

drilidæ, it seems on the whole probable that they are nearly akin. Provisionally therefore I include the new genus described in the present paper in the family Ocnerodrilidæ. I am not at all certain, however, that the likeness is not the result of a convergence due to simplification in the same direction. Both *Ocnerodrilus* and *Gordiodrilus* are chiefly to be defined by negative characters.

V. EXPLANATION OF THE PLATES.

PLATE VI.

- Fig. 1.* *Gordiodrilus elegans*. Ventral surface of genital segments represented as being semitransparent. *at*, atria; *v.d.*, vas deferens.
Fig. 2. *Gordiodrilus dominicensis*. Ventral calciferous gland. *l*, lumen of gland opening into œsophagus; *n*, nephridium, apparently continuous with intracellular part of lumen of gland; *s*, inter-segmental septa.
Fig. 3. The same. A portion of intracellular part of lumen of calciferous gland viewed superficially and showing connexion with nephridium (*n*).

PLATE VII.

- Fig. 4.* *Gordiodrilus robustus*. A spermatheca.
Fig. 5. The same. Longitudinal section through genital segments, to show external orifice of atria (*at.*) and vas deferens (♂). *f*, inter-segmental furrow; *s*, seta.
Fig. 6. A. *Gordiodrilus elegans*; B. *G. robustus*; C. *G. tenuis*; all of natural size. ♂, male pore; *p*, genital papilla.
Fig. 7. *Gordiodrilus elegans*. Spermatheca.
Fig. 8. *Gordiodrilus ditheca*. Longitudinal horizontal section through œsophagus (*œs.*) and calciferous gland (*Cac.*). *S*, septum; *T*, testis; *H*, heart; *Per.*, peritoneal cells; *a*, glandular cells surrounding calciferous gland; *vac.*, vacuole.

X.—Notes from the St. Andrews Marine Laboratory (under the Fishery Board for Scotland).—No. XIII. By Prof. M'INTOSH, M.D., LL.D., F.R.S., &c.

[Plate VIII.]

1. On the Eggs and young Stages of the Sand-eels.
2. On the Ova and Larvæ of certain Pleuronectids.
3. On *Clymene ebiensis*, Aud. & Ed.
4. On the Atlanta-like Larval Mollusk.

1. On the Eggs and young Stages of the Sand-eels.

THE reproduction of the sand-eels has hitherto been involved in obscurity, though considerable attention has been given to the subject at St. Andrews for several years, *e. g.* by Mr. W. L. Calderwood and others. Similar investigations were carried out elsewhere by the late esteemed and conscientious observer,

Mr. Duncan Matthews, under the auspices of the Fishery Board for Scotland.

The eggs and larval forms of sand-eels for the most part have escaped observation, and it is possible that there is something peculiar in the habits of the adults at the spawning-period, and especially in connexion with the deposition of the ova. The latter have never been captured in the tow-nets, though these have often swept the bottom. They have also escaped notice in the dredge used on sandy ground, and in digging for the adults in the sand at extreme low water.

The literature on the subject, so far as known, is scanty. Parnell notes that the sand-eel (*Ammodytes tobianus*) spawns in September *, but that he could give no definite opinion with regard to *A. lancea*. Day observes that he found the ovaries of *Ammodytes lanceolatus* considerably developed in August, and concludes it spawns in autumn and winter. The reproductive organs of *A. tobianus*, again, were far advanced in August and September, and he mentions that Thompson procured some ready to deposit their spawn at the end of July; but he remarks that in some places they do so during the winter. "Couch considered the end of December the most common period; so probably they continue spawning through the last few months of the year, dependent on the temperature, becoming very poor in winter after breeding." The words of Couch are:—"It is in this retreat, concealed and sheltered with the sand of the shore, that this lance (*A. tobianus*) sheds its roe, the grains being scattered as it passes on; and in the west of the kingdom, at least, this process is accomplished at about the shortest days of the year." Buckland† mentions May and June on the authority of Blanchere, and the place of spawning the "sand." Möbius and Heincke give May as the spawning-season of *A. lanceolatus*, according to Bloch, and mention that Malm found a female with enlarged ova in June.

The general result of the observations made in former years at St. Andrews was that in May and June many examples of *A. tobianus*, not always the largest, have the ovaries well developed, but until this year no ripe specimen had been procured either by digging or other method of capture. Ripe males, however, have often been obtained, and, as in other groups, some of these have been comparatively small. Few ripe examples on the whole have been procured by digging, but, on the other hand, there is no

* 'Fishes of the Firth of Forth,' pp. 391-393.

† 'Report Sea-Fisheries of England and Wales,' p. 246.

evidence that they assume a more or less pelagic existence at the spawning-period.

By the aid of the Fishery Board for Scotland, additional facilities have lately been afforded for the examination of both species by seine-nets at Elie and at St. Andrews. From the former place (Elie) almost all the examples of *A. lanceolatus* have been procured, since it is rare at St. Andrews. Dr. Fulton also kindly forwarded ripe ovaries of an early specimen (May 20).

The specimens of *A. lanceolatus* were large—some exceeding a foot—and in fine condition. The enlarged ovaries in these stretch forward to the liver, and posteriorly extend some distance behind the vent. The organs are so closely applied as to appear connate, the respective sides, however, being separated by a deep furrow. In some a general enlargement of almost all the ova occurred, the majority having reached the stage at which a single oil-globule only is present, the greenish-yellow hue of the latter affecting the tint of the ovaries *en masse*. Yet none of these had the slight translucency characteristic of a perfectly ripe egg. In others, while the ovaries generally were enlarged, the ripe eggs were few in number and scattered singly at the surface of the ovaries. A few presented a continuous band of ripe eggs on the outer side of each ovary ventrally, and from the anterior to the posterior end, with or without a group of ripe eggs (one or two of which occasionally escaped externally) near the reproductive aperture. The specimens thus forwarded daily from Elie* showed few marked differences, unripe ovaries being as common at the beginning of July as at the beginning of June. So far as could be observed, no great exodus of eggs takes place suddenly, the diminution in the size of the ovaries occurring gradually.

In the most advanced males the testes occupied a similar area to that of the ovaries, but while at the beginning of June the sperms occasionally retained considerable activity on arrival, those at the beginning of July were in most cases either undeveloped or almost motionless. The general impression, indeed, was that their vitality was feeble. The testes in a few were diminished, while the centre contained crowds of sperms, showing that the organs were in full functional activity.

The spermatozoa are very minute, with a head that when highly magnified resembles a grain of rice slightly curved, so as to present a kind of hilum at one side. Neither end is

* By the skill and care of Mr. Rodger, Chief Officer of the Coast-guard.

tapered. The filiform tail is so attenuate that it is difficult to distinguish it.

As indicated, the ova varied in different examples. The larger developing (not ripe) ova in some were all about the same stage of advancement, though small ova occurred here and there throughout. The capsule (*zona radiata*) is tough, and contains, in the eggs approaching maturity, besides the nucleus, the minutely granular yolk, which has a series of small, deep greenish-yellow oil-globules distributed amongst it. In ovaries somewhat further advanced, the ripe ova had an average diameter of .7620 millim., and instead of the numerous scattered globules all had now coalesced into a single conspicuous oil-globule of a greenish-yellow hue measuring .1950 millim. in diameter. The capsule is thick, and may be divided into an external and an internal lamina. The outer surface is minutely areolated or papillose, the papillæ being evident as a distinct border at a fold of the zona, *e.g.* after rupture. In some the minutely complex folds resemble those of a microscopic *Meandrina*. The nature of this outer layer is still *sub judice*. It may be either a follicular growth or more probably the result of a special secretion for adhesion, though the latter at first sight would hardly be supposed to be so regular. It can easily be abraded from prominent folds of the egg, leaving the smooth and glistening zona beneath. The latter is a hyaline and minutely perforate layer, which assumes different appearances under examination, such as rows of dots or finely crossed lines. The micropyle is conspicuous in the form of a deep pit, from which radiate a series of long furrows.

When these eggs are removed from the ovaries and placed in sea-water they adhere to the bottom of the vessel, so that it may be inverted without detaching them. They are not, however, firmly fixed, since they can be loosened from the glass with a camel's-hair pencil or the point of a pipette. They adhere in the same manner to the forceps or a slide. In water they do not often adhere to each other, but do so slightly when placed in contact.

At the same period the majority of the most advanced examples of the lesser sand-eel (*A. tobianus*) at St. Andrews present considerably smaller ova than the foregoing; indeed, throughout June and July only a single female here and there is found in a ripe condition, yet perhaps hundreds are captured in a single sweep of the seine-net. These, however, are, as a rule, smaller forms than those captured by the same kind of net in the Forth, at Elie, where the ripe females are considerably more numerous. On the other hand, ripe males

are not uncommon amongst the specimens at St. Andrews—some of these being only four inches in length, or even somewhat less.

The ova of this species agree in general structure with those of *A. lanceolatus*. In the early condition the capsule (*zona radiata*) encloses only minutely granular yolk, no special oil-globules being visible. The latter subsequently become distinct, and by-and-by coalesce into a single large oil-globule, as in the latter species. The colour of the globule, however, is different, being of a honey-colour or faint yellowish brown.

The spermatozoa are more minute than in *A. lanceolatus*, but appear to have the same shape, viz. like a slightly curved grain of rice, no perceptible diminution occurring at the end from which the filament proceeds. Their vitality would seem to be as feeble as in that species.

Artificial fertilization was frequently performed with specimens sent by the courtesy of the Fishery Board from Elie, but at first without success. It is true certain changes ensued, but whether these were altogether due to partial fertilization, is an open question. A slight streaming of protoplasm occurred with the formation of a thick belt round the yolk. The perivitelline space also largely increased in size. Then a conical elevation of the protoplasm formed a disk, but no segmentation took place. The persistent feebleness of the sperms after the journey showed that it was necessary to fertilize on the spot—immediately after landing at Elie. This was accordingly done, with the result that after the usual streaming of the protoplasm on the surface of the yolk, the increase of the perivitelline space, and the formation of the prominent conical disk, segmentation ensued. Towards the end of July a considerable number of ova were successfully hatched, so that the larva was satisfactorily identified with those abundantly procured by the various nets from the early part of the year onwards. Dr. Fullerton also hatched them at the Laboratory at Dunbar at the same time.

The constant employment of the various tow-nets at different depths throughout the year shows that few forms of larval, post-larval, and young fishes are more abundant, more generally distributed, or occur over a longer period than the sand-eels. At St. Andrews they appear in February, and the larval and post-larval forms are found onward through March, April, May, June, July, and August, showing that a constant succession of eggs and young are kept up throughout this long period.

2. *On the Ova and Larvæ of certain Pleuronectids.*

The ova of most of the pleuronectids have been developed at St. Andrews, but until recently those of the halibut and long-rough dab have been enveloped in mystery. The large eggs of the former, which Mr. Holt and I find to measure from 3·5 to 3·9 millim. or even more in diameter, have been procured by the former energetic observer at Grimsby, and about the same time by Mr. Mackie, an officer of the Fishery Board for Scotland, stationed at Peterhead—thanks to the exertions of Dr. Fulton, the scientific secretary of the Board. Last year again, Mr. Holt, when engaged off the west coast of Ireland, proved that the egg with the large perivitelline space (egg of Pleuronectid B)*, with which we had long been familiar, was that of the long-rough dab. These ova were frequently encountered in considerable numbers during the trawling-expeditions of 1884, and Mr. Cunningham described and figured the same form before hatching†. Further observations on the egg and the larva were given in the “Pelagic Fauna of St. Andrews Bay”‡, and in the “Researches”*, where an account of the larval condition, with a coloured figure by Prof. Prince, occurs.

The ova of the pleuronectids group themselves in three series, viz.: (1) those with a perfectly transparent yolk devoid of oil-globules; (2) those with a single oil-globule which moves freely in the yolk; (3) those with groups of small or scattered larger oil-globules. In the first series are the eggs of the halibut, long-rough dab, plaice, lemon-dab, craig-fluke or witch (*Pleuronectes cynoglossus*), dab, and flounder. In the second group are the ova of the turbot, brill, megrim, scald-fish, and topknot. In the third series are the soles, the common species (*Solea vulgaris*) having a ring of groups of minute oil-globules, and the others scattered oil-globules of larger size.

Though ripe eggs of the turbot were procured in the trawling-expeditions of 1884, additional information has since been obtained. The ripe unfertilized ova have a diameter of from ·99 to 1·06 millim. (Holt). Closely allied eggs, which have a diameter of about ·9906 millim., have been captured in the tow-nets in summer for years, but their precise identification with those of the turbot has not been satisfactorily made out by Mr. Holt or myself. The egg and larva

* Trans. R. S. E. vol. xxxv. iii. p. 853, pl. x. fig. 8, and pl. xviii. fig. 2.

† Trans. R. S. E. vol. xxxiii. i. p. 105, pl. vii. fig. 2 (1887).

‡ 7th Ann. Rept. Scottish Fishery Board, p. 270, pl. iii. figs. 1, 2, & 3.

are figured in the "Researches" * by Prof. Prince, the latter being recognized by the position of the oil-globule in the yolk after hatching, viz. considerably in front of the posterior border of the yolk-sac, which, moreover, is finely reticulated, and by the yellowish coloration. A preanal portion of the marginal fin is present.

The eggs of the brill, which have a diameter of 1.33 millim., were recognized by Raffaele †, and subsequently at St. Andrews, where they were for the first time hatched, and the larva figured and described ‡. As, however, the ova had been fertilized with the milt of a turbot, since no male brill could be procured on the occasion, some uncertainty was expressed as to the condition under ordinary circumstances. Further experience this season has shown that the description and figures are fairly reliable for the species. Both the turbot and the brill have a smaller oil-globule than the sail-fluke (*Arnoglossus megastoma*).

3. On *Clymene ebiensis*, Aud. & Ed.

In the edition of the 'Règne Animal' by the disciples of Cuvier, Audouin and Milne-Edwards introduced as the type of the 'Climènes,' Savigny (an abbranchiate setigerous group which they associated with the Lumbrici), and for the accompanying illustrations on pl. xxii., a new form which they termed *Clymene ebiensis*. No description further than the explanation of the six figures and a footnote is given, but there is sufficient to recognize the form. It was found by the authors "à l'île des Ebîens" on the shores of Brittany, and is characterized by the pyramidal form of the cephalic segment and the absence of cirri on the anal funnel. In the plate the annelid with its tube of the natural size, two views, dorsal and ventral, of the cephalic lobe, and a figure of the posterior end of the body are given, besides four of the hooks magnified. The cephalic region is diagnostic, but the posterior end, or, as it is called, the "Extrémité anale," represents only the ruptured constricted region between the two preanal bristled segments, while the figure of the hooks is scarcely diagrammatic. The tube is evidently of sand-grains cemented together.

In his 'Familien der Anneliden' § Grube characterizes

* Trans. R. S. E. *olim cit.* pl. v. fig. 4, and pl. xvii. fig. 4.

† "Le nova Galleggianti, &c.," Mitth. Zool. Stat. Nap. viii. p. 48, tav. 4. figs. 8 &c.

‡ 9th Ann. Report S. F. B. p. 317, pl. xiii. figs. 1-3.

§ P. 157.

the species doubtfully as having a small anal funnel, and places it under the division of those with the plate of the head-lobe small. Sars again thought his *Clymene Mülleri** somewhat approached *Clymene ebiensis*, Aud. & Ed., but such referred only to the cephalic lobe, since the Norwegian form had an anal cup with from fifteen to twenty-three or more cirri. De Quatrefages located the species under his genus *Leiocephalus*, which he instituted for those with a head terminating in a papilla, and with no or hardly any cephalic plate. The anterior region of the body is composed of three elongate segments, the feet are biramous, the inferior division indistinct. He characterizes the head as acute, protracted, with the cephalic lobe almost absent. The first segment, moreover, has no superior division. Kinberg† gave two foreign genera (*Chrysothemis* and *Sabaco*) with a comparatively simple anal funnel, but there is nothing else in their structure to associate them with the present species.

Grube, in his remarks on the group ‡, pointed out that for a proper classification of the Maldanidæ both ends of the body are necessary, and therefore the precise position of Audouin and Milne-Edwards's *Clymene ebiensis* is uncertain. He would in the meantime decline to place *C. ebiensis* under the genus *Leiocephalus*, De Quatrefages, and thought the species perhaps identical with *C. intermedia* (which the examination of a complete specimen shows that it is not). He mentioned two species with smooth anal funnels, viz. *C. urceolata*, Leidy§, and *C. leiopygos*, Grube. The latter will be mentioned elsewhere; while the number of the segments, their condition as regards bristles, and the large urceolate anal funnel of the former leave doubts as to its identity with *C. ebiensis*, even after allowing the necessary margin for imperfect description.

Clymene ebiensis was next alluded to by the author||, a specimen, incomplete posteriorly and in its tube of coarse sand, having been dredged by the late Dr. Gwyn Jeffreys in the Outer Haaf, Skerries, Shetland (75–80 fathoms), in June 1867. "It is recognized by the pointed snout, the somewhat swollen anterior segments, and the absence of the usual frontal flattening. The shape of the hooks is peculiar, the chief fang being short and somewhat flattened." It was also

* Ann. Nat. Hist. 2nd ser. vol. xx. p. 156 (1857).

† Öfversigt af K. Vetensk.-Akad. Förhandlingar, 1866, pp. 340, 341.

‡ Schlesischen Gesellsch. f. vat. Cult. 1867; and Ann. Nat. Hist., Dec. 1868 (4th ser. vol. ii. p. 391).

§ Marine Invert. Rhode Is. and N. Jersey, p. 145 (1855).

|| Trans. R. S. E. vol. xxv. p. 422 (1869).

stated that it was allied to Grube's *Clymene leiopygos*, from Cherso*, though of course this diagnosis rested on the characters of the anterior region only. The acquisition of a perfect specimen, however, shows that Grube's species differs in the number of bristled segments, which are twenty-three, as well as in the form of the anal cup and the preanal segments. The anal cup, moreover, follows the last bristled segment, and thus materially diverges from the condition in *Clymene ebiensis*. It was subsequently procured in the 'Porcupine' expedition of 1870, at 305 fathoms in the Atlantic, but in this specimen also the posterior region was absent.

Théel's *Praxilla polaris*† has the same number of bristled segments, and the two or three last are devoid of these organs; but the otherwise smooth anal funnel has a small ventral cirrus, and the cephalic segment of course wholly differs. Hansen's *Clymene Koreni*‡, another form with a smooth anal funnel, has only eighteen bristled segments, and the cephalic plate is like that in *Maldane*. The *Clymene cirrata* of Ehlers§ has an anal plate with four long cirri, though the margin is otherwise smooth, and the cephalic lobe has broad flat lateral plates.

The anal plate of *Nicomache McIntoshii* of Marenzeller|| is smooth, but it is flattened and otherwise quite different from the condition in the present species.

The examination of a complete specimen (Plate VIII. fig. 1) in spirit, courteously sent by Mr. Hornell, of Sinel's Laboratory, Jersey, has enabled me to clear up the ambiguity attached to the species, and more especially to ascertain the character of the anal funnel.

The cephalic lobe in this example, which Mr. Hornell says was six inches in length, has a dense series of minute brownish eyes in the preparation—visible from the dorsum on each side of the snout (Plate VIII. fig. 2), but disappearing by passing under the pointed tip. They extend on the under surface (Plate VIII. fig. 3) forward to the apex of the snout. In the other two examples no eyes can be seen. The curiously aberrant *Branchiomaldane Vincentii* of Langerhans, from the Canaries, shows similar groups of eyes on the dorsum of the

* Archiv f. Naturgesch. 1860, p. 91, Taf. iv. figs. 3, 3a, 3b.

† Kongl. Sv. Vet.-Akad. Handl. Bd. xvi. no. 3, p. 58, pl. iv. figs. 52 56 (1879).

‡ Norwegian N. Atlantic Exped. p. 40, pl. vi. figs. 1-5 (1882).

§ Florida-Anneliden, p. 182, Taf. 46. figs. 10-13.

|| "Polychäten d. Angra Pequena-Bucht," Zool. Jahrbüch, Bd. iii.

cephalic segment *. The median ridge on the dorsum runs smoothly into the general surface posteriorly, and the aspect of the parts varies according as the lateral flaps are erect or flattened. The lobe is comparatively short, and is marked inferiorly by the commencement of a median ridge, which is continued along the body to the margin of the anal funnel. The separation between it and the succeeding segment is only slightly indicated. The second segment is about a third longer than the cephalic lobe, and bears, about a fifth behind the anterior border, a small tuft of bristles and three hooks, the crowns of which are less elaborately formed than the same organs posteriorly. The third segment is still more elongated, and like some of the segments which follow is distinguished by an anterior whitish region, the bristles and hooks being at the posterior border of the latter, viz. about the anterior fourth of the segment. The two succeeding segments are similar, but the sixth and seventh are somewhat shorter and thicker—all, however, in the preparation showing the free fold of the anterior border, which in a manner ensheaths the posterior end of the preceding segment. The eighth has also the free and densely white anterior margin intensified by the dark hue of the region behind, and the bristles and hooks are similarly placed. Posteriorly a change in the arrangement of the segment-junction occurs, since the densely whitish region of the ninth segment passes slightly forward on it ventrally, so that the free margin so characteristic of the preceding segments is lost. The anterior border of this curved white region, however, really marks the segment-junction, though in the specimen from Jersey the arrangement is not so distinct as in the others, probably from the less perfect preservation. The bristles and hooks of the short ninth segment are situated posteriorly, and thus a change in the position of the organs is inaugurated. The segment-junctions are clearly behind this and all the remaining bristle-tufts, that is, from the tenth (inclusive) to the twenty-third, the last five or six segments being considerably elongated. The bristle-bundles and rows of hooks in this division of the body are conspicuous, and placed a little in front of each junction. The anal division (Plate VIII. fig. 4) appears to be composed of six segments, four of these (24th, 25th, 26th, and 27th) having slight elevations or papillæ to indicate the position of the bristle-tufts and hooks of the other segments, which are here absent. The terminal rim is not

* "Ueb. einige canarische Anneliden," *Nova Acta Acad. Cæs. Leop.-Car. Bd. xlii. No. 3, p. 116, figs. 21 a &c.*

much expanded, has a perfectly smooth edge, and the anal cone is in the centre.

The bristles have the usual microscopic structure, and the anterior hooks differ from the posterior in the shape of the crown and in the absence of the process under the great fang. The bristles and hooks of the posterior segments, viz. from the thirteenth to the twenty-third, are best developed.

No tube accompanied the specimen, but in the Zetlandic example the somewhat firm though friable tube is composed of sand-grains and minute fragments of shells cemented together by secretion, and it apparently resembles that figured by Audouin and Edwards.

4. On the *Atlanta*-like Larval Mollusk.

A few remarks were made under the Xth Series of "Notes from the Marine Laboratory" * on a minute *Atlanta*-like form which had been found in the tow-nets in St. Andrews Bay. A single example had been obtained, and it was only observed after having been immersed in spirit for a considerable time. In 1890 and in 1891, however, many specimens of the same form appeared, and the shell was observed to be elastic (uncalcified) and very minutely spinous, as shown in the accompanying drawing kindly made from the living animal by Mr. E. W. L. Holt (Plate VIII. fig. 5). The frequency of the form in the tow-nets, together with its minute size, showed that it probably was a larval stage of a mollusk not uncommon in the neighbourhood. Its relationship with the young *Lamellaria*, as described by Dr. A. Krohn, was indeed soon afterwards kindly pointed out to Mr. Holt and myself by Mr. M. F. Woodward.

A larva allied to the foregoing was first procured by Dr. A. Krohn at Messina, in March, and described as a new mollusk under the name of *Echinospira diaphana* †. The shape of this form, however, considerably diverges from that procured at St. Andrews, and the spines are much larger. Two years later the same author pointed out that the foregoing *Echinospira diaphana* was the larva of a pectinibranchiate Gastropod, and he subsequently described another species also obtained in the tow-net, in February, at Messina ‡. In the latter paper a full description of the horny shell and the structure of the larval mollusk are given; while the relationship of the form to the Marsenidæ (*Lamellaria* &c.) is indi-

* Ann. Nat. Hist., January 1890, p. 47.

† Archiv f. Naturgesch. 1853, p. 223, Taf. xi. figs. i., ii.

‡ Ibid. 1857, p. 252, Taf. xi. figs. 1-4.

cated, with figures of the permanent as well as the larval shell*. The latter resembles the species procured at St. Andrews (Plate VIII. figs. 5 & 6), but differs from it in the size of the serrations on the ridges (fig. 7), those in the Messina specimen being much more minute.

The adult *Lamellarie* are not uncommon under stones between tide-marks, especially in rock-pools, and it might have been expected that the larval forms would have been sooner procured in the tow-nets. The more systematic use of the special bottom-net in recent years, however, seems to have been much more successful in this respect than either the surface or mid-water nets.

EXPLANATION OF PLATE VIII.

- Fig. 1.* *Clymene ebiensis*, a little larger than natural size and viewed from the side.
Fig. 2. View of the dorsal surface of the cephalic segment. Enlarged under a lens.
Fig. 3. Ventral surface of the same region, showing the eyes and mouth. Similarly enlarged.
Fig. 4. Anal cone and funnel of the same species with the adjoining segments. Enlarged under a lens.
Fig. 5. Atlanta-like larva of *Lamellaria* in lateral view. The fine serrations of the edge are distinct. Magnified from life.
Fig. 6. View of the edge of the shell of the foregoing, so as to exhibit the double angle.
Fig. 7. Portion of the double angle, more highly magnified.

XI.—*Descriptions of Seven new Species of Birds from the Sandwich Islands.* By the Hon. WALTER ROTHSCHILD.

SOME specimens of birds belonging apparently to new genera and species have been forwarded to me by my collector, Mr. Palmer, and are of sufficient interest, I think, to be brought before the notice of naturalists.

Family *Anseridæ*.

Bernicla Munroii, sp. n.

Adult. Head and neck black, excepting a large patch which extends on the upper throat over the lower part of the

* A summary of the pelagic larval forms allied to the above is given in Bronn's 'Klassen u. Ordnungen' (Malacozoa), p. 1005, &c.



M'Intosh, William Carmichael. 1892. "X.—Notes from the St. Andrews Marine Laboratory (under the Fishery Board for Scotland).—No. XIII." *The Annals and magazine of natural history; zoology, botany, and geology* 10, 97–108.

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