

QK1
.A419
ser. 3
v. 17
Jan. - June
1879

THE
AMERICAN JOURNAL
OF
SCIENCE AND ARTS.

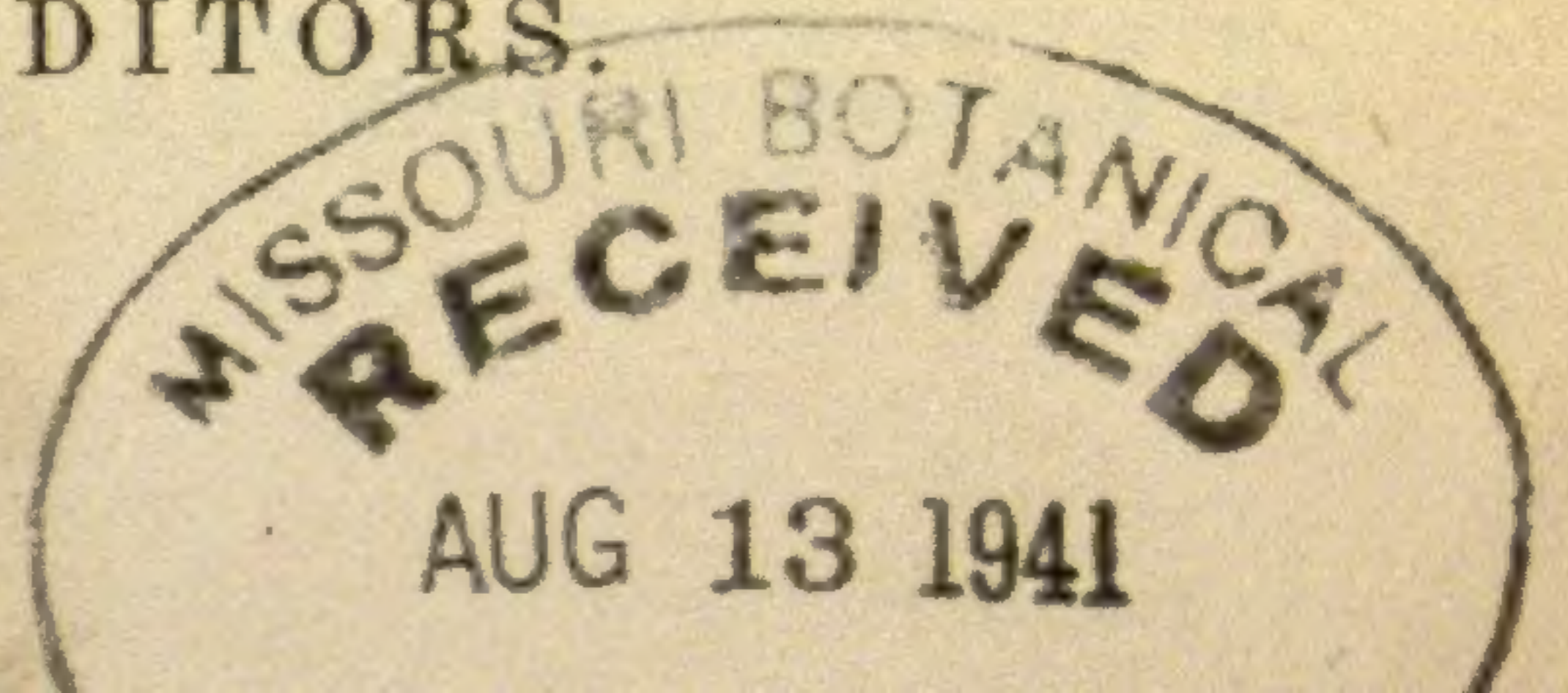
EDITORS,
JAMES D. AND E. S. DANA, AND B. SILLIMAN.

ASSOCIATE EDITORS,
PROFESSORS ASA GRAY, WOLCOTT GIBBS AND
J. P. COOKE, JR., OF CAMBRIDGE,
PROFESSORS H. A. NEWTON, S. W. JOHNSON, G. J. BRUSH
AND A. E. VERRILL, OF NEW HAVEN,
PROFESSOR GEORGE F. BARKER, OF PHILADELPHIA.

THIRD SERIES.
VOL. XVII.—[WHOLE NUMBER, CXVII.]
Nos. 97—102.
JANUARY TO JUNE, 1879.

WITH TEN PLATES.

NEW HAVEN: EDITORS.
1879.



	Page
L.—Composition of the Cymatolite from Goshen, Mass.; by A. A. JULIEN, -----	398
LI.—Relations of the Volumes of Solutions of Hydrated Salts to their Water of Composition; by R. J. SOUTHWORTH, -	399
LII.—Analysis of the Tetrahedrite from Huallanca, Peru; by W. J. COMSTOCK, -----	401

SCIENTIFIC INTELLIGENCE.

Chemistry and Physics.—Determination of Fusing Points, TERREIL: Chromium, Manganese, Iron, Nickel and Cobalt Amalgams, MOISSAN, 402.—Chromates and Dichromates, SCHULERND: Purification of Mercury, BRÜHL, 403.—Eikosylene, a hydrocarbon from the Paraffin of Brown coal, LIPPMANN and HAWLICZEK: Transformation of Starch into Dextrose in the Cold, RIBAN, 404.—Structure-formulas of Aromatic Compounds, WROBLEVSKY: Phthalein of Orthocresol, FRAUDE, 405.—Baryta and Strontia, 406.—Illumination of gases by Electric discharges, WIEDEMANN: New current interrupter, F. NIEMOLLER: Dimensions of Molecules, R. RUHLMANN, 407.—American Chemical Journal, 409.

Geology and Natural History.—Fossil Forests of the Volcanic Tertiary Formations of the Yellowstone National Park, W. H. HOLMES: Fruit-bearing branch of Cordaites from Cannelton, Pennsylvania, 409.—Woodland Caribou or Reindeer from the Loess of Iowa, LEIDY: Annual Report of the Wisconsin Geological Survey, for the year 1878, T. C. CHAMBERLIN: Amber and Asphaltum from Vincenttown, New Jersey, E. GOLDSMITH: Guides for Science-Teaching, 410.—Function of the Sterile Filament of Pentstemon, LÉO ERRERA, 411.—Revue Mycologique: Meehan's Native Flowers and Ferns of the U. States, 412.—Observations on Several Forms of Saprolegnieæ, F. B. HINE: Popular California Flora, or Manual of Botany for Beginners, V. RATTAN: Halosphæra, eine neue Gattung grüner Algen aus dem Mittelmeer, SCHMITZ, 413.—Dr. W. G. Farlow, 414.

Miscellaneous Scientific Intelligence.—Intra-Mercurial Planet: Geological Society of London, 414.—Geological Survey of the Territories of the United States: Gold Medal of the Astronomical Society: Paris Academy of Sciences: Memoirs of the Museum of Comparative Zoology: Report of the Observations of the total Solar Eclipse, July 29th, 1878, made at Fort Worth, Texas, L. WALDO, 415.

Obituary.—Frank Howe Bradley, 415: Dove: W. K. Clifford, 416.

NUMBER CII.

	Page
ART. LIII.—The Forests of Central Nevada, with some re- marks on those of adjacent regions; by C. S. SARGENT, -	417
LIV.—Ethylidenamine Silver Sulphate; by W. G. MIXTER, -	427
LV.—Notes on the Satellites of Saturn; by M. MITCHELL, -	430
LVI.—Force of Effective Molecular Action; by W. A. NORTON, -	433
LVII.—Dark Lines of Oxygen in the Solar Spectrum on the less refrangible side of G; by J. C. DRAPER, -----	448
LVIII.—Genesis of Cinnabar Deposits; by S. B. CHRISTY, -	453
LIX.—Notice of Recent Scientific Publications in Brazil.— O. A. Derby on the Geology of the Lower Amazonas; by R. RATHBUN, -----	464
LX.—First Catalogue of Radiant Points of Meteors; by E. F. SAWYER, -----	468
LXI.—Notice of recent Additions to the Marine Fauna of North America, No. 5; by A. E. VERRILL, -----	472
LXII.—New Absolute Galvanometer; by N. D. C. HODGES, -	475
LXIII.—Polydactyle Horses, Recent and Extinct; by O. C. MARSH, -----	499

ART. LXI.—*Notice of recent Additions to the Marine Fauna of the Eastern coast of North America, No. 5; by A. E. VERRILL. Brief Contributions to Zoology from the Museum of Yale College. No. XLII.*

OF Polyzoa about 140 species have been identified by the writer from the coast between Cape Cod and Labrador. Nearly all these are Arctic or European species, already known. They are mostly described in Smitt's papers on Arctic Bryozoa. They are also mostly enumerated by the writer, in a Check-list of the Marine Invertebrata of this coast, now in type. The following is one of the more interesting new forms.

The recent determination of so large a number of American Polyzoa, confirms the decision already arrived at, several years ago, from the study of other classes, that the fauna of northern New England is remarkably arctic and chiefly of northern origin, and that the fauna of Greenland is more allied to that of Northeastern America than to that of Northern Europe. In a valuable paper* on the Podophthalmous Crustacea of our northern coast, just published, Professor S. I. Smith has arrived at the same results for that group.

Bugulella, gen. nov.

Stems slender, dichotomously branched, consisting of single series of cells (zoecia), which are connected by short tubular joints that arise medially, from the back and near the distal end of the preceding cell, either singly or two together. Zoecia elongated, expanded distally, with a large, sunken, elliptical frontal area on the front side, close to the end; gradually tapered to the proximal end, which is united, by an articulation, with the tubular process of the preceding cell, representing the stem. New branches arise laterally from these small joints. Frontal area surrounded by spines. Zoecia subglobular, attached to the distal end of the zoecia. Avicularia median, at the distal end of the zoecia, shaped as in *Bugula*. Allied to *Bicellaria* and perhaps to *Brettia*.

Bugulella fragilis, sp. nov.

Zoarium translucent, shining, delicate, filiform, much branched; forming intricate divaricate clusters, sometimes an inch or more in height. Apertures broad oval or elliptical, oblique, with a distinct rim, and with five spines, on each side; of these the two nearest the distal end are much shorter than the other three, which are as long as the breadth of the aperture, and arch over it. Sometimes a median spine is also present at the proximal edge. Ovicells globose, prominent,

* The Stalk-eyed Crustaceans of the Atlantic Coast of North America north of Cape Cod. Trans. Connecticut Acad., vol. v, Part I, May, 1879.

nearly as wide as the zoöcial apertures, smooth, shining, sometimes sculptured with raised lines, or with rounded sunken areas on the sides. A small oval disk on the lateral surfaces of the zoöcia. Avicularia small, with a rather short, thick, swollen head, the pedicel shorter than the vertical diameter of the head, attached to the distal end of the zoöcia.

East of George's Bank, 220 fathoms, on *Acanella Normani*. Presented to the U. S. Fish Commission by the captain and crew of the schooner "Alice G. Wunson."

ECHINODERMATA.

Solaster Earllii, sp. nov.

A large, handsome species. Arms nine in our specimen, elongated, tapering. Upper surface thickly covered with clusters of divergent spinules, mostly six to eight, much smaller and shorter than in *C. papposus*. Marginal plates large, prominent, the largest bearing about twenty spinules, in two transverse rows. Ventral plates with about seven or eight long acute spines in one transverse row. Adambulacral plates with about five shorter, more slender spines. Greatest diameter 180^{mm}; lesser 50^{mm}. Taken in lat. 43° 24'; long. 59° 46', in 200 to 250 fathoms, by the schooner "Bessie W. Somers," and presented to the U. S. Fish Com. by Capt. Thomas F. Hayden.

Dedicated to Mr. R. E. Earll of the U. S. Fish Commission.

Molpadia turgida, sp. nov.

Body large, elongated, turgid, suddenly tapering posteriorly to the slender, moderately long caudal portion. Tentacles short, almost rudimentary, two-lobed, seldom expanded. Skin thin, often somewhat translucent, dark reddish or purplish brown, filled with perforated table-shaped or spinulated plates, and with numerous regular, circular and oval, biscuit-shaped orange-brown calcareous grains, of various sizes, less numerous than in *M. oölitica*, but far more numerous and more regular than in *M. borealis*. These grains have a concentric structure, either around one, or, when oval, around two nuclei. The perforated plates are rather large and irregular, but delicately formed, much less irregular and larger than in *M. borealis*. They usually have a central circle of three to six foramina, then a circle of ten or more, larger, oval foramina, separated by a thin framework, which runs out into irregular projections beyond the border; the central spinule is elongated, acute, consisting of three or four columns. The largest specimens are about 125^{mm} long, and 25 to 30^{mm} in diameter.

Bay of Fundy,—A. E. Verrill and S. I. Smith, 1865. Massachusetts Bay, 40–100 fath., soft mud, 1877, '78; Gulf of Maine, 1874; Casco Bay, 1873; off Nova Scotia, 1877,—U. S. Fish Commission. Gulf of St. Lawrence, Whiteaves.

ANTHOZOA.

Actinernus, gen. nov.

Body large, short, smooth. The margin below the tentacles is deeply divided into acute lobes, or teeth, continuous with the body-wall. The tentacles are rather large, and adnate to the marginal lobes for a considerable part of their length. Disk large, with the margin undulate or frilled in large specimens. The disk and tentacles apparently are not retractile.

Actinernus nobilis, sp. nov.

Body stout, with a very broad basal disk and short column, and toward the summit thrown into about eight large undulations or folds, bending outward and inward, corresponding to the lobes of the disk; the margin is deeply cut into sharp conical teeth, corresponding to the tentacles in number and position, and like them alternating in an inner and outer row; integument of column and teeth thick, firm and smooth. Tentacles numerous, elongated, tapering, acute, moderately large, subequal, in two rows close to the margin, adnate to the marginal teeth for about two-thirds of their length, or even more. Lips well-developed, with about eight large lobes on each side. Color, in recently preserved specimens, deep purplish brown on the disk and tentacles, with radiating lines of paler color on the disk; mouth deep brown inside; sides of body milk-white, with traces of orange-color where the outer coat remains.

Largest specimens, in alcohol, about four inches broad and three high. Four specimens were presented to the U. S. Fish Commission.

Off Sable I., N. S., 200–250 fathoms, Aug., and Banquereau, about 200 fathoms, Sept. 9, 1878,—Capt. J. W. Collins, sch. "Marion." Eastern slope of George's Bank, in about 220 fathoms,—Capt. and crew of the sch. "Alice G. Wunson," Sept., 1878. Lat. $42^{\circ} 31'$; long. $64^{\circ} 20'$, 300 fathoms,—Capt. Wm. H. Greenleaf, sch. "Chester R. Lawrence."

Synanthus, gen. nov.

Actiniæ which have a broadly expanded, thin base from which new zoöids arise by budding, so as to constitute a small colony, connected together by a common base. Integument thin and smooth. Tentacles numerous, retractile.

Synanthus mirabilis, sp. nov.

Colonies often consist of five or six, or more, zooids, which are generally parasitic upon the branches of *Primnoa reseda* and *Paragorgia arborea*, often surrounding them like a ligature, and in the case of *Paragorgia* often forming deep constrictions so as to seriously weaken the branches. Column low and button-like in contraction, the integument so translucent as to show the numerous internal radiating lamellæ. Same localities as for the preceding species.