. Simaluc Island (N.), S. 51° E., 4.7 miles (N. Lat. 5°31'26" E. Long. 120°09'45"), north of Tawi Tawi. 334 fathoms. September 22, 1909. Length 55 to 61 mm. 3 examples.

D. 5662. Tana Keke Island (W.), N. 17° W., 12.5 miles (S. Lat. 5°43'00" E. Long. 119°18'00"), Flores Sea. 211 fathoms. December 21, 1909. Length 65 to 76 mm. 5 examples.

Diaphus latus Gilbert

Diaphus latus GILBERT, Mem. Carnegie Mus., vol. 6, No. 2, Aug. 1913, p. 95, pl. 13, fig. 1. Sagami Bay. --JORDAN and THOMPSON, Mem. Carnegie Mus., vol. 6, No. 4, Sept. 1914, p. 213 (Sagami Bay). --JORDAN and HUBBS, Mem. Carnegie Mus., vol. 10, No. 2, June 27, 1925, p. 156 (Misaki). --PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 123 (compiled).

Depth 4 1/3; head 3 3/4. Snout 6 3/4 in head; eye 4 1/5, greater than snout; maxillary extends 1 1/5 eye diameters behind eye, slender, length 1 2/5 in head; interorbital moderately high. Gill rakers 7 + 15, long, slender.

Scales 37 in lateral line, not enlarged.

Upper antorbital photophore small ocellated dot under edge of frontal bone and lower antorbital occupies area between eye and nostril, expanding little above nostril, scarcely extending on ventral edge of orbit; 1 opercular, in inclined line with lower eye edge and upper subpectoral; 3 branchiostegals; 5 pectorals, first interval much greatest, fourth spot over third nearly level with upper subpectoral; 1 suprapectoral, at upper third in space between lateral line and pectoral fin origin, slightly posterior above upper subpectoral; 2 subpectorals, in inclined line with first pectoral, first equidistant and upper close before bases of lower pectoral rays; 5 ventrals, first to third in inclined line with third little below level of median supraanal, though close before fourth ventral in vertical; 1 supraventral, about upper third between lateral line and ventral base; anals 6 to 7 + 5 to 6, first anteroanal greatly elevated or level with median supraanal, close before second anteroanal in vertical, seventh equally high as first, posteroanals behind anal fin base; 3 supraanals, very slightly angulated so median only slightly advanced from vertically inclined series to fifth ventral, first little nearer fifth ventral than median and latter nearer first than third which close below lateral line; 1 posterolateral, close below lateral line little behind last anterolateral; 4 precaudals, first and second low, close, third little elevated behind and fourth still posterior little below lateral line.

D. III, 11, I, first branched ray 1 1/10 in head; adipose fin 3; A. II, 13, first branched ray 1 2/3; caudal forked; least depth of caudal peduncle 2 3/5; pectoral 2 1/6; ventral 1 2/5.

Color very dark, mouth and gill cavity black. Vertical fin with rays dotted darker.

Japan. The above description largely from Gilbert's figure.

D. 5297. Matocot Point, S. 50° E., 5.10 miles (13°41'20" N., 120°58' E.), China Sea vicinity southern Luzon, in 198 fathoms. July 24, 1908. Length 45 to 70 mm. 3 examples.

Genus Lampadena Goode and Bean

Lampadena GOODE and BEAN, Oceanic Ichth., 1895, p. 85. Type

Lampadena speculigera GOODE and BEAN, monotypic.

Antorbital luminous organs not conspicuously prominent. First pectoral photophore and 2 subpectorals like first 3 ventrals, not arranged as straight inclined ascending series. Both subpectorals and suprapectoral one above another in same vertical. Supraanals in vertical or vertically inclined row. One posterolateral. Precaudals 3 or 4, distinct from posteroanals and last in lateral line. Photophores divided by black septum. Large luminous supracaudal and infracaudal plates present. No luminous scales. Dorsal and anal subequal.

Analysis of species

a^1. Pectorals all on same level; eye 2 1/2 to 3 1/2.

b^1. Anals 0 + 7; 9 pectorals; 6 ventrals; 2 supraanals; eye 3.- speculigera.

b^2. Anals 7 + 2 or 3; 5 pectorals; 5 or 6 ventrals; 3 supraanals; eye 3.- chavesi.

b^3. Anals 2 + 6 to 8; 5 pectorals; ~~5 pectorals~~; caudal plates shorter than eyes. - braueri.

b^4. Anals 3 or 4 + 1 or 2; 7 pectorals; 3 ventrals; 2 supraanals; eye 3 1/2. - anomala.

b^5. Anals 2 to 4 + 1 or 2; 5 or 6 pectorals; 3 to 5 ventrals; 1 or 2 supraanals; eye 2 1/2 to 2 4/5. - - - - - - - - - bathyphila.

b^6. Anals 6 + 4 or 5; 5 pectorals; 8 (or 9?) ventrals; 1 supraanal; eye slightly less than 3. - - - - - - - - - - - - - - - - - minima.

a^2. Fourth pectoral photophore elevated; eye 4 1/2 to 5; anals 5 + 2. - luminosa.

Lampadena speculigera Goode and Bean

Lampadena speculigera GOODE and BEAN, Oceanic Ichth., 1895, p. 86, pl. , fig. 99. N. 39°48' W. 70°36', 551 fathoms. --JORDAN and EVERMANN, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 561 (compiled). --BRAUER, Deutsch. Tiefsee Exp. Valdivia, vol. 15, Tiefsee-Fische, 1906, --PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, 1928, p. 149 (compiled); Proc. U. S. Nat. Mus., vol. 76, 1929, p. 45 (type).

Depth 4 1/2 to 4 2/3; head 3 1/5 to 3 3/5, width 1 7/8 to 2 1/2. Snout 7 in head; eye 2 4/5 to 3 1/3, greater than snout, greater than interorbital in young to equal front of interorbital with age; maxillary extends 2/3 an eye diameter behind eye though not quite to slightly inclined hind preopercle edge, length 1 2/5 in head; interorbital 3 1/4 to 3 3/5, depressed. Gill rakers 7 + 13, slender, lanceolate, 1 3/4 in eye; gill filaments 1/3 of gill rakers.

Scales 40 in lateral line to caudal base, not enlarged; 5 above, 6 below, 12 predorsal forward to occiput. Axillary ventral scale 3 4/5 in ventral fin. Caudal base finely scaled. Scales with 3 basal radiating striae; circuli very fine, obsolete apically.

Antorbital luminous organ median and rather small at front eye edge; 2 opercular photophores, upper larger and in line with lower eye edge and lower subpectoral, lower behind hind maxillary end; 3 veiled equidistant branchiostegals; 9 pectorals, level; 1 suprapectoral on lateral line over pectoral fin origin; 2 subpectorals, first or lower little behind upper and below pectoral fin base, upper close before bases of lower pectoral fin rays; 6 ventrals, equidistant, same level; 1 supraventral, little above middle in space between lateral line and ventral fin base; 7 + 5 anals, last anteroanal slightly elevated, posteroanals behind anal fin base; 3 supraanals, first or lowest little above and behind last ventral, second elevated though little lower than supraventral opposite anal fin origin, third or uppermost close below lateral line over second; 1 posterolateral little below lateral line behind last anteroanal; 2 low close set precaudals and 1 at end of lateral line. Supracaudal luminous plate 1 1/3 in eye, infracaudal equals eye. Many luminous whitish bodies scattered over head and body.

D. III, 11, I, first branched ray 1 3/5? to 1 7/8? in head; adipose fin 4 to 5 1/8; A. III, 11, I, first branched ray 1 1/2; caudal 1 1/8, forked; least depth of caudal peduncle 2 1/4 to 2 3/4; pectoral 1 3/4 to 3; ventral 2 1/10 to 2 1/5.

Blackish, with whitish blotches irregularly due to luminous blotches. Iris dark slate. Vertical fins dusky. Pectoral grayish. Ventral with inner rays whitish, outer dusky.

Gulf Stream. The figure os Lampadena speculigera by Goode and Bean is wrongly credited by them to "Steamer Fish Hawk Station 797" when it should have read Gloucester Donation 797, Schooner "Alice G. Wanson" as given in their list of plates and figures and corrected by Mr. Barton A. Bean. Goode and Bean evidently had the smaller 43796 in mind originally as their type but later designate 43797, so that this larger specimen becomes available. It is in very poor condition so that few of its characters can now be made out.

39479 U. S. N. M. N. 39° W. 70°. Albatross Collection. Length 146 mm. Paratype.

43796 U. S. N. M. N. 39°48' W. 70°36'. In 551 fathoms. Albatross Collection. Length 48 mm. Paratype.

43797 U. S. N. M. Georges Bank. Schooner "Alice G. Wanson". Length 148 mm. Type.

92117 U. S. N. M. Gully between Browns and Georges Banks, from Xiphias gladius stomach. Schooner "Eleanor". Capt. Thomas Brigham. July 15 - August 5, 1931. Length 153 mm.

Lampadena chavesi Collett

Lampadena chavesi COLLETT, Zool. Anzeiger, vol. 28, 1905, p. 728. Azores. --REGAN, Brit. Antartic "Terra Nova" Exp., Nat. Hist. Rep. Zool., vol. 1, No. 4, 1916, p. 140, pl. 6, fig. 8 (N. 26°17' W. 20°54', 10 meters, south of Canaries). --TAANING, Vidensk. Medd. Dansk Naturh. Foren. Köbenhavn, vol. 86, 1928, p. 62 (North Atlantic). -- PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, 1928, p. 149 (compiled).

Myctophum (Lampadena) chavesi BRAUER, Deutsch. Tiefsee Exp. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 210, fig. 129 (Azores). -- ZUGMAYER, Res. Camp. Sci. Monaco, vol. 35, 1911, p. 29 (N. 36°5'30" W. 9°00'30", 3600 meters). --PAPPENHEIM, Deutsch Südpolar Exp., vol. 15, Zool. pt. 7, 1914, p. 194 (N. 17°28' W. 29°42', 3000 meters, west of Cape Verde).

Depth 4 5/6; head 3 1/3. Snout 6 3/4 in head; eye 2 9/10, greater than snout; maxillary extends 1/2 eye diameter behind eye, slender, length 1 2/5 in head; interorbital very low.

Scales 39 in lateral line, cycloid.

Small antorbital luminous body slightly below middle of front eye edge; 2 opercular photophores, upper larger, in slightly upward inclined line from lower eye edge to pectoral fin origin; 3 branchiostegals; 5 pectorals, first interval much longest, all level except last which little elevated before ventral fin origin; 1 suprapectoral, little below lateral line, slightly before subpectorals; 2 subpectorals, rather close, one above other, upper close before bases of lower pectoral rays; 5 or 6 ventrals, level; 1 supraventral, midway between lateral line and ventral fin base; anals 7 + 2, last 2 or 3 anteroanals behind anal fin base, all anals level; 3 supraanals, in very slightly angulate series also slightly inclined from vertical, first and second nearly in line with last ventral and equi-distant, upper slightly advanced from median and close below lateral line; 1 posterolateral, close below lateral line little advanced from last anteroanal; 3 wide set precaudals, third at end of lateral line and slightly behind second which level with first. Long supracaudal and infracaudal luminous plates, latter extends from last anteroanals to first precaudal.

D. IV, 10, first branched ray 1 4/5 in head; adipose fin 3 1/6; A. III, 10, first branched ray 1 4/5; caudal 1 1/5, forked; least depth of caudal peduncle 2 2/5; pectoral 1 3/5; ventral 1 3/4.

Bluish black. Length 70 mm. (Brauer)

Atlantic Ocean.

Lampadena braueri Zugmayer

Lampadena braueri ZUGMAYER, Bull. Inst. Océanogr. Monaco, No. 288, 1914, p. 2. Station 3447, 1100 meters, 1913, one from stomach of Stomias boa RISSO. --TAANING, Vidensk. Medd. Dansk Naturh. Foren. København, vol. 86, 1928, p. 63 (diagnosis in key). -- PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, 1928, p. 149 (compiled).

Eye medium, twice or more in maxillary. Distance from eye to pectoral twice long as distance from pectoral to dorsal origin.

Pectoral photophores all level; anals 6 to 8 + 2, posteroanals at front end of infracaudal luminous plate; 2 supraanals, lower posterior to vertical line through upper (third supraanal evidently enters series between ventral and anal fins); precaudals 2 or 3 + 1. Infracaudal luminous plate shorter than half distance from anal to caudal.

D. 14 or 15; A. 13 to 15. (Taaning.)

North Atlantic.

Lampadena anomala Parr

Lampadena anomala PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, 1928, p. (149) 150, fig. 35. N. 32°24' W. 64°29', 10000 feet.

Depth 5 1/3; head 3 1/3. Snout 6 2/3 in head from snout tip; eye 4, greater than snout; maxillary extends eye diameter behind eye, slender, length 1 1/3 in head from snout tip; interorbital low, eye impinging on upper profile.

Scales 37 in lateral line.

Opercular photophores 6, equidistant, follow along and behind hind preopercle edge, uppermost level with lower pupil edge; 7 pectorals, level, second interval longest; 1 suprapectoral, above upper third between lateral line and pectoral origin and in line with 2 subpectorals of which upper before lower basal half of pectoral, lower close below upper posteriorly; 3 ventrals, level; 1 supraventral, about midway between lateral line and ventral fin base; anals 3 or 4 + 2 or 1, level, posteroanals behind anal fin base, side by side; 2 supraanals, first or lower close behind and posterior to last ventral, second or upper close below lateral line opposite anal fin origin; 1 posterolateral well below lateral line; 3 precaudals, lower 2 close, above lower rudimentary caudal rays, third elevated and posterior close below end of lateral line. Supracaudal and infracaudal plates rather small, equal.

D. 14; A. 14, origin below bases of last dorsal rays; least depth of caudal peduncle 2 2/3 in head; pectoral 4; ventral 1 3/4.

Uniformly dark brown. Length without caudal 48 mm. (Parr.)

Western Atlantic.

Lampadena bathyphila Taaning

Lampadena bathyphila TAANING, Vidensk. Medd. Dansk Naturh. Foren. København, vol. 86, 1928, p. 63. North Atlantic (diagnosis in key). --PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, 1928, p. (150) 151, fig. 36 (N. 21° to 33° W. 64° to 77°, 7000 to 10000 feet).

Depth 5 1/2; head 3 1/2. Snout 8 1/2 in head; eye 3, greatly exceeds snout; maxillary extends 7/8 eye diameter behind eye, slender, length 1 1/3 in head; interorbital low, eye greatly impinging on upper profile.

Scales 35 in lateral line, deciduous.

Three very small photophores in close set series close along hind eye edge; 2 operculars, upper larger and slightly above level of line from lower eye edge to upper subpectoral; 5 or 6 pectorals, level, first interval longest; 1 suprapectoral, slightly before subpectorals little nearer lateral line than pectoral fin origin; 2 subpectorals, one above other with lower slightly advanced, upper close before lower pectoral ray bases; 3 to 5 ventrals, level; 1 supraventral, about midway between lateral line and ventral fin origin; anals 3 + 1 or 2, level, posteroanal behind anal fin base; 1 or 2 supraanals, close below lateral line also when both present; 1 posterolateral close below lateral line; 3 precaudals, first 2 side by side, low, upper or third posterior and close above end of lateral line. Supracaudal and infracaudal luminous plates large, half head length. Uniformly deep brownish black. Length without caudal 61 mm.

(Parr.)

Western Atlantic.

Lampadena minima Taaning

Lampadena minima TAANING, Vidensk. Medd. Dansk Naturh. Foren. Köbenhavn, vol. 86, 1928, p. 63. North Atlantic (diagnosis in key). --PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, 1928, p. (150) 154, fig. 37 (N. 32°19' W. 64°33', 8000 feet). --BORODIN, Bull.Mus. Comp. Zool., vol. 72, No. 3, Aug. 1931, p. 77 (N. 33°50' W. 63°55', 1500 meters; N. 32°50' W. 64°18', 1500 meters).

Eye large, less twice in maxillary length, twice or more in body depth at pectoral fin. Space from eye to pectoral nearly equals space from pectoral origin to dorsal origin. Space from pectoral origin to anal origin equals space from anal origin to caudal base.

Ventral photophores 8 (apparently lower and median supraanals); anals 6 + 4 or 5, 3 posteroanals along front end of infracaudal luminous plate; 1 supraanal, at lateral line; 2 + 1 precaudals.

D. 11 or 12, origin premedian; A. 11 or 12. (Taaning.)

North Atlantic.

89907 U. S. N. M. N. 35°50' W. 63°53'. Museum of Comparative Zoology (46). Length 20 mm. This poorly preserved specimen was received under the present name though few of its characters may now be made out.

Lampadena luminosa (Garman)

Myctophum luminosum GARMAN, Mem. Mus. Comp. Zool., vol. 24, 1899, p. 263, pl. 55, fig. 2. Galapagos Islands, S. Lat. 6°57'30" W. Long. 89°3'30", in 421 fathoms. --WEBER and BEAUFORT, Fishes Indo Austral. Archipelago, vol. 2, 1913, p. 172, fig. 66 (compiled).

Myctophum (Lampanyctus) luminosum BRAUER, Deutsch. Tiefsee Exp. Valdivia, vol. 5, Tiefsee-Fische, 1906, p. 208, text fig. 128(west coast of Sumatra; between Chagos Archipelago and Seychelles).

Lampadena luminosa PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 155 (Atlantic material). --BORODIN, Bull. Mus. Comp. Zool., vol. 72, No. 3, Aug. 1931, p. 77 (N. 33°50' W. 63°55', 1500 meters; N. 33° W. 64°, 1200 meters; N. 37° W. 67°12', 1500 meters.

Lampanyctus luminosa nitida TAANING, Vidensk. Medd. Dansk Naturh. Foren. Kӧbenhavn, vol. 86, 1928, p. 62. North Atlantic (diagnosis in key).

Depth 4 2/5 to 4 1/2; head 3 to 3 3/4, width 2 to 2 1/8. Snout 6 1/4? to 8 in head; eye 4 3/5 to 4 3/4, greater than snout; maxillary extends back behind eye 1 1/2 eye diameters but not to well inclined hind preopercle edge, slender, length 1 1/3? to 1 1/2 in head; interorbital low, damaged.

Scales 35 to 38 in lateral line to caudal base, not enlarged; 3 above, 4 below, 12 predorsal forward to occiput. Caudal base scaly. Scales very caducous, most all fallen.

Small upper photophore at front eye edge; 2 operculars, upper larger and on line with lower eye edge and pectoral fin origin, lower close behind maxillary end; 3 equidistant veiled branchiostegals; 5 pectorals, fourth elevated and over third, interspace between first and second twice length of other interspaces; 1 suprapectoral, before pectoral fin origin and closer to lateral line; 2 subpectorals, lower little behind suprapectoral though nearer upper subpectoral than third pectoral and about same level as fourth pectoral, upper spot opposite mid pectoral fin base though little behind lower; 5 ventrals; 1 supraventral, midway between lateral line and ventral fin base; 5 + 2 anals, posteroanals all well behind anal fin base; 3 supraanals, first and second close, though both behind last ventral and second little higher than first, third close below lateral line nearly opposite anal fin origin; 1 posteroanal close below lateral line and over break in anals or behind anal base; 4 precaudals, first 3 close and on same level along lower edge of tail, last at end of lateral line on caudal base. Large supracaudal and another infracaudal luminous plate.

D. III, 11, I or III, 12, I, first branched ray 1 2/5 to 1 3/5 in head; adipose fin 5 to 7 1/4; A. III, 10, I, first branched ray 2 to 2 1/10; caudal 1 1/5 to 1 1/4?, deeply forked; least depth of caudal peduncle 2 1/2 to 3 1/8; pectoral 1 1/4 to 1 1/3; ventral 1 4/5 to 2.

Brown, scale pockets dusky. Opercle blackish, also inside gill opening. Iris dark gray. Fins all pale brownish.

D. 5387. Bagatao Island Light (outer). S. 80° E., 27 miles (N. 12°54'40" E. 123°20'30"), between Burias and Luzon. In 209 fathoms. March 11, 1909. Length 103 mm.

D. 5250. Linao Point, N. 22° E., 1.1 miles (N. 7°5'7" E. 125°39'45"), Gulf of Davao. May 18, 1908. Length 128 mm., head damaged.

D. 5190. Pescador Island, S. 9° E., 10.70 miles (N. 10°8'15" E. 123°16'45"), Tanon Strait, east coast of Negros. In 295 fathoms. April 1, 1908. Length 26 to 33 mm. 3 examples.

Genus Neoscopelus Johnson

Neoscopelus JOHNSON, Proc. Zool. Soc. London, 1863, p. 44. Type

Neoscopelus macrolepidotus JOHNSON, monotypic.

Body oblong, compressed, somewhat robust. Head conic. Snout depressed, rather long. Maxillary expanded terminally, with small supplemental bone. Upper mouth border formed entirely of premaxillary each side. Mouth cleft wide, oblique, not nearly reaching preopercle angle. Lower jaw slightly protrudes. Teeth in bands in jaws, on palatines, vomer and also patches on ectopterygoids. Gill membranes separated, slightly overlap at chin. Gill rakers long, slender. Pseudobranchiae large. Branchiostegals 8 or 9. Air bladder large. Scales large, cycloid, caducous, with photophore below and surfaces of each with minute spinules. Luminous glands on head and mandibular rami. Lateral line present. Dorsal origin over ventral origin, fin short, premedian in body. Adipose fin present. Anal short, behind dorsal or origin well postmedian. Caudal forked. Pectoral long, lateral, lower rays not especially thick, reach middle of body. Ventral short.

Neoscopelus macrolepidotus Johnson

Neoscopelus macrolepidotus JOHNSON, Proc. Zool. Soc. London, 1863, p. 44, pl. 7. Madeira. --ALCOCK, Ann. Mag. Nat. Hist., ser. 6, vol. 8, 1891, p. 129 (Andaman Sea, in 188 to 200 fathoms). --GOODE and BEAN, Oceanic Ichth., 1895, p. 93, pl. 29, figs. 108-109 (Atlantic material). --ALCOCK, Journ. Asiatic Soc. Bengal, vol. 65, pt. 2, 1896, p. 333 (reference). --GILBERT and CRAMER, Proc. U. S. Nat. Mus., vol. 19, 1897, p. 414 (Hawaii, in 343 to 375 fathoms). --ALCOCK, Cat. Deep Sea Fish. Indian Mus., 1899, p. 164 (Andaman Sea, in 188 to 405 fathoms; Arabian Sea off Travancore coast, in 360 fathoms). --GILBERT, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905), p. 601 (off Molokai; French Frigates shoal; Bird Island; Kauai; west of Hawaii; in 222 to 800 fathoms). --BRAUER, Deutsch. Tiefsee Exp. Valdivia, vol. 5, Tiefsee-Fische, 1906, p. 147, text figs. 72-76, pl. 11, figs. 2-3 (off west coast of Sumatra; east coast of Africa; in 614 to 693 meters). --WAITE, Records Canterbury Mus., vol. 1, No. 1, April 25, 1907, p. 13 (reference). --REGAN, Trans. Linn. Soc. London, ser. 2, vol.12,

Zool., pt. 3, 1908, p. 219 ( ). --WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 83 (Madura, Flores, Arafura, Timor, Bali Seas, in 289 to 709 meters). --GILBERT, Mem. Carnegie Mus., vol. 6, No. 2, August 1913, p. 69 (Sagami Bay). --WEBER and BEAUFORT, Fishes Indo-Austral. Archipelago, vol. 2, 1913, p. 174, fig. 67 (Weber's materials). --MC CULLOCH, Biolog. Res. Endeavor, vol. 2, pt. 3, July 3, 1914, p. 90, pl. 17 (Great Australian Bight, in 350 to 450 fathoms. --WAITE, Records South Australian Mus., vol. 2, No. 1, 1921, p. 45, fig. 66. --GILCHRIST, Rep. Fishes Marine Biol. Surv. South Africa, vol. 2, 1921, p. ( ); Fish. Marine Surv. South Africa, Special Rep. No. 3, 1922, p. 56 ( ). --JORDAN and JORDAN, Mem. Carnegie Mus., vol. 10, No. 1, Dec. 1922, p. 10 (reference). --BARNARD, Ann. South African Mus., vol. 21, pt. 1, June 1925, p. 246 (off Cape Morgan and Natal coast, in 174 to 290 fathoms). --PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 48 (compiled). --FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 70 (Hawaii).

Scopelus macrolepidotus GÜNTHER, Cat. Fishes Brit. Mus., vol. 5, 1865, p. 414 (type); Rep. Voy. Challenger, vol. 22, 1887, p. 196 (Kermadec Islands, in 520 to 630 fathoms).

Neoscopelus alcocki JORDAN and STARKS, Bull. U. S. Fish Comm., vol. 2, 1902 (1904), p. 580, pl. 2, figs. 1-2. Suruga Bay, in 173 to 260 fathoms.

Depth 4 1/6 to 5; head 2 3/4 to 3, width 2 1/4 to 2 1/3. Snout 3 3/4 to 3 7/8 in head from snout tip; eye 3 1/2 to 5 4/5, subequal with snout in young to 2 in snout with age, subequal with interorbital in young to 1 1/2 with age; maxillary reaches hind eye edge or slightly beyond, expansion 1 to 1 1/2 in eye, length 1 4/5 to 2 in head from snout tip; interorbital 3 2/5 to 3 7/8, low, but slightly convex. Gill rakers 2 to 5 + 10, also with 2 or 3 rudimentary bony tubercles above and below, lanceolate, equal eye; gill filaments 3/5 of gill rakers.

Scales 30 to 33 in lateral line to caudal base; 4 above, 4 below, 14 or 15 predorsal to occiput. Scales very caducous, all fallen.

Pectoral photophores in 5 longitudinal series, also 1 or 2 short parallel rows before pectoral base; pectorals also continued as 5 rows of ventrals though only 2 rows each side above anal base and this giving way behind anal or about middle of caudal peduncle only to lower row which persistent to lower caudal base.

D. IV, 8, I or IV, 9, 1, first branched ray 1 1/5 to 1 1/2 in total head length; adipose fin 4 2/5 to 4 2/3; A. III, 9, I or III, 10, I, first branched ray 2 1/8 to 2 1/5; caudal 1 2/3 to 1 3/4, forked, rudimentary rays 8 or 9 and inconspicuous; least depth of caudal peduncle 3 1/4 to 3 3/5; pectoral 1 to 1 1/8; ventral 1 3/5 to 2.

Brown, variably russet or light brown to dusky or neutral dusky or even blackish. Scales where present and sides of head, though also sometimes whole lateral regions even where scales denuded brilliant silvery white. Iris gray to silvery white. Opercles sometimes with violet or emerald tints. Fins pale brown to whitish. Photophores silvery white with narrow dark encircling borders.

D. 5216. Anima Sola Island, N. 44° W., 29.50 miles (N. 12°52' E. 123°23'30"), between Burias and Luzon. In 215 fathoms. April 22, 1908. Length 140 mm.

2616. D. 5535. Apo Island (C.), S. 24° W., 17 miles (N. 9°20'30" E. 123°23'45"), between Cebu and Siquijor. In 310 fathoms. August 19, 1909. Length 157 mm.

2044. D. 5536. Apo Island (C.), S. 26° W., 11.8 miles (N. 9°15'45" E. 123°22'), between Negros and Siquijor. In 279 fathoms. August 19, 1909. Length 180 mm.

1533 to 1535. D. 5537. Apo Island (C.), S. 46° W., 8.7 miles (N. 9°11' E. 123°23'), between Negros and Siquijor. In 254 fathoms. August 19, 1909. Length 37 to 213 mm.

1946 to 1948. D. 5445. Atalaya Point, Batag Island, S. 56° E., 5.3 miles (N. 12°44'42" E. 124°59'50"), east coast of Luzon. In 383 fathoms. June 3, 1909. Length 97 to 115 mm.

3705 to 3707. D. 5387. Bagatao Island Light (outer), S. 80° E., 27 miles (N. 12°54'40" E. 123°20'30"), between Burias and Luzon. In 209 fathoms. March 11, 1909. Length 41 to 130 mm. 4 examples.

3763. D. 5388. Bagatao Island Light (outer), S. 86° E., 21 miles (N. 12°51'30" E. 123°26'15"), between Burias and Luzon. In 226 fathoms. March 11, 1909. Length 162 mm.

2783 and 2784. D. 5260. Balanja Point, N. 28° W., 7.20 miles (N. 12°25'35" E. 121°31'35"), off southeastern Mindoro. In 234 fathoms. June 3, 1908. Length 130 to 175 mm.

4031. D. 5527. Balicasag Island (C.), N. 14° W., 8.2 miles (N. 9°22'30" E. 123°42'40"), between Siquijor and Bohol. In 392 fathoms. August 11, 1909. Length 247 mm.

3525, 3526, 8474, 10153. D. 5424. Cagayan Island (S.), S. 11° W., 3.4 miles (N. 9°37'05" E. 121°12'37"), Jolo Sea. In 340 fathoms. March 31, 1909. Length 195 to 240 mm.

2801. D. 5363. Cape Santiago Light, S. 79° W., 4.5 miles (N. 13°47'20" E. 120°43'30"), Balayan Bay, Luzon. In 180 fathoms. February 20, 1909. Length 150 mm.

2276, 2277. D. 5409. Capitancillo Light, N. 19° W., 22 miles (N. 10°38' E. 124°13'08"), Dupon Bay (Leyte) and vicinity. In 189 fathoms. March 18, 1909. Length 158 to 172 mm.

D. 5301. China Sea, vicinity of Hong Kong (N. 20°37' E. 115°43'). In 208 fathoms. August 8, 1908. Length 80 to 113 mm. 4 examples.

2228 to 2230. D. 5566. Dammi Island (N.), S. 67° W., 6.8 miles (N. 5°52'12" E. 120°31'), between Jolo and Tawi Tawi. In 244 fathoms. September 21, 1909. Length 144 to 190 mm.

2190. D. 5329. Font Island (W.), N. 28° E. 24.25 miles (N. 18°33' E. 121°37'30"), off northern Luzon. In 212 fathoms. November 19, 1908. Length 59 mm.

2683. D. 5172. Jolo Light, E. 24.75 miles (N. 6°3'15" E. 120°35'30"), vicinity of Jolo. In 318 fathoms. March 5, 1908. Length 160 mm.

2872. D. 5551. Jolo Light (E.), N. 60° E., 18 miles (N. 5°54'48" E. 120°44'24"), Jolo Island and vicinity. In 193 fathoms. September 17, 19091 Length 112 mm.

3276, 3277, 3291, 3292, 3294. D. 5625. Kayoa Island (SE.), S. 3° W., 6 miles (N. 0°7' E. 127°28'), between Gillolo and Kayoa Islands. In 230 fathoms. November 29, 1909. Length 145 to 181 mm.

3792 to 3795, 4129, 4130. D. 5626. Kayou Island (S. E.), S. 5° W., 6.7 miles (N. 0°7'30" E. 127°29'). In 265 fathoms. November 29, 1909. Length 145 to 182 mm.

3081. D. 5412. Louis Point Light, N. 21° E. 5.5 miles (N. 10°9'15" E. 123°52'), between Cebu and Bohol. In 162 fathoms. March 23, 1909. Length 109 mm.

1920. D. 5417. Louis Point Light, N. 10° E.,3.5 miles (N. 10°10' E. 123°53'15"), In 165 fathoms. March 25, 1909. Length 176 mm.

3364. D. 5421. Lusaran Point Light, S. 27° E., 5 miles (N. 10°33'30" E. 122°26'), between Panay and Guimaras. In 137 fathoms. March 30, 1909. Length 75 mm.

1614, 1653 to 1662. D. 5589. Mabul Island (N. W.) N. 3° W., 2.8 miles (N. 4°12'10" E. 118°38'8"), Sibuko Bay, Borneo, and vicinity. In 200 fathoms. September 29, 1909. Length 128 to 203 mm.

1621 to 1624. D. 5590. Mabul Island (N. W.), N. 22° W., 4.3 miles (N. 4°10'50" E. 118°39'35"). In 310 fathoms. September 29, 1909. Length 163 to 197 mm.

2603. D. 5501. Macabalan Point Light (Mindanao), S. 35° E., 8.2 miles (N. 8°37'37" E. 124°35'), northern Mindanao. In 214 fathoms. August 4, 1909. Length 111 mm.

2017, 3514. D. 5502. Macabalan Point Light (Mindanao), S. 35° E., 8.2 miles (N. 8°37'37" E. 124°35"). In 214 fathoms. August 4, 1909. Length 55 to 200 mm. 13 examples.

1677 to 1679, 2439, 3159. D. 5503. Macabalan Point Light (Mindanao), S. 31° E., 6.6 miles (N. 8°36'26" E. 124°36'8"). In 226 fathoms. August 4, 1909. Length 52 to 203 mm. 40 examples.

2444. D. 5504. Macabalan Point Light (Mindanao), S. 39° E., 6 miles (N. 8°35'30" E. 124°36'). In 200 fathoms. August 5, 1909. Length 152 mm.

1912 to 1914, 10149, 10150. D. 5505. Macabalan Point Light (Mindanao), S. 31° E., 7.7 miles (N. 8°37'15" E. 124°36'). In 220 fathoms. August 5, 1909. Length 200 to 233 mm.

10209. D. 5506. Macabalan Point Light (Mindanao), S. 41° E., 12.2 miles (N. 8°40" E. 124°31'45"). In 262 fathoms. August 4, 1909. Length 215 mm.

D. 5622. Makyan Island (N. E.), N. 66° W., 4.1 miles (N. 0°19'20"E. 127° 28'30"). In 275 fathoms. November 29, 1909. Length 170 mm.

4100, 4103, 4104, 4114. D. 5624. Makyan Island (S.), N. 67° W., 8.9 miles (N. 0°12'15" E. 127°29'30"), between Gillolo and Makyan. In 288 fathoms. November 29, 1909. Length 56 to 185 mm.

4150 to 4151, 4153 to 4156. D. 5622. Makyan Island (N. E.), N. 66° W. In 275 fathoms. November 29, 1909. Length 136 to 160 fathoms.

1651. D. 5122. Malabrigo Light, N. 14° W., 9 miles (N. 13°27'20" E. 121°17'45"), east coast of Mindoro. In 108 fathoms. February 2, 1908. Length 208 mm.

2757. D. 5274. Malavatuan Island (N.), S. 73°30' E., 17.50 miles (N. 13°57'30" E. 120°03'25"), China Sea, vicinity southern Luzon. In 525 fathoms. July 16, 1908. Length 167 mm.

D. 5280. Malavatuan Island (N.), S. 60° W. 6.10 miles (N. 13°55'20" E. 120°25'55"). In 193 fathoms. July 17, 1908. Length 78 to 153 mm. 13 examples.

D. 5281. Malavatuan Island (N.), S. 84° W., 4.30 miles (N. 13°52'45" E. 120°25"). In 201 fathoms. July 18, 1908. Length 103 to 170 mm. 9 examples.

10097. D. 5282. Malavatuan Island (N.), S. 84° W., 6.20 miles (N. 13°53' E. 120°26'45"). In 248 fathoms. July 18, 1908. Length 185 mm.

D. 5268. Matocot Point, S., 50° E., 5.80 miles (N. 13°42' E. 120°57'15"), Verde Island Passage and Batangas Bay. In 170 fathoms. June 8, 1908. Length 125 to 140 mm. 3 examples.

10109. D. 5290. Matocot Point, S. 50° E., 3.10 miles (N. 13°40'09" E. 120°59'30"), China Sea, vicinity southern Luzon. In 214 fathoms. July 22, 1908. Length 145 mm.

D. 5297. Matocot Point, S. 50° E. 5.10 miles (N. 13°41'20" E. 120°58'). In 198 fathoms. July 24, 1908. Length 104 mm.

4094. D. 5656. Olang Point, N. 67° W., 14.5 miles (S. 3°17'40" E. 120°36'45"), Gulf of Boni, Celebes. In 484 fathoms. December 19, 1909. Length 198 mm.

2772. D. 5124. Point Origon (N.), S. 56° E., 20.75 miles (N. 12°52' E. 121°48'30"), east coast of Mindoro. In 281 fathoms. February 2, 1908. Length 120 mm.

3545. D. 5348. Point Tabonan, S. 89° E., 33.5 miles (N. 10°57'45" E. 118°38'15"), Palawan Passage. In 375 fathoms. December 27, 1908. Length 180 mm.

3802. D. 5517. Point Tagolo Light, S. 83° W., 10.5 miles (N. 8°45'30" E. 123°33'45"), northern Mindanao and vicinity. In 169 fathoms. August 9, 1909. Length 178 mm.

1987, 3934. D. 5221. San Andreas Island (W.), S. 27° E., 5.50 miles (N. 13°38'15" E. 121°48'15"), between Marinduque and Luzon. In 193 fathoms. April 24, 1908. Length 130 to 192 mm.

2424, 2566. D. 5442. San Fernando Point Light, N. 39° E., 8.4 miles (N. 16°30'36" E. 120°11'06"), west coast of Luzon. In 45 fathoms. May 10, 1909. Length 150 to 154 mm.

3672. D. 5441. San Fernando Point Light, S. 87° E., 18.7 miles (N. 16°38' E. 119°57'18"). In 186 fathoms. May 10, 1909. Length 93 mm.

2122. D. 5460. Sialat Point Light, N. 24° E., 8.2 miles (N. 13°32'30" E. 123°58'06"), east coast of Luzon. In 565 fathoms. June 10, 1909. Length 145 mm.

2246, 2247. D. 5463. Sialat Point Light, S. 74° E., 3.9 miles (N. 13°40'57" E. 123°57'45"). In 300 fathoms. June 16, 1909. Length 166 to 207 mm. 3 examples.

D. 5111. Sombrero Island, S. 41° E., 4.50 miles (N. 13°45'15" E. 120°46'30"), China Sea off southern Luzon. In 236 fathoms. January 16, 1908. Length 84 to 117 mm. 8 examples.

1749. D. 5112. Sombrero Island, S. 18° E., 6.75 miles (N. 13°48'22" E. 120°47'25"). In 177 fathoms. January 17, 1908. Length 131 mm.

4506. D. 5368. Tayabas Light (outer), N. 32° W., 21.8 miles (N. 13°35'30" E. 121°48'), Marinduque Island and vicinity. In 181 fathoms. February 23, 1909. Length 130 mm.

3738, 3739. D. 5371. Tayabas Light (outer), N. 43° W., 6 miles (N. 13°49'40" E. 121°40'15"). In 83 fathoms. February 24, 1909. Length 185 to 197 mm.

2179. D. 5374. Tayabas Light (outer), N. 9° E., 7.4 miles (N. 13°46'45" E. 121°35'08"). In 190 fathoms. March 2, 1909. Length 94 to 145 mm. 26 examples.

44602 U. S. N. M. N. 29°3'15" W. 88°16'. February 11, 1885. Albatross Collection (7376). Length 80 to 165 mm. 4 examples.

47635 U. S. N. M. Off Martinique. In 357 fathoms. Steamer Blake XLII. Length 166 mm.

47712 U. S. N. M. N. 21°8'30" W. 157°49', off Hawaiian Islands. December 4, 1891. Albatross Collection (3470). Length 185? to 205? mm. 2 examples.

47725 U. S. N. M. N. 21°12' W. 157°38'30", off Hawaiian Islands. December 6, 1891. Albatross Collection (3474). Length 96 to 120 mm.? 2 examples.

47736 U. S. N. M. N. 21°8'30" W. 157°49', off Hawaiian Islands. September 4, 1889. Albatross Collection (3470). Length 155 to 175? mm. 3 examples.

83882 U. S. N. M. December 14, 1887. Albatross Collection (2756). Length 110 to 165 mm? 2 examples.

Genus *Scopelopsis* Brauer

Scopelopsis BRAUER, Deutsch. Tiefsee Exp. *Valdivia*, vol. 15, Tiefsee-Fische, 1906, p. 146. Type *Scopelopsis multipunctatus* BRAUER, monotypic.

Body elongate, tapers back from head. Head large, forms greatest body depth. Eye large, smaller with age. Maxillary reaches beyond middle of head, very slightly expanded posteriorly. Opercles large. Pseudobranchiae present. Branchiostegals 9 or 10. Air bladder well developed. Scales with denticulate edges. Small photophore below each scale. Dorsal origin premedian. Adipose fin present. Anal begins below middle of dorsal, fin similar to dorsal. Caudal emarginate. Pectoral little shorter than ventral.

Allied with *Myctophum* but differing chiefly in the presence of a small photophore below every scale on body.

Scopelopsis multipunctatus Brauer

Scopelopsis multipunctatus BRAUER, Deutsch. Tiefsee Exp. Valdivia, vol. 5, Tiefsee-Fische, 1906, p. 146, text fig. 71. Cape Colony (S. Lat. 33°23'4" E. Long. 16°19'4", in 2000 meters). --BARNARD, Ann. South Afric. Mus., vol. 21, pt. 1, June 1925, p. 246 (off Cape Point, in 800 to 1000 fathoms; off Cape Morgan, in 480 fathoms; Agulhas Bank). --PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 49 (compiled). --NORMAN, Discovery Rep., vol. 2, 1930, p. 318 (S. 33°50' to 34°13' E. 16°4' to 15°49', 850 to 950 meters).

Depth 4 3/4 to 5; head 3 1/5 to 3 3/4. Snout 4 1/3 in head, with median ridge; eye 3 1/3 to 3 7/8, slightly greater than snout in young to nearly 2 in snout with age, 1 1/3 in interorbital; maxillary reaches well beyond eye, length 1 3/5 in head; interorbital low.

Scales 37 or 38 in lateral line, 3 above, 4 below.

Photophores 1 below each scale over whole body, similar ones around orbit, on lower jaw, branchiostegal membrane; isthmus and caudal fin; with age elongate luminous patch on upper edge of caudal peduncle between adipose fin and caudal fin base.

D. 21 or 22, first branched ray 1 7/8 in head; adipose fin about equals eye; A. 23 to 25, first branched ray 1 4/5 in head; caudal 1 4/5; least depth of caudal peduncle 3; pectoral reaches ventral base, with second uppermost ray prolonged, reaches midway between ventral base and vent; ventral rays 8.

Dark brown, fins lighter. Reaches 75 mm. (Brauer, Barnard.)

Off South Africa.

Genus Scopelengys Alcock

Scopelengys ALCOCK, Ann. Mag. Nat. Hist., ser. 6, vol. 6, 1890,

p. 302. Type Scopelengys tristis ALCOCK, monotypic.

Body compressed, deepest anteriorly, tapering backward. Caudal peduncle rather long or least depth less than half its length. Head large, compressed. Snout rather long. Eye small. Maxillary expanded posteriorly. Mouth very wide. Teeth in bands in jaws. Gill covers united. Long close set gill rakers. Pseudobranchiae rudimentary, of 3 or 4 small filaments each side. No air bladder. Pyloric appendages 8. Scales very deciduous. Dorsal median, short. Caudal forked. Pectoral well developed, low. Ventral short, nearer pectoral than anal.

According to Alcock very closely related to Notoscopelus, differing in the smaller eye, rudimentary pseudobranchiae and absence of air bladder.

Scopelengys tristis Alcock

Scopelengys tristis ALCOCK, Ann. Mag. Nat. Hist., ser. 6, vol. 6, 1890, p. 303. Off Elicapeni Bank, Laccadive Sea (N. Lat. 11°12'47" E. Long. 74°25'30", in 1000 fathoms); Illustrat. Zool. Investigator, Fishes, pt. 1, 1892, pl. 7, fig. 7; Journ. Asiatic Soc. Bengal, vol. 65, pt. 2, 1896, p. 333 (reference); Cat. Deep Sea Fish. Indian Mus., 1899, p. 166 (Arabian Sea; Laccadive Islands, 1000 fathoms). --GOODE and BEAN, Oceanic Ichth., 1895, pp. 93, 512 (reference). --PARR, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 48 (note).

Scopelengys dispar GARMAN, Mem. Mus. Comp. Zool., vol. 24, 1899, p. 254, pl. 54, figs. 2 - d. N. Lat. 6°-7° W. Long. 79°-80°, in 695 to 1832 fathoms (Gulf of Panama). --TOWNSEND and NICHOLS, Bull. Amer. Mus. Nat. Hist., vol. 52, art. 1, May 16, 1925, p. 11 (off Point San Bartholome, Lower California, 480 fathoms; N. Lat. 25° to 28°, 735 fathoms).

Depth 4 1/5 to 4 3/5; head 2 4/5 to 3 1/8, width 2 1/4 to 2 2/5. Snout 3 3/4 to 4 in head from snout tip; eye 5 1/5 to 6, 1 1/3 to 1 1/2 in snout, 1 1/5 to 1 1/2 in interorbital; maxillary extends 4/5 to 1 eye diameter beyond eye, expansion 1 1/8 in eye, length 1 3/4 to 1 5/6 in head from snout tip; interorbital 4 1/4 to 4 1/3, low, broadly convex. Gill rakers 6 + 14, slender, lanceolate, 1 1/8 in eye.

Scales 38 to 40 in lateral line to caudal base, though not enlarged; 5 above, 4 below; 27 or 28 predorsal. Scales with 30 to 35 irregular short apical spinules; circuli very fine, not extended apically.

D. III, 10, I, first branched ray 1 2/3 ro 1 4/5 in total head length; adipose fin 4 2/3 to 3 3/4; A. II, 7, I or II, 8, I, first branched ray 2 2/3 to 3 1/4; caudal 1 3/4 to 1 4/5, forked; least depth of caudal peduncle 3 3/4 to 4 2/5; pectoral 1 1/2 to 1 3/5; ventral 1 4/5 to 2.

Brown, nearly uniform. Iris gray. Fins all pale brown to whitish, caudal sometimes gray.

Gulf of Panama, Arabian Sea, Philippines.

3502 to 3505. D. 5526, Balicasag Island (C.), N. 15° W., 18.4 miles (N. 9°12'45" E. 123°45'30"), between Siquijor and Bohol. In 805 fathoms. August 11, 1909. Length 178 to 233 fathoms.

2152. D. 5515. Camp Overton Light, S. 26° E., 24.6 miles (N. 8°34'48" E. 124°1'24"), northern Mindanao and vicinity. August 8, 1909. Length 210 mm.

9173. D. 5491. Diuata Point (W.), S. 9° W., 19.3 miles (N. 9°24' E. 125°12'), between Leyte and Mindanao. In 736 fathoms. August 1, 1909. Length 318 mm.

9181 to 9183. D. 5492. Diuata Point (W.), S. 45° W., 15.2 miles (N. 9°12'45" E. 125°20'), between Leyte and Mindanao. In 735 fathoms. August 1, 1909. Length 235 to 245 mm.

9186 to 9189. D. 5494. Diuata Point (N.), N. 74° W., 4.2 miles (N. 9°6'36" E. 125°18'40"), between Leyte and Mindanao. In 678 fathoms. August 2, 1909. Length 308 to 344 mm.

9195. D. 5495. Diuata Point (N.), S. 76° E., 9.4 miles (N. 9°6'30" E. 125°00'20"), between Leyte and Mindanao. In 976 fathoms. August 2, 1909. Length 255 mm.

5473. D. 5203. Limasaua Island (S.), S. 38° W., 5.50 miles (N. 9°58' E. 125°7'40"), Sogod Bay, southern Leyte. In 775 fathoms. April 10, 1908. Length 265 mm.

9156 to 9158. D. 5487. San Ricardo Point (Panaon Island), S. 50° E., 11.2 miles (N. 10°2'45" E. 125°5'33"), between Leyte and Mindanao. In 732 fathoms. July 31, 1909. Length 265 to 321 mm.

9161 to 9170. D. 5488. San Ricardo Point (Panaon Island), S. 59° E., 9 miles(N. 10° E. 125°6'45"), between Leyte and Mindanao. In 772 fathoms. July 31, 1909. Length 240 to 288 mm.

4492 and 4493. D. 5428. Thirtieth of June Island, N. 62° W., 19.5 miles (N. 9°13' E. 118°51'15"), eastern Palawan and vicinity. In 1105 fathoms. April 3, 1909. Length 120 to 126 mm.

87561 U. S. N. M. California. Albatross Station D. 5687. April 23, 1911. Length 138 mm.