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1868.

Regular Meeting, August 17th, 1863.

Dr. Trask in the Chair.

Present, eleven members.

Donations to the Cabinet:

Three boxes of ores from various localities, presented by Dr. Trask. Mr. Lorquin presented a number of land shells collected on the Phillippine Islands by Mr. Lorquin, senior. A box of shells from the Smithsonian Institution.

Donations to the Library:

Verslagen en Mededeelingen der Koninklijke Akademie van Wetenschappen; Afdeeling Naturkunde, Parts 10–14, 1860–1862; Same, Afdeeling Letterkunde, Parts 5–6, 1860–1862; Jaarboek van de Koninklijke Akademie van Wetenschappen te Amsterdam, 1859, 1860, 1861; Proceedings of the Royal Horticultural Society, Vol. iii, Nos. 1–4, Jan. to April, 1863; Nachrichten von der Georg-Augusts Universität und der Königl. Gesells. der Wissenschaften zu Göttingen, 1862, Nr. 1–27.

The above were received through the Smithsonian Institution.

Dr. Cooper read the following paper:

On New or Rare Mollusca Inhabiting the Coast of California.—No. II.

BY J. G. COOPER, M.D.

The following species were collected while exploring for the State Geological Survey, along the main land and islands bordering Santa Barbara channel, in May, June, and July last. Besides those described as new, I obtained additional specimens of some of those described in 1862, confirming the specific characters then given, and to some extent establishing the generic more accurately.

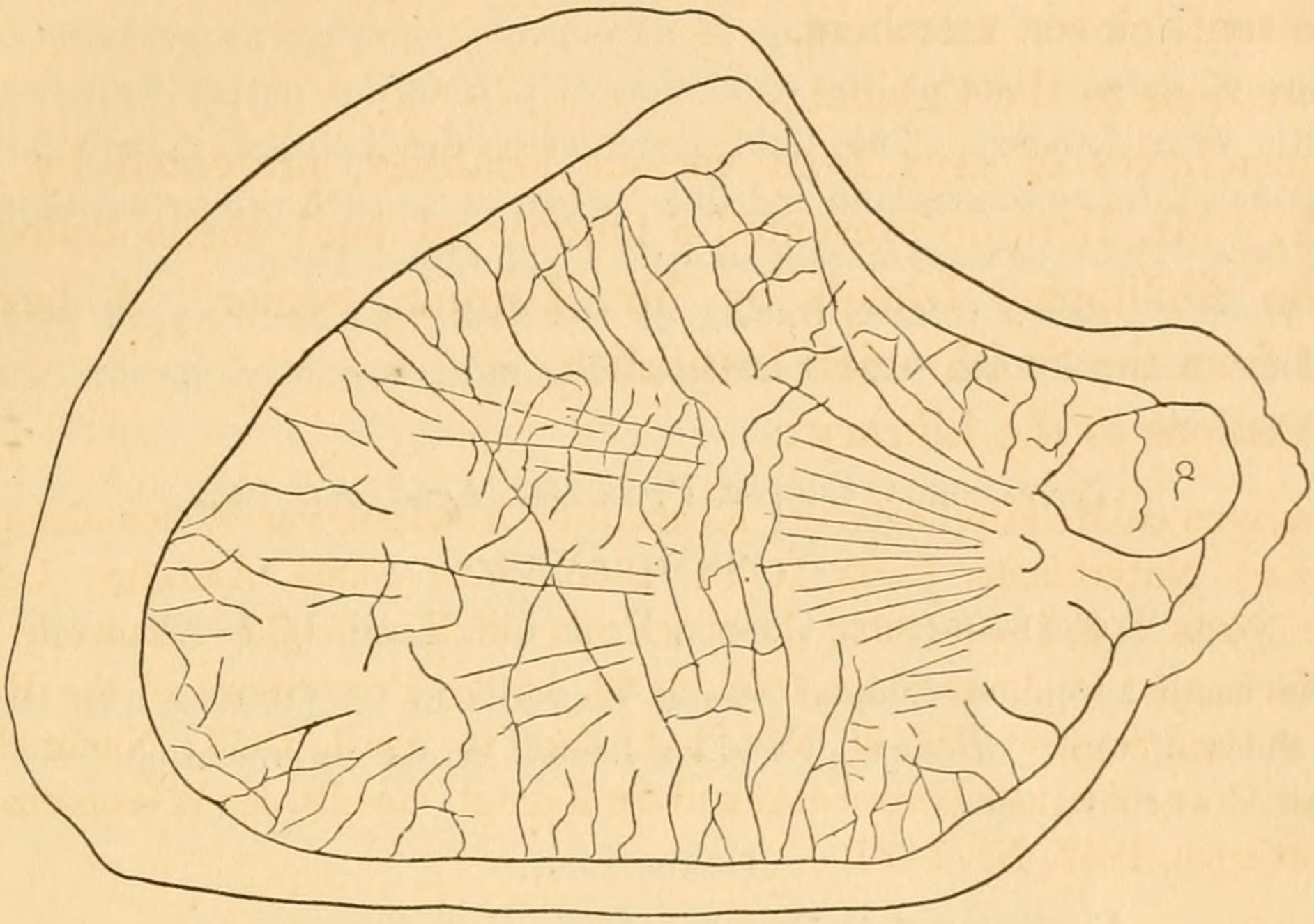
Careful notes and drawings from living specimens furnish the basis of most of the descriptions, together with examination of the specimens in alcohol.

With regard to localities, it must be noticed that "Santa Barbara" and "Santa Barbara Island" are very distinct both in local characteristics and the groups of animals inhabiting them. The island is about seventy-five miles from the town, and thirty-five from the nearest main land. Catalina Island is twenty-four miles from the main land, and very different in its molluscous animals from both the main land and the other islands, being the richest locality on our shores.

I have not been able to compare these species with those from South America described by D'Orbigny and others; but, like our other littoral mollusca, they are probably distinct. I have, however, found the pelagic species *Omma-*

strephes giganteus D'Orb in large numbers, and "hundreds" of a species of *Argonauta* washed ashore last spring as far north as Santa Cruz Island, as I was informed by Dr. Shaw, who presented specimens to the State collection.

FIG. 14.



APLYSIA Linn.

A. californica Cooper. State Collection, species 1045.

Form and external appearance as usual in the genus. Length fifteen inches, breadth five, height about the same. Color pale gray or greenish, becoming purplish on the side, folds of mantle with scattered white specks, from which an irregular network of brown lines extends over the rest of the body, interspersed with large brown blotches. Inner surface of mantle varied with alternating painted bars of white and dark brown interlocking together. Sole of foot black. Eyes very minute and black.

Shell contained in the substance of the mantle cartilaginous, translucent, trapezoidal or hatchet-shaped, margins rounded, slightly convex above, the nucleus or centre in old specimens distant from the posterior end or apex. Faint radiating lines diverging from the nucleus, crossed by an irregular network of darker lines, all ending abruptly at some distance from the margin, which has thus a wide, nearly transparent border. An accessory plate arises on the inner surface from the nucleus, spatulate in form and slightly raised.

The two younger specimens have the clear border and accessory plate less developed, and very young ones do not probably show these characters at all, but resemble the typical *Aplysia* in the form of the shell. On this account I am unwilling to constitute it a new genus, but propose to call it a sub-genus under the name of NEAPLYSIA.

There was no appearance of a multiplication of shells, said to occur in old specimens of *Aplysia*. Not having any full description of the internal anatomy

of *Aplysia*, I cannot at present determine whether there are many other differences in structure.

The stomach was full of large fragments of *Algæ*. I found three specimens only, on the beach at San Pedro, July 25th, just after a heavy blow which occurred at the lowest summer tides. Kept in water for some time, they were very slow and uninteresting in movements, showing no evidence of any means of defence except the exudation of a beautiful purple fluid from the mantle when handled. This fluid, common to the Aplysiæ, though formerly supposed to be poisonous and indelible, possesses no such properties, though it may be a defence against marine animals which attack them.

The figure, taken from a tracing of the shell, and electrotyped by Dr. A. Kellogg, represent the inner surface of the most developed specimen, of the natural size.

NAVARCHUS, Cooper, Proc. Cal. Acad. Ap. 1863.

N. inermis Cooper.

Syn. *Strategus inermis* Cooper, Proc. Cal. Acad. II, 1862, p. 202.

One small specimen, dredged among seaweeds in ten fathoms, near the eastern shore of the "Isthmus," Catalina Island, shows no variation from those obtained at San Diego.

DORIS, Linn.

D. albopunctata Cooper. State Coll. Species 1000.

Form ovate, pointed behind, flattened, surface shining, minutely rugose. Tentacles club-shaped, retractile, branchial plume, 6–8 parted, bipinnately divided, situated near the posterior extremity. Color yellow or orange brown, dorsal surface thickly speckled with small white dots, each forming a slightly raised papilla. Beneath paler.

Dredged from a rocky bottom in twenty fathoms, a mile from the shore at Santa Barbara. Also found on rocks at low water mark near the north-west end of Catalina Island.

Length about one inch, breadth one-third of an inch.

Doris montereyensis Cooper, Proc. Cal. Acad. II, 1862, p. 204.

Found at Santa Barbara Island on rocks at low water, differing from the original specimens only in larger size and deeper color. The tentacles are club-shaped, the branchial 7–8 parted, bipinnate and from one opening.

Doris sanguinea Cooper, loc. cit. (*Asteronotus.*)

Four specimens found with the last, differ from the type only in having the black spots very small. The tentacles are acute, cylindro-conic, retractile into a cavity bordered by a toothed membrane. The branchiæ form an erect chimney-shaped expansion. I cannot discover the stellate valvular structure of the branchial opening, which characterises the genus *Asteronotus*, in these specimens.

Doris Sandiegensis Cooper, loc. cit.

Two found with the last agree exactly with specimens from San Diego. The

tentacles are conical and acute. The branchial orifice does not present the peculiar characters of *Actinocyclus*. Although all these species differ to some extent, they have no characters to distinguish them generically from the typical *Doris*, unless anatomical or microscopical examination should reveal them, or the characters of that genus should be more closely limited.

TRIOPA Johnston, 1838.

T. catalinæ Cooper. State coll. species, 1002.

Form much elongated, narrow, dorsal surface flat, becoming spatulate posteriously. Head expanded laterally and flattened, wider than the body, ornamented with 14 ciliæ, equally distributed around its margin, so as to form nearly a circle. Tentacles long, conical, retractile. Three pairs of short ciliæ at equal distances apart between the tentacles and middle of the body, connected by the sharp edges of the dorsal surface. Branchial plume five parted, bipinnately divided, expanding to nearly twice the width of the body, situated a little behind the middle of the body. Two short ciliæ close together on the medium line, a little behind the branchiæ. Length 1.50, breadth 0.25 inch. Color yellowish, speckled with white, filaments vermilion red.

Four specimens found on sea weed among rocks at low water near north end of Catalina Island, June 16th.

DENDRONOTUS Alder and Hancock, 1845.

D. iris Cooper. State coll. species 959.

Pale purple, varying to orange red, foot narrowly edged with white, tentacles with white tips and a subterminal orange ring, branchial processes purple, the smaller ones sometimes olive near the base. Length of largest specimens 3, breadth 0.50 inch.

Several found on the beach at Santa Barbara, May 5th, having been washed ashore by an unusually heavy sea, occurring at a very low stage of the tide. One, also, dredged on seaweed, from a depth of 28 fathoms, two miles off shore.

This species seems more variable in color than the other *nudibranchiata* of this coast, but I saw no reason for considering them of more than one species. Those washed ashore being somewhat injured, although still alive, I made no drawing of them, and the more perfect one dredged was too small for this purpose.

In the "Mollusca and Shells," of the U. S. Exploring Expedition under Commodore Wilkes, Dr. Gould mentions a species of Dendronotus collected at Puget Sound, but does not name it or give any clue to its characters, except that the *branchiæ* have white tips, unlike our specimens. It is very probable, however, that it belongs to the same species, as so many of the Mollusca of this coast have an equally wide range.

ÆOLIS Cuvier, 1798.

Æ. barbarensis Cooper. State coll. species 978.

Rose-red, longer tentacles tipped with yellow, branchial ciliæ simple, in six longitudinal rows, all short, the middle rows longest and tipped with blue, ante-

rior tentacles two, above the mouth, dorsal tentacles club-shaped, a white streak extending from the median line between them to the mouth. Length nearly an inch.

One specimen dredged on a rocky bottom, in a depth of 16 fathoms, a mile from the shore at Santa Barbara.

Although small, its characters are too different from those of our other species, when of the same size, to allow us to consider it the young of any of them.

FLABELLINA Cuvier, 1830.

F. opalescens Cooper.

Syn. Æolis, (Flabellina?) opalescens, Cooper—Proc. Cal. Acad. II, 1862, p. 205.

This species, dredged from the same locality as the last, presented exactly the same characters as the original specimens from San Diego. I also found a few of them on the rocky shore of Santa Barbara Island, differing only in having the branchial olive, tipped with white.

PHIDANIA Gray, 1850.

P. iodinea, Cooper—*Syn.* Æolis (Phidania?), iodinea, Cooper, loc. cit. sup.

I found one of this species on the beach at Santa Barbara, agreeing exactly with those from San Diego.

CHIORÆRA Gould, 1855.

C. leonina (?) Gould—Molluscs and Shells, U. S. Expl. Exped.

Wholly translucent, pale yellow, the variations marked only by a darker shade. Form of head nearly conical, the apex anterior, forming an angular roof above the oral opening. Branchial processes five on each side, larger than represented in Gould's figure, imbricated and decumbent. Length 2.75, height 1 inch. Otherwise as in the description and figure of Gould's specimen.

A single specimen dredged in 20 fathoms off Santa Barbara, May 15th, differs in the points above mentioned from the northern animal, but being much smaller, the differences may arise from immaturity, and I have therefore preferred to retain the same name for it.

The single specimen which formed the type of the genus was dredged in Puget Sound, was over five inches long and of various bright colors, the head subglobose, higher than oral opening, branchiæ in six pairs, comparatively smaller and erect, all of which differences may have arisen from more perfect development, and from having been observed under more favorable conditions.

From its rarity on our southern coast we may expect to find it more abundant northward.

Dr. Kellogg read a paper describing a new species of ALSINE, collected by Mr. Bolander, in the swamp near Mission and Howard and Seventh and Eighth Streets, San Francisco.