

"in a dimly-lighted room, the night-nurse idly dozing by the fire, the sound of the everlasting wind in my ears, howling outside and dashing the rain like hailstones against the window panes; to be awake to all this, feverish and ill and sore, conscious of my danger too, and at the same time to be thousands of miles away, out in the sun and wind, rejoicing in other sights and sounds, happy again with that ancient, long-lost and now recovered happiness!"

In the last 4 years of his life Hudson enlarged his *Birds in a Village* and reissued it as *Birds in Town and Village*; he recast his *Argentine Ornithology* in more popular form under the title of *Birds of La Plata*; he wrote a volume of delightful pen-sketches and anecdotes—*A Traveller in Little Things*; he composed two short stories, one of which, he tells us, sprang full-grown from his brain in an instant after long hours of concentration: *Dead Man's Plack*, a Hampshire legend of King Edgar and Athelwold, the bosom friend whom he slew with his own hand.

Immediately after publishing *Far Away and Long Ago*, he followed it up with *The Book of a Naturalist*, one of the most racy and genial of all

his books of Natural History. In 1922, with weakened frame to be sure, but mental vigour unabated, he turned to grapple with the problems of sense, instinct and presentiment in the wonderful volume of *A Hind in Richmond Park*, which ranges from the sense of smell and bird migrations to the origin of art and psychic phenomena. Late in August 1922, the month of his birth, he handed over to a friend the MS. of the last chapter and went to bed tired but happy as a little child; and so, in the night, he slept away.

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SOME HOLOTHURIANS FROM BRITISH COLUMBIA

BY HUBERT LYMAN CLARK



SMALL collection of holothurians from British Columbia from the Victoria Memorial Museum, Ottawa, has been placed in my hands for identification and, as they are of more than ordinary interest, it seems proper to publish these notes upon the species represented.* Nine of the eleven species belong to the already heterogeneous and overcrowded genus *Cucumaria* and two of them fail to conform to the description of any known species and hence must be given new names here. The variety of *Cucumarias* occurring along the western American coast is remarkable and more information about their size, colour and habits in life is greatly to be desired. Unfortunately there are no notes with these specimens that throw any light upon such matters. All the specimens treated here are in the Victoria Memorial Museum, Ottawa, Ont., except certain duplicates retained for the Museum of Comparative Zoölogy.

Leptosynapta inhaerens Verrill

Holothuria inhaerens, O. F. MULLER, 1776. *Zool. Dan. Prod.*, p. 232.

Leptosynapta inhærens, VERRILL, 1867. *Trans. Conn. Acad.*, Vol. I, p. 325.

*I take pleasure in extending my thanks to Mr. Frits Johansen, who attended to the packing and transfer of the specimens, when dealing with material collected by the Canadian Arctic Expedition, 1913-18.

A small synaptid, only about 10 mm. long, seems to represent this species. It was taken on August 6, 1885, by G. M. Dawson, in 10 fathoms of water, sand and mud, at Alert Bay, Queen Charlotte Sound, B.C.

Cucumaria californica Semper

SEMPER, 1868; *Holothurien* p. 235.

There is a large specimen, 150 mm. or so in length, from Farewell Harbour, Queen Charlotte Sound, B.C., 8-12 fathoms, gravel. It was collected by G. M. Dawson on September 7, 1885. This is apparently Whiteaves' "*Pentacta frondosa* Gunner," (1886, p. 117).*

Dr. Dawson also collected on September 4, 1885, off False Head, Queen Charlotte Sound, 30 fathoms, sand, gravel and dead shells, the anterior ends of four large *Cucumarias*, which probably belong to this species, but of course are not determinable with certainty. There are four more or less poor and decalcified *Cucumarias*, from Ucluelet, west side of Vancouver Island, low tide, which probably are *californica*. They were taken in May-July, 1909, by Young and Spreadborough.

Trans. Roy. Soc. Can., Vol. IV, Sect. 4, 1886, pp. 111-137

***Cucumaria chronhjelmi* Théel**

THÉEL, 1886. *Challenger, Holos.*, pt. 2, p. 105.

This species is well represented in the collection by the following specimens:

Two specimens, 12 and 20 mm. long respectively, from Queen Charlotte Sound, off False Head, 30 fathoms, sand, gravel and dead shells, September 4, 1885, G. M. Dawson coll.

Fifty-five specimens, a few in good condition, but mostly very much contracted, 6-40 mm. long. They were taken by G. M. Dawson on August 6, 1885, in 10 fathoms, sand and mud, in Alert Bay, Queen Charlotte Sound, B.C.

Four specimens, 30-50 mm. long, much contracted, unusually white, from Ucluelet, west side of Vancouver Island, low tide, May-July, 1909. Young and Spreadborough coll.

One specimen, 55 mm. long, very good condition, from Comox, east side of Vancouver Island, between tides, July, 1915. W. Spreadborough coll.

***Cucumaria lissoplaca* sp. nov.**

* $\lambda\iota\sigma\sigma\acute{o}s$ = smooth + $\pi\lambda\acute{\alpha}\xi$ = plate, in reference to the smooth calcareous plates in the skin.

Length along midventral radius, about 35 mm. along middorsal interradius, about 25 mm.; diameter of body near middle, dorsoventral, 10 mm.; lateral, 9 mm. Body distinctly curved and more or less tapering posteriorly; in the least contracted specimens the form is markedly elongated into a caudal portion. Tentacles strongly contracted but presumably 10. Pedicels confined to ambulacra in very distinct, somewhat crowded double series; they are so full of calcareous rods they are not badly contracted but seem rather long. Calcareous ring rather high, the anterior points of the radial and interrarial pieces about equal; interrarial pieces about 2 mm. high and half as wide, concave behind; radial pieces with long posterior prolongations; measured from the interrarial margin these prolongations are about 2 mm. long but the radial piece is so deeply cleft posteriorly that they are 3 mm. long on the radial side. No madreporic canal was found but what appeared to be a collapsed Polian vessel was detected. Genital glands well developed.

Calcareous particles in two layers; the outer consists of somewhat scattered, very delicate plates only 30-50 μ in diameter, while the inner is a dense crowded layer of smooth, more or less button-like plates. The outer layer tends to be easily rubbed off and might readily be overlooked. The plates that compose it may be likened to the disk of the tables of some holothurians; in fact, the figure of the disk of a table of a young *Stichopus badinotus* recently published by me (H. L. Clark, 1922, *Bull. M.C.Z.*, Vol. 65, No. 3, pl. 2, fig. 18) gives a very good idea of their form.

Few, however, are so symmetrically developed as this figure and they all have minute blunt spinelets or tubercles more or less numerous on the upper surface.

The plates of the inner layer show considerable diversity of form but typically they may be described as short fusiform in outline, or elongated diamond-shaped with rounded angles, thus approaching the shape of a flattened spindle. In the expanded part are four moderately large perforations and in each of the elongated angles, which are opposite each other of course, is another smaller perforation. Such plates are about 90-100 μ long and 40 μ wide. From this typical form variation occurs in three ways; the plates may become more elongated and have still another perforation distal to those mentioned; such plates may be 150 μ -200 μ long and only 30-40 μ wide at the middle. Or the plates lose their projecting angles and become irregular rounded plates, which may be only 60x40 μ or even smaller, and sometimes are nearly circular; such plates have only four or five perforations. Again the plates become widened and the number of perforations increases, so that they are 120-130 μ long, 40-50 μ wide and have 10-15 perforations, but they may be much larger; the largest plate measured was 175 μ by 90 μ and had about 40 perforations.

The supporting rods of the pedicels are merely modifications of the fusiform bodies. They become more flattened and thinner, the ends are more truncate and the whole plate is curved into about a fourth or a third of a circle. Distally in the pedicel, the plates tend to develop a rudimentary spire and this becomes fairly conspicuous at the tip of the foot.

Colour, if any were ever present, is quite bleached out; the alcoholic material is now yellowish-white.

There are ten specimens of this little holothurian in the collection, taken in 10 fathoms, sand and mud, in Alert Bay, Queen Charlotte Sound, B.C., by G. M. Dawson on August 6, 1885. It was taken along with *lubrica*, *chronhjelmi*, *populifera* and *trachyplaca*, species which it closely resembles. Its tendency to develop a caudal appendage and its very characteristic calcareous particles will distinguish it, however, on careful examination. (Catalogue number 583, Radiata, Victoria Memorial Museum, Ottawa; *Cotypes*.)

***Cucumaria lubrica* H. L. Clark**

H. L. CLARK, 1901, *Proc. Boston Soc. Nat. Hist.*, Vol. 29, p. 334.

This species seems to be abundant in Alert Bay, Queen Charlotte Sound, B.C., in about 10 fathoms,

sand and mud, for there are some 80 specimens in the collection made there on August 6, 1885, by G. M. Dawson. Museum No. 85-4. They are all very much contracted, 6-26 mm. long and in poor condition.

***Cucumaria miniata* (Brandt)**

Cladodaactyla (Polyclados) miniata BRANDT, 1835, *Prodromus*, p. 44.

Cucumaria miniata SELENKA, 1867. *Zeit. f. w. Zool.*, vol. 17, p. 350.

I am referring to this species 7 specimens 10-50 mm. long, ranging in colour from white to dark brown, whose small size and poor condition make their identification somewhat dubious. The calcareous particles indicate *miniata* and the largest specimen has two Polian vessels and a number of stone canals. No full grown specimen of *miniata* is in the collection. The small individuals were collected at the following places:

Vancouver Island, Ucluelet, low tide, May-July, 1909. Young and Spreadborough colls.

Vancouver Island, east side, Comox; between tides, July 1915. Spreadborough coll.

***Cucumaria piperata* (Stimpson)**

Pentacta piperata STIMPSON, 1864. *Proc. Phila. Acad. Nat. Sci.*, p. 161.

Cucumaria piperata, H. L. CLARK, 1901. *Zool. Anz.*, vol. 24, p. 171.

It is unfortunate that all of the material which is apparently to be referred to this species is in poor condition and more or less decalcified. Hence the identification is largely based on the characteristic black spots and is not confirmed by calcareous particles. There are 5 specimens 12-35 mm. long, taken at the following points:

British Columbia, Queen Charlotte Islands, 1910, Spreadborough coll.

Vancouver Island, west side, Ucluelet, 9 fathoms, August, 1909. Young and Spreadborough colls.

Same place, low tide, May-July, 1909. Same collectors.

***Cucumaria populifera* (Stimpson)**

Pentacta populifer STIMPSON, 1864. *Proc. Phila. Acad. Nat. Sci.*, p. 161.

Cucumaria populifer THÉEL, 1886. *Challenger Holos.*, p. 103.

All of the 14 *Cucumarias* that I refer to this species are small and strongly contracted, 10-25 mm. long; many are in poor condition and some are decalcified, making their identity uncertain. The four specimens from Cortez and Hernandez Islands show a very interesting diversity in the calcareous particles. The two largest specimens have the typical tables. The smallest has the

disks of the tables more or less cruciform while the next larger specimen shows a similar but not so well-marked condition. The tables are largest in the smallest specimen and smallest in the largest. Apparently we have here fragmentary evidence of interesting growth changes but obviously more detailed observations are needed to enable us to understand them.

The fourteen specimens are from the following places:

Cortez and Hernandez Islands, 8-20 fathoms, sandy bottom, July 6-8, 1885, G. M. Dawson coll.

Queen Charlotte Sound, Alert Bay, 10 fathoms, sand and mud, August 6, 1885, G. M. Dawson coll.

Vancouver Island, Queen Charlotte Sound, off False Head, 30 fathoms, sand, gravel and dead shells, September 4, 1885, G. M. Dawson coll.

Vancouver Island, east side, Departure Bay, 20 fathoms, September 17, 1908, W. Spreadborough, coll.

***Cucumaria trachyplaca** sp. nov.**

**τραχύς* = rough + *πλάξις* = plate, in reference to the ridged and knobbed outer surface of the plates in the skin.

Length 18 mm., diameter 5 mm. Body not curved, but in the strongly contracted condition of all the specimens straight and not much larger at the middle than at the blunt and subequal ends. Tentacles strongly contracted, 10, of which the ventral pair are much the smallest and the dorsal four evidently larger than the others. Pedicels rather short, confined to ambulacra in two very distinct somewhat crowded series. Calcareous ring moderate; interradial pieces about 1.5 mm. high, pointed anteriorly, slightly concave posteriorly; radial pieces with long posterior prolongations, the piece itself a little narrower and more pointed than the interradial, not cleft posteriorly, the prolongations as long as the piece, the two together about 3 mm. Neither madreporic canal nor Polian vessel was found in the specimens. Genital glands moderately developed.

Calcareous particles all of one kind. I cannot find any outer epidermal layer of more delicate plates or "baskets" but the skin is more or less crowded with knobbed, perforated plates. Normally the plates are so numerous as to overlap freely and make a continuous layer, but in places where the skin is stretched the plates may be found well spaced and not in contact with each other. The plates occur in all stages of development from rods about 33μ long, widened and a little forked at each end, up to the complete plate, 200μ long (or more) and $60-70\mu$ wide, with 20 or more perforations, and on the outer surface a complicated and very irregular combination of ridges and knobs, making the plates very rough on that side. In partly developed plates, there are half a dozen or more low rounded knobs regularly

arranged with reference to the holes in the plate but as the plate develops it soon loses its symmetry, one side usually developing more than the other, the knobs are more numerous, no longer regularly distributed, and connected with each other by crooked ridges. As the ridges become higher, knobs and low spinelets develop on them, and thus the rough outer surface of the plate is formed. In the pedicels the plates become more elongated, narrower and curved, the ridges and knobs are confined to the central part, and thus the supporting rods arise.

Colour of preserved specimens, yellowish-white; tentacles darker. There is no clue as to what the colour in life may have been.

There are 25 specimens of this little *Cucumaria* before me. All were taken in 10 fathoms, sand and mud, in Alert Bay, Queen Charlotte Sound, British Columbia, by G. M. Dawson, August 6, 1885. They were taken in company with *lubrica*, *chronhjelmi*, *lissoplaca* and *populifera*, and all five species were preserved together. It is hardly probable that the five actually live in such close relationship as this indicates. Probably field study in Alert Bay will show that each species has its own particular habitat. (Catalogue No. 594,

Radiata, Victoria Memorial Museum, Ottawa. *Cotypes*.)

Cucumaria vegae Théel.

THÉEL, 1886, *Challenger, Holo.*, p. 114.

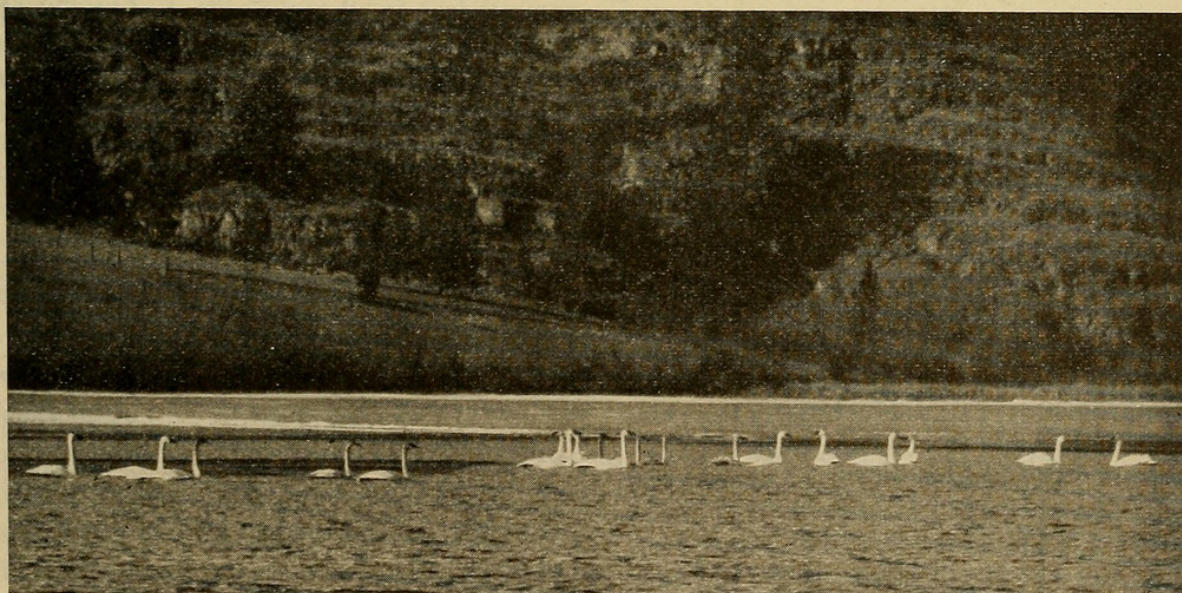
There are four little *Cucumarias* 10-20 mm. long which were taken in 10-20 fathoms, sand and gravel, at Discovery Passage, on the Vancouver Island side of Johnstone Strait, by G. M. Dawson in 1885. I have compared them with specimens of *vegæ* from St. Paul's Island and find they are immature examples of that species. As yet only the largest has pedicels on the dorsal interambulacra and, in that case, the extra pedicels are all middorsal.

Psolus chitonoides H. L. Clark

H. L. CLARK, 1902. *Proc. Boston Soc. Nat. Hist.*, vol. 29, p. 335.

There are two specimens of this holothurian from Ucluelet, Vancouver Island, B.C., taken at low tide in the early summer ("May-July") of 1909, by Young and Spreadborough. They are about 40x35 mm. and are in poor condition. The dorsal plates are imbricated and the characteristic calcareous particles in the "Sole" are well developed.

NOTES AND OBSERVATIONS



A FLOCK OF TRUMPETER SWANS

Photo by BYRON HARMON, February, 1920

Courtesy of Canadian National Parks

TRUMPETER SWANS.—The picture shows nineteen Trumpeter Swans. This species is one of the largest and rarest of Canadian birds. There are seven young birds in the flock shown, which is encouraging, since it indicates of course that we have not here a flock of birds past breeding age.

Every effort is being made for the protection of the species, but, if the species is to be saved, the co-operation of sportsman, hunter and trapper in Alberta, the Northwest Territories, British Columbia and the Yukon is essential. Swans are protected by law at all times in these areas, and in



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