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THE NAUTILUS.

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NEW SPECIES OF LEDA FROM THE PACIFIC COAST.

BY WM. H. DALL.

The species of *Leda* from the littoral zone north from Panama are not numerous, though individuals are plenty in suitable localities. *Leda hamata* Cpr. is only known from the Sta. Barbara Islands. *Leda calata* Hinds ranges from Bodega Bay to Lower California in 6 to 60 fms. *Leda fossa* Baird is known from Bering Sea to Puget Sound. *Leda cuneata* Sby., from Panama to Monterey and also in the Atlantic. *Leda minuta* Fabr., a circumpolar species, reaches south as far as Puget Sound on the Pacific. Omitting some Arctic and abyssal species, the above-mentioned five species include all hitherto recognized from the western coast of the United States. I am now able to add three well defined species to the list.

Leda cellulita n. s.

Shell solid, with a dull olive-gray epidermis, moderately convex, with subcentral, not prominent beaks, base profoundly arcuate, anterior dorsal slope rounded, posterior straight or slightly concave; posterior extreme bluntly pointed; escutcheon large, transversely striate; lunule not differentiated but similarly striate; sculpture of fine sharp, concentric grooves with wider interspaces, less arcuate than the incremental lines; chondrophore small, triangular, not projecting, with 22 anterior and 16 posterior hinge teeth on the cardinal border. Height 10·5; diameter 7·2; length 15·5 mm.

Puget Sound near Port Orchard, dredged by the Young Naturalists' Society of Seattle, Wash.

This species is less inflated, less polished, with finer grooving and less recurved rostrum than *L. calata*. It is heavier, more inflated, and with a coarser hinge plate and larger teeth than *L. confusa* Hanley (*L. pella* Sby. non Lin.) from Japan.

Leda leonina n. s.

Shell rather thin, compressed, with the low beaks at the anterior third; base slightly arcuate, anterior end rounded, posterior dorsal slope concave, lunule and escutcheon narrow, elongate, strongly impressed, smooth, with the valve margins elevated; rostrum broadly and a little obliquely truncate; sculpture of thin sharp concentric lamellæ strongest on the rostrum, epidermis dull olive-gray, dehiscent; hinge with 22 anterior and 28 posterior teeth, the chondrophore small, inconspicuous. Height 11; length 23·5; diameter 5·25 mm.

Off Sea Lion Rock, Coast of Washington in 477–559 fathoms, mud, U. S. Fish Commission.

This species bears a distant resemblance to *L. tenuisulcata* but cannot be confounded with it.

Leda conceptionis n. s.

Shell elongate, smooth, polished, compressed, with the beaks in the anterior third; base arcuate, prominent below the beaks; anterior dorsal slope slightly rounded, posterior slope straight, rostrum narrow, pointed, obliquely truncate, cardinal margin elevated between the halves of the narrow impressed, almost linear lunule and escutcheon; beaks very small, low, the prodissoconch conspicuous; hinge with 18 anterior and 33 posterior small and delicate teeth; the chondrophore narrow, produced posteriorly, interior of the rostrum without a longitudinal septum. Height 10·5; length 27·5; diameter 4·5 mm.

From Sannakh Islands, Alaska, to the Santa Barbara Channel in 200–500 fathoms, especially off Point Conception, Cala., in 278 fathoms, U. S. Fish Com.

This is nearest to *L. platessa* Dall, from off Rio Janeiro, but that species is smaller, with much fewer teeth and has a strong septal ridge dividing the interior of the rostrum.

Leda pontonia Dall, originally described from 812 fathoms off the Galapagos Islands, has since been dredged in 822 fathoms off San Diego, California, thus adding another to the rapidly increasing list of species which occur off the coast of West America in both hemispheres.

SOME REFERENCES TO THE GENUS OLIVA.

BY JOHN FORD.

Of all the marine univalves the Olives are perhaps among the most difficult to define specifically. It is true that the most irregular forms can in some instances be readily determined and properly placed by expert conchologists, for however greatly they may differ from the accepted types, certain characters, proving a common origin, are always perceivable. This is especially the case with such species as *O. inflata* Lam., *O. maura* Lam., and *O. peruviana* Lam. (Fig. 1).

To other species, however, many shells have been assigned which are apparently devoid of characters necessary to sustain the relationship claimed for them. In this group may be included *O. araneosa* Lam., *O. irisans* Lam., *O. ispidula* Linn., and *O. reticularis* Lam. So variable both in form and color patterns are many of the shells assigned to these four species, it is not at all strange that they have been honored with scores of specific names. That a majority of these names are synonymous there is no reason to doubt, but it seems equally apparent that quite a number of the shells, the names of which have been thus subordinated, are really specifically distinct from the types with which they are associated.

FIG. 1.
O. peruviana Lam.

FIG. 2.
O. erythrostoma Lam.

FIG. 3.
O. porphyria Lam.

Among these may be noted *O. ornata* Marratt and *O. julietta* Duclos, which some recent writers have determined to be varieties only, the former of *O. irisans*, the latter of *O. araneosa*. If there

is an affinity between these so-called varieties and the species mentioned, I have failed to discover it, though in possession, perhaps, of every form of the shells in question known to science.

Certain writers also claim that the difference between *O. irisans* and *O. textilina* Lam. is merely varietal. Possibly this may be true; still, the facts do not appear to favor any such conclusion. On the contrary, the characters exhibited by large numbers of each clearly show them to be specifically distinct.

It is just possible that intervening forms linking the two together are known, such for instance, as those uniting the typical *O. irisans* with its admitted varieties *O. zelanica* Lam., *O. tremulina*, Lam., and *O. erythrostoma* Lam. (Fig. 2), but if so they are certainly absent from the several large collections of Olives belonging to members of the American Association of Conchologists and the Philadelphia Academy of Natural Sciences. These are but a few samples of the difficulties at present barring the way to a thorough comprehension of the specific relationship of the various members of the genus. The presence of such obstacles, however, should be to the earnest student more of a pleasure than an annoyance, since any effort for their removal will surely give him ample opportunity to exercise both his judgment and powers of observation. Despite the individual vagaries referred to, the genus is a thoroughly attractive one, many of the species, indeed, being unsurpassed in

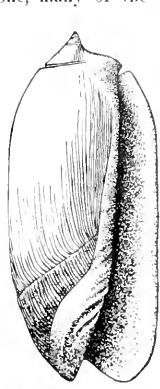

Fig. 4 *O. cryptospira* Ford.

Fig. 5.

richness of color and perfection of form by even the more pretentious members of the genus Cypræa.

Among the most charming of the 55 or 60 accepted species, *O. porphyria* Lam. (Fig. 3) may be safely reckoned. These are the "tent shells" of the amateur collector, being so-called from the peculiar patterns which often cover the surface in such profusion as to suggest a large military encampment, including the marquees supposed to be necessary for official comfort, etc.

The ground color, on which these tent-like figures appear, is of a deep chocolate hue and exceedingly brilliant. Add to this the graceful form of the shell and we may readily see that the combination presents a picture of the utmost beauty.

O. cryptospira Ford (Figs. 4, 5) is smaller and less charming in appearance than *O. porphyria*, but the callus-covered spire and enamelled body whorl make it a very interesting species. The type of this is in my own collection. There is, however, a fine suite of typical specimens in the Phila. Acad. Nat. Sciences, and, I think, a similar set in the U. S. National Museum at Washington.

DESCENT AND DISTRIBUTION OF UNIONIDÆ.

BY BERLIN H. WRIGHT, PENN YAN, N. Y.

It must be admitted that the Unionidæ are under the same natural laws, and occult forces, that have operated for vast ages on all animal and vegetal life. Fossilized Unios are found in several geological formations, and all living Unios are their descendants, or else they are new creations. But no evidence sustains the theory of successive creations. On the contrary, we behold everywhere successive new but related forms of descent on divergent lines. Nowhere is this astonishing fact better exemplified than in the numerous species of Unionidæ. But what causes the new forms? If not direct creations—a baseless theory—they are the outcome of changed conditions of life or varying environments.

Geographical distribution furnishes such environments. The young fry of the Naiads have a byssus which generally disappears early and with this appendage they can and do attach themselves to the legs of ducks, wading birds and floating objects. They are then easily transported by the semi-annual bird migration, from river to river, and from lake to lake, and eventually to very remote

regions. New habitats, with new climates, and with changed chemical qualities of new waters, and with new food materials, must disturb the usual and normal lines of descent. A change in the activity of functions of organs, affecting the physiology of the animal must result. Over stimulation of some functions, and depressed activity of others, must change the tenor of life, ultimately evolving new shell characters, and minimizing old ones, or even reducing them to a rudimentary state—all being effected by change of environment.

The dispersion of species is scarcely affected by mountain ranges, but oceans are potential barriers. Distribution eastward or westward is very slow, owing to the fact that the migrations of water fowls and birds, is mainly from north to south and *vice versa*. The spawn, fry or seeds being carried in these migrations, causes a great mixing of fauna and flora, on the lines of migration.

The paucity of Unionidæ west of the 100th meridian is probably due to the fact that since the laying of the cretaceous beds there and the destruction of the once numerous forms of Naiads that swarmed in that region, by the great upheavals of the country—there has not been sufficient time to repopulate. There are signs, however, of adventive Naiads, even from Europe, there. *Margaritana* (*Unio*) *margaritifera* L. and *Anodonta cygnea* L. from Europe, neither of them fully divorced from their Old World progenitors, seem to have somehow got a lodgement in California and Oregon, though Drs. Lea and Gould did not detect it. Mr. Simpson suggests that the Californian *A. cygnea* is the parent of the "tramp" *A. exilior* Lea, found from Southern California to Mexico and Central America, where it resents having relatives in Europe.

The most common Unios are those most subject to variation, as seen in *U. complanatus* Sol., whose progeny are clamoring for "sovereign rights" and recognition, which some Uniologists grant, and others deny. On the other hand Naiads vigorously resisting variation, such as *U. cylindricus* Say, and others, have no near relatives, and are generally rare and with very restricted distribution.

In living plants, secessions from a given and normal type are readily traceable, and in fossil types, floral and faunal, the gradations of differences are well marked. "Connecting links" may be absent, when we seek to trace and run down a species, through the long æons of geologic time. But if a long line of visible road be crossed by a chasm, we cannot resist the conviction that the road was once continuous.

There are no inherent tendencies in a species to depart from itself, but when estrangements do occur, they are effected by ulterior causes, natural or artificial. Where color markings are bleached out in mature shells in clear streams, they are retained in the same species in muddy waters. Shells thin and fragile in cold, limeless, pure water, become thicker and coarser in dirty streams. Spinose and verrucose shells are found in rapid waters, with a maximum development of spines and warts, while the same species in sluggish waters have these characters minimized or even absent. The thin edentate Anodontas of ponds or lakes, need no teeth to keep their valves in place, and hence have none. Nature's argument for an organ or an accessory is the need of it, which is furnished by a process of slow development the heavier species showing rudimentary teeth.

Mr. Darwin, in "The Origin of Species," shows that in a genus having many species, if it has not reached a maximum development, many other species are *still forming* in it. This is confirmed in Unio and Anodonta, and we may reasonably expect new species will be discovered in them.

Departures of a Unio from its parent stock, when seen as features of whole colonies, entitle it to *specific* distinction without hesitation, provided the habitats differ, and to *varietal* distinction where found in company with or near its next in affinity. On such a basis specific recognition is accorded in other branches of zoology, and also in botany. Plenty of land and marine shells, are specifically separated, only by the most minute or *microscopic* differences of the shells. We would not advocate such peering minuteness in the Unionidæ where the tendency to variation is much greater, and where expert comparative anatomists are unable to find distinguishing generic or specific differences in the soft parts.

In the Unionidae, the constants of nature are few and the differentials many. How then shall a rule be formulated by which we can confidently say a given Unio is distinct from another? The hiatus necessary for the founding of a new species must be such an aggregation of differences of character, such an estrangement from its next in affinity, that the gap will be large enough to justify a specific separation of the two. A substantial agreement in the *outline* of two Unios may be a fact, and yet other distinctive characters easily and unmistakably separate them. A process of differentiation must be applied in uniology but with extreme care. But just

here we are confronted with the fact that all differential observations are more or less affected with the variable "personal equation" among observers. The measure of conclusions is more or less in error, and the elimination of the variable is not a mathematical possibility. It follows, therefore, that a definition of the word SPECIES is almost an impossibility, the judgment of a naturalist being a controlling factor. This is a serious and unalterable fact. The most unselfish and conscientious naturalists will often radically disagree on the validity of a species. Others without a surplus of conscience, candor or brains, will go on making species *ad libitum*, to the end of time.

As a result of such diffusiveness, the birds, fishes, insects, shells, and plants, have generally been named three or four times over. This condition is discreditable to science, and Congresses of scientists are not able to remedy the evil. An epidemic of this sort is raging in Europe, and the "New School" mills are grinding out species by the hundreds.

The animus of species mongers is often visible, and not praiseworthy. Posing as scientists, they grasp nomenclature and bandy names about football fashion, with a nonchalance that takes away the breath of astonished beholders and raises the hair on end. The vocation of such gentry is that of the "Bulls and Bears," tearing down what others labored hard to build up, and raising standards which a later litter of "Bears" will demolish.

A FEW NOTES ON PISIDIA.

BY DR. V. STERKI.

It is hoped that our fellow conchologists will not feel chilly when reading this title, but kindly excuse the writer for coming again with Pisidia. The *Cycladidæ* are in order at present, and the season for collecting is at hand. Many conchologists in the East and West, North and South of our country are prepared to do vigorous collecting, and many others not yet enlisted will probably join them, so that, in all probability, more will be done in this line than at any previous time. And there is no doubt that the results will be highly satisfactory. Almost every sending coming in from the comparatively few places where collecting has been done so far, brought up some new form or forms which may prove to be new species, or varieties, by comparing them with more materials from other places.

By the perplexing variability of some members of this group, it is too unsafe to establish new species upon a few specimens coming from a single locality.

The headquarters of these smallest Bivalves, and so probably of *Sphærium*, are the region of our great lakes, which, in fact, seems to be the richest on the globe. And here, too, a serious difficulty is added to the one already lying in the embarassing richness of forms itself. The deep water mussels are decidedly different from the shallow water and shore forms, reduced in size, and less characteristic in shape, striation, color, hinge formation, etc., hence the double difficulty in ascertaining their true relations with the shallow water, river, pond and shore forms on the one hand, and among themselves on the other. Such is the teaching of the materials brought up so far from some deeper places of the lakes, mainly by the efforts of the Michigan Fish Commission, as I understand, upon the encouragement of Mr. Bryant Walker. There also is a field for successful work; the use of the dredge.

Another point may as well be mentioned here. It is an open question how far *Cycladidæ* are able to exist in brackish water, of rivers and creeks emptying into the sea, and in salt marshes. Conchologists having chances to collect in such places are invited to pay the matter their attention. The researches may be extended to other fresh water mollusks at the same time.

A few hints must be added for those collecting and sending *Pisidia* (and *Sphæria*). 1. Not even the smallest specimens should be overlooked, as some forms are very minute, and the young of all are of interest and value. 2. It is not only annoying, but really perplexing and deceptive, to examine lots where a part of the specimens had been picked out previously. Thus the larger, mature and characteristic examples of one or several species may be wanting, while the younger and poorer are represented in the remnants. Whole suites only can afford a true conception of a species, variety or local form. Mixed lots, however, are the most desirable for examination, separated only for considerable differences in size of the specimens.

Several conchologists lately have sent living Pisidia, which arrived alive and could be kept alive for some time, observed and examined for the soft parts. I would solicit the sending of more such. They should be packed up with damp moss, or other similar material, in receptacles admitting air, not in tightly corked vials.

ISAAC LEA DEPARTMENT.

[Conducted in the interest of the Isaac Lea Conchological Chapter of the Agassiz Association by its General Secretary, Mrs. M. Burton Williamson.]

During the first quarter of the year the following new members have been added to the chapter: Mrs. H. A. Zeck, Los Angeles, Cal.; Mrs. E. H. King, Napa, Cal.; Mrs. E. A. Lawrence, 2024 E. Second St., Los Angeles, Cal.; and, in the Juvenile Section, Master James H. Porter, New Wilmington, Pa. The California members will belong to Sections A. and F., the first section "Marine Shells of the West Coast," is under Professor Keep's instruction, and, Section F, "Fossil Shells," is directed by the Hon. Delos Arnold.

NOTES ON SOME ONTARIO SHELLS.

[Report of Mr. James H. Lemon. From the Transactions of the Isaac Lea Conchological Chapter for 1895.]

During last Summer I was able to do very little work in the conchological line, as my time was mostly occupied with botany. This report, therefore, will have to deal with work done in former years.

As far as I am aware about 147 species of land and fresh water shells have been found in the Province of Ontario, fifty-five species being land shells, and ninety-two fresh water; but as very few localities in the Province have been diligently searched it is very probable that in the future several more species will be added to the list. Of the 147 species, quite a number are extremely common all over the Province. Others, although widely distributed, are comparatively rare. Others, again are rather plentiful in some parts, but entirely wanting in other parts. Of our rarer species mention might be made of the following:

Selenites concava Say. This shell has been found in several parts of the Province of Ontario, but nowhere abundantly. I, myself, have found it in Eastern Ontario, and it is reported from around Ottawa.

Omphalina fuliginosa Grff., has been found, as far as I am aware, only near the city of Hamilton, in S. Ontario, and even there is not a common shell.

Omphalina inornata Say, has been found around Ottawa, but I have not heard of its being taken elsewhere in the Province.

Gastrodonta interlexta Binn. This shell has not been found, to my knowledge in Eastern Ontario, but several specimens have been

collected around Hamilton. I also collected a few specimens near Brantford.

Pyramidula perspectiva Say, is another species which seems to be confined to the southern portion of the province. I have found it around Hamilton, and, also in Brant County, but it is not abundant in either place.

Polygyra (*Mesodon*) *Sayii* Binn. has been found in several parts of the Province, but is by no means a common species. I have never been fortunate enough to find any live specimens, but have found dead ones.

Polygyra (*Triodopsis*) *palliata* Say, and *T. tridentata* Say, are both comparatively common in parts of Southern Ontario, I have not heard of their being found in the Northern or Eastern parts.

Pupa fallax Say, has been found very abundantly around Hamilton, especially in sandy places, but I have not found it elsewhere.

It is chiefly among our Fresh Water species that additions to the list are to be expected. Ontario abounds in lakes and streams, which when diligently explored will no doubt yield a number of species new to the Province. Many additions may be expected among the Unionidæ and Cycladidæ (*Spharium* and *Pisidium*), although over 30 of our 92 Fresh Water species belong to the Unionidæ.

During the coming summer I hope to have more time to devote to the study of Conchology, and will endeavor to get as complete a list, as possible, of those shells found around Toronto.

CUTTLE FISHES WASHED ASHORE IN SAN PEDRO BAY.

[Extract from the report of H. Lowe. From the Transactions of the Isaac Lea Conchological Chapter for 1895]

In June, while I was out collecting one morning, I was surprised to find a number of cuttle fishes which had been washed ashore. They were all dead, excepting one, which I carried home and kept in water for a day or two. The length of the entire mollusk was about four feet, and, weight about twenty pounds. It was covered with a very thin paper-like skin, so thin that the bloodvessels could be seen beneath for it has, unlike most other mollusks, red blood. The head was surmounted by ten arms with powerful suckers, two of these arms were much longer than the rest, being about two feet long. Where the ten arms radiated was the mandible, shaped like,

and much resembling, the beak of a parrot. This mandible was partially enveloped in a tough white muscle and was connected with the digestive organs by a muscular gullet. On each side of the head was a large eye about two inches in a diameter. The crystalline lens, when dried, were clear and bright and closely resembled large solitaries (I have seen the lenses used for settings). The gladius, or internal shell was about eighteen inches long, composed of shining white cartilage, and shaped like a large quill-pen, with the pen point towards the tail. I found about fifteen of these mollusks, but have been unable to identify them and would be pleased if some one could give me the probable name.

GENERAL NOTES.

NOTE ON CARYCHIUM EXILE (C. B. ADAMS).—This Jamaican species was originally described in Adams' Contributions to Conchology, III, p. 38 (Oct., 1849) as *Pupa exilis;* and Pfeiffer retains the species in *Pupa* in the Monographia Heliceorum III, p. 556. It is omitted from the Monographia Auriculaceorum. Bland in Journal de Conchyliologie, 1872, p. 46, first refers the species to *Carychium.* In this genus the name is preoccupied by H. C. Lea for a species of the United States described in 1841. The Jamaica form will, therefore, stand *C. exile* Lea, var. *jamaicensis* Pilsbry (see Nautilus VIII, p. 63, figs. 15, 16), although some would probably consider it distinct from the United States species. *P. exilis* Ad., *C. exile* Bland, becoming a synonym of the variety described by myself.—*H. A. P.*

NEW PUBLICATIONS RECEIVED.

I. THE UNIONIDÆ OF THE OHIO RIVER. II. THE STREPOMATIDÆ OF THE FALLS OF THE OHIO.—By R. Ellsworth Call, from Proceedings Indiana Academy of Science, No. IV, 1894. Published Nov., 1895. Brief comparative reviews. The writer states that "the literature of the subjects reveals some sixty species" of Unionidæ found in the Ohio River. "The Strepomatid molluscan fauna of the Falls of the Ohio is one that is very rich in numbers, but rather poor in species," the total number being but ten species.

ON THE OCCURRENCE OF ALECTRYONIA UNGULATA IN S. E. AFRICA WITH A NOTICE OF PREVIOUS RESEARCHES ON THE CRETACEOUS CONCHOLOGY OF SOUTH AFRICA.—By R. Bullen Newton (from the Journal of Conchology, VIII, 136–151, Jan., 1896).

BULLETIN OF THE U. S. GEOLOGICAL SURVEY, NO. 133; CONTRIBUTIONS TO THE CRETACEOUS PALEONTOLOGY OF THE PACIFIC COAST; FAUNA OF THE KNOXVILLE BEDS. By T. W. Stanton. This Bulletin, which contains 132 pages and 22 plates, is a very valuable addition to our knowledge of the Cretaceous Mollusca. Preceding the descriptions of species, is a thorough discussion of the geological features of the region. There are enumerated 77 species of invertebrates, 50 of which are described as new; all but 7 of the species are mollusks.

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NOTE ON NERITINA SHOWALTERI LEA.

BY WM. H. DALL.

In February, 1861, Dr. E. R. Showalter of Alabama sent four small shells without opercula or soft parts to Dr. Isaac Lea. They were obtained ten miles above Fort William, Shelby Co., Alabama, from the Coosa River. Three of these specimens are now in the National Museum, with the original labels of Showalter and Lea. The species was described under the name of *Neritina Showalteri* by Dr. Lea, who observed that it was the first instance of the discovery of true freshwater *Neritina*, like those of Europe, in our southern waters. The note in which the description is embodied was read Feb. 12, 1861 and published in the Proceedings of the Academy of Natural Sciences, vol. xiii, p. 56, March 19, 1861, and also separately.

Since that time for many years no notice of the species as collected has come to my knowledge and I began to suspect that Dr. Showalter had been imposed upon by some one who had given him, as obtained from the Coosa River, some specimens of *Neritina fluviatilis* of Europe, to which these shells bear a marked resemblance, except that they are smaller and without any dark markings upon the olivaceous surface. It seemed very curious that a species of the section *Theodoxus*, to which *Neritina fluviatilis* is now referred, and which is notably profuse in individuals when occurring at all, in Europe, should be found only in one small stream in our Southern States and very sparsely there. Of numerous collectors on the Coosa River since

1865, none seemed to have found it. Dr. Lewis in his Freshwater and Land shells of Alabama (Geol. Sur. Ala. Rep., p. 25, 1876) gives no further information but states that in the absence of the operculum it is uncertain whether it should be referred to *Neritella* (=*Neritina*). Binney was not able to add any further information in his Land and Freshwater shells of North America. I find in one of my books a manuscript note by a very competent conchologist which declares under date of 1884 that this shell is the young of *Aneulosa ampla* Anth. Under *Neritidæ* in the Manual of Conchology (vol. x, 1888) Mr. Tryon observes that it has not the characters of *Aneulosa*, on the contrary it more nearly resembles *Neritina crepidularia*, though the coloring of the epidermis is more like that of *Aneulosa* than in the other fluviatile species of *Neritina*.

For some years I have used every opportunity to seek further information about this species but without success, until lately Mr. Bryant Walker of Detroit informed me that he had found, among shells collected on the Cahawba River in Alabama, by Prof. R. E. Call, a single specimen which he had referred to Lea's species. This he was kind enough to send me for examination and on comparison with the types it proved identical, thus establishing the correctness of the American habitat of the shell which had been so long in doubt. The specimen had also the operculum, which was not that of a *Neritina*, but the soft parts had been removed.

A comparison was then made with the young of all the species of *Aneulosa* in the National collection, which resulted in confirming Mr. Tryon's opinion that it could not be referred to that genus. During this search, under the head of "*Aneulosa ampla*, very young" were found three additional specimens of the so-called *Neritina*, received under that name from Dr. Lewis, who in turn had received them from Mr. T. H. Aldrich who had collected them from the Cahawba River, Alabama, thus fixing a second locality for the species. The smallest of Dr. Lewis's specimens fortunately contained the operculum and dried remains of the soft parts which were put in soak and boiled in potash finally revealing an extremely minute rhipidoglossate radula, in general not unlike that of *Neritina* but not like that of any species of *Neritina* yet figured. The differences are such as would ordinarily be regarded as generic and, taken into consideration with the operculum, it becomes evident that, while the species is related to *Neritina* (and not to *Aneulosa*), a new genus must be instituted to receive it.

Genus LEPYRIUM Dall.

Shell neritiniform, small, thin, unicolorate; with a broad smooth-edged pillar lip; the operculum shaped like that of *Neritina* but without any calcareous layer or projecting processes; the dentition comprising a very wide rhachidian tooth with a short finely denticulate cusp, the median denticle hardly larger than the others and on each side of it a small obliquely set lateral, a broad major lateral with finely denticulate short cusp, and a short series of spatulate uncini much longer than the median teeth. Formula x.2.1.2.x.

Type *Lepyrium Showalteri* (Lea, as *Neritina*), from rivers of the Appalachian drainage in Northeastern Alabama. Types, numbers 29,016 and 102,851, U. S. Nat. Museum.

The specimen from which the radula was obtained was very small and the radula so minute, and its long uncini so tangled, that it was impossible to make a complete description or enumeration of them. The rhipidoglossate character, however, was evident, and the form of the cusps of the middle part of the radula could be clearly seen. They differ from those of *Neritina* by having a very wide and short, finely denticulate rhachidian tooth, instead of a small quadrate one with simple edges; one instead of two oblique minor laterals; in the broad and simple quadrate form of the major lateral, and the relatively smaller number and larger size of the uncini. *Aneulosa* has a taenioglossate radula with the formula 3.1.3, so it is evident that this form is not in any way related to *Aneulosa*.

The Oligocene of the Southern United States contains several species of *Neritina*, but none, so far as known, having a close resemblance to *Lepyrium*; which is, however, probably an offshoot from *Neritina*. The fluviatile fauna of the Coosa region contains several unique or isolated types of mollusks and the present species adds another to the list.

THE GOOSE FAIR BROOK.

BY REV. HENRY W. WINKLEY.

A curious brook, with an odd name, the origin of which I do not know. For some years this stream has formed the boundary between the city of Saco and the town of Old Orchard. The portion of it known to the writer is the last five or six miles of its course.

It flows for a distance through meadow land in a valley; here mollusca are seldom found. The next portion continues through a valley thickly wooded, with alders overhanging the water and covering the narrow belt of marsh; beyond these the steep banks and upper land are covered with pine growth. Land shells occur rarely along this area: *Succinea ovalis, Patula striatella, Strobilops labyrinthica, Zonites exiguus* etc., have been found here. The brook has a fine lot of *Margaritana margaritifera* of large size and fine specimens. *Pisidium variabile, abditum* and *adamsii* occur in the mud, the last of these in an area of a few feet, but having some fine examples. *Planorbis* and *Physa* also occur sparingly. The third area is a mile or two of tide marsh; here one may study the problem of salt and freshwater distribution. The writer gave an afternoon to this work a few days ago with the following result: In the upper quarter of the marsh *Pisidium* occurs more or less abundantly, and *Amnicola* is to be found in great profusion; following the windings careful siftings were made. *Pisidium* disappeared after the first quarter of the distance to the sea; I am quite sure that salt water has little or no influence here. *Amnicola* was met with where *Pisidium* had disappeared, but only for a short distance. The portion following this in the second quarter was entirely wanting in shells, but gradually salt water forms showed themselves, i. e., *Macoma* and *Litorina*. The marsh itself now gives an interesting field of study. Plant life is very rich, but that is not our subject. Pot holes now reveal the presence of multitudes of *Litorinella minuta* living on the thread-like marine plants. The Goose Fair Brook enters the sea in the middle of a long beach, generally known as Old Orchard beach. Its marine shells are chiefly *Litorina littoria* and *Macoma*, the latter often badly eroded. I have seen living specimens with the animal exposed in places where erosion had destroyed the shell. Not far from the shore there must be beds containing *Tellina tenera, Ceronia arctata* and others, as specimens are washed up by storms. I trust that these few observations may help to settle the question of the distribution of marine and freshwater forms. At any rate this is one point in the evidence.

SOME NEW OR RARE SPECIES OF MARINE MOLLUSCA RECENTLY FOUND IN BRITISH COLUMBIA.

The following note may be of interest to collectors of West Coast Mollusca. It adds sixteen species to our fauna not hitherto reported

from British Columbia (though some have been found in neighbouring seas), and four species are new to science. My best thanks are due to Dr. Dall for kindly determining new and doubtful material, and species so identified are marked in the accompanying list by an asterisk.

It will be noticed that the range of several Californian species receives a considerable extension, as in the case of *Diala marmorea* Cpr., *Eulima falcata* Cpr., *Ischnochiton radians* Cpr., *Lepidopleurus rugatus* Cpr., *Chrysallida cincta* Cpr., *Phasianella pulloides* Cpr., *Tornatina harpa* Dall, and *Turbonilla stylina* Cpr., etc.

Of northern species the southward range is extended of *Buccinum plectrum* Stimps. (now first established as living in our waters) of *Trichotropis borealis* Br. & Sby., and of *Siphonorverkrüzeni* Kobelt. The two last mentioned species occur at Alert Bay in company with an unusual abundance of boreal and circumpolar species such as *Buccinum cyaneum* Brug., *Bela violacea* M. & A., *Margarita helicina* O. Fab., *Cryptobranchia concentrica* Midd., *Lepidopleurus cancellatus* Sby., *Crenella decussata* Mont., etc.

Of the four new species, three belong to genera new to our waters; viz. *Rissoina*, *Möllcria* and *Phasaniella*. The fourth species belongs to a subgenus (*Mumiola*) of *Odostomia* especially Japanese in its recorded species.

Most of the following additions are of small shells, of which, however, we are still far from having on record a normal proportion.

The stations quoted in the following lists are arranged in their order passing from the south towards the north.

Station 1. Near Victoria, Vancouver Island, in 60 fathoms, fine clean sand. Collected by the Natural History Society of B. C. March 14, 1896.

Station 2. Near Alert Bay, Queen Charlotte Sound, northeast of Vancouver Island, 20 fathoms, small gravel. Collector, C. F. N. July, 1895.

Station 3. North side of the entrance to Cumshewa Inlet, Queen Charlotte Islands, 10–20 fathoms, small broken shells and sand. Collector, C. F. N. Sept., 1895.

Station 4. East end of Skidegate Inlet, Queen Charlotte Islands, sand and mud. Collector, C. F. N. August, 1895.

Station 5. Dawson Harbour, west end of Skidegate Inlet, Queen Charlotte Islands, 20 fathoms., broken shells. Collector, C. F. N. Sept., 1895.

List of Species.

* *Admete Couthouyi* Jay. Cumshewa Inlet, living.

Angulus variegatus Cp. Victoria, Station 1.

* *Bela fidicula* Gld. "variety approximating *B. scalaris* Möller." Alert Bay, Station 2.

* *Bela tabulata* Cpr. A remarkably slender variety occurred at Station 2 with the last.

* *Bela violacea* Migh. & Ads. Not uncommon at Alert Bay, Station 2.

* *Bittium quadrifilatum* Cpr. At all stations in the Queen Charlotte Islands. A Californian shell new to B. C.

* *Buccinum cyaneum* Brug., var. *Morchianum* Fischer. Very fine and plentiful, living at low water near Station 2, Alert Bay. Not reported from any other locality.

* *Buccinum plectrum* Stimpson. Two dead and a few living specimens at Station 1, Victoria. Dead specimens have before been recorded since 1878 as *B. polare* var. *compactum* Dall, and as *B. pererassum* Dall. It has also been found at Rivers Inlet, B. C. (C. F. N.) and in Queen Charlotte Sound by Dr. G. M. Dawson.

Cadulus aberrans Whiteaves. Several specimens at Station 1, Victoria. Only once taken before in B. C.

* *Cæcum crebricinctum* Cpr. Living in great abundance at Station 3, Queen Charlotte Islands. Only a single dead specimen before noted.

* *Cancellaria modesta* Cpr. One dead specimen dredged in 15 fathoms, near Victoria in 1894, the first reported in B. C. It measures 33 mm. in length and is the largest species of its genus here.

* *Cancellaria unalaskensis* Dall. A few found at Stations 3 and 5 in the Queen Charlotte Islands.

Chrysodomus rectirostris Cpr. Three living specimens of this rare shell at Station 1, Victoria.

Chrysodomus (Sipho) Verkrüzeni Kobelt. Three young living specimens dredged near Alert Bay by Mr. W. Harvey in 1894.

* *Crenella decussata* Mont. Abundant at Station 2 near Alert Bay.

Dentalium pretiosum Nuttall. A single living specimen at Station 5, Dawson Harbour, Q. C. I.

Dentalium rectius Cpr. A few living at Station 1, Victoria. Only noted here once before.

* *Diala marmorea* Cpr. At Station 5, Dawson Harbour, Q. C. I. New to these waters.

Doridium Adellæ Dall. Clayoquot Sound, B. C., and near Victoria. Taken in 1893, by C. F. N. Not hitherto recorded from B. C.

* *Eulima falcata* Cpr. At Station 2, near Alert Bay. Also taken at low water. A rare Californian shell not on our lists, but probably identical with the form recorded as *E. distorta* and *E. incurva*.

* *Halistylus pupoideus* Dall. Very abundant, living at Station 3, Cumshewa Inlet.

Ischnochiton interstinctus Gld. On rocks at low water near Station 4. A Californian species new to our Province. Sixteen specimens of various markings.

Lazaria subquadrata Cpr. Dead shells and single valves at Stations 3 and 5 in the Queen Charlotte Islands, the northern limit of this species so far as known.

* *Leda acuta* Conr. A few living and many dead specimens at Stations 3, 4 and 5, Q. C. I.

* *Leda fossa* Baird. A few specimens at Station on 3, Cumshewa Inlet. In 1894 I dredged three living specimens near Victoria.

* *Lepidopleurus rugatus* Cpr. Under rocks at low water near Victoria, April, 1894, C. F. N.

* *Macoma yoldiformis* Cpr. Stations 3 and 4 in the Queen Charlotte Islands.

Mactra falcata. Station 3, Cumshewa Inlet.

* *Mölleria Quadræ* Dall, sp. nov. A few living and dead specimens at Station 3, Cumshewa Inlet.

* *Mumiola tenuis* Dall, sp. nov. Station 3, with the last.

* *Odostomia (Chrysallida) cincta* Cpr. In 30 fathoms near Victoria, March, 1896. New to B. C.

* *Phasianella (Eucosmia) lurida* Dall, sp. nov. Station 5, Skidegate Channel. Encrusted with a polyzoan.

* *Phasianella pulloides* Cpr. Station 5, Dawson Harbour. Skidegate with the last, and in shell sand from Nootka Sound.

* *Rissoina Newcombei* Dall sp. nov. Station 3, Cumshewa Inlet, Queen Charlotte Islands.

* *Tellina inflatula* Dall. Stations 3 and 4 in the Queen Charlotte Islands. The northern limit so far as known.

Tonicella submarmorea Midd. Not rare at low water at Station 2, Alert Bay, and quite plentiful at Station 4, Skidegate Inlet.

* *Tornatina harpa* Dall. Not rare at Stations 3, 4 and 5, Queen Charlotte Islands. The northern known limit.

Trachydermon (Cyanoplax) Raymondi Pilsbry. Not rare at Stations 2 and 4, Alert Bay and Skidegate, Q. C. I.

* *Trichotropis borealis* Br. & Sby. Station 2, Alert Bay. New to this Province.

Turbonilla chocolata Cpr. Both at Stations 2 and 4.

**Turbonilla stylina* Cpr. Cumshewa Inlet, Q. C. I., at Station 3. A Californian shell, new to B. C.

* *Turbonilla torquata* Gld. With the last.

* *Turbonilla tridentata* Cpr. At Station 3, Cumshewa Inlet. Though found in Puget Sound many years ago, it has not before been reported from British Columbia.

* *Venericardia borealis* Conr. At stations 2 (Alert Bay) and 4, Skidegate Inlet.

C. F. NEWCOMBE.

DESCRIPTIONS OF NEW PISIDIA.

BY DR. V. STERKI.

Pis. fallax n. sp.

Mussel rather small; it is of the same type with *Pis. compressum* Pr. but smaller, more rounded in outline, the upper margin is less strongly curved, not angular, the ridges on the beaks are comparatively larger and situated less high up; the striation is finer, crowded, somewhat irregular and sharp; the color commonly greenish or yellowish-horn in the younger, more yellow in older specimens; the hinge is strong, more regularly curved than in *compressum*, the hinge plate broad, the cardinal tooth of the right valve more oblique, the lateral teeth strongly projecting inward; nacre more glassy-whitish; ligament strong.

Size: long 3·2, alt. 2·9–3, diam. 2·1.

Habitat: Tuscarawas River and Sugar Creek, Ohio.

It was first noticed in October and November, 1891, when hundreds of specimens were collected, and so every year since, in company with *Pis. compressum*, *cruciatum* and *punctatum*. Also found in the stomach of the "Buffalo Sucker" (fish) with *Pis. cruciatum* and other molluscan shells. It is decidedly and constantly distinct, not a variety or depauperate form of *Pis. compressum*. The latter has been collected in this vicinity in many places and in very different forms. Old specimens of *Pis. fallax* are almost always badly eroded, and covered with a thick, blackish coat, while *Pis. compressum* from the same places, were intact and clean.

Pis. vesicnlare n. sp.

Mussel small, ovoid, very inequipartite, somewhat oblique, strongly inflated; beaks very posterior, moderately prominent; margins all well rounded, or the scutum forming a very slight angular projection; color yellowish to brownish-horn; surface slightly striated, polished, often with a few coarser lines of growth; shell thin, translucent; nacre rather glassy, colorless; hinge rather small, markedly short; cardinal teeth lamellar, the right moderately curved with its anterior end thicker; anterior left distinctly directed upward, curved, often angular, posterior oblique, moderately curved; groove between them narrow and deep; lateral teeth situated very close to the cardinals, short, especially those in the left valve abrupt, high; ligament short.

Size: long 2·3, alt. 1·9, diam. 1·7 mill.

Habitat. Michigan.

More than fifteen hundred specimens were seen during the last year, collected at Grand Rapids, Michigan, by Mr. L. H. Streng about ten years ago, and all were remarkably uniform in shape and appearance. Yet I hesitated to announce the form as a new species, thinking it might be a variety of *P. ventricosum* Prime. But later it has been seen from various other places, as Lake Michigan, Hess Lake, "Michigan," in one instance named "*P. rotundatum*," from which it is very different by its beaks situated posteriorly, while in *rotundatum* they are almost in the middle.

P. vesiculare can be mistaken only for *P. ventricosum* Pr., from which it differs by the following characters: it is longer, less oblique, more regular in form, being more regularly though less inflated, the beaks are much less prominent: the surface shows less coarse and irregular lines of growth. It is somewhat variable in size, measuring 2·1–2·7 millimetres in length, and in being slightly more or less inflated.

A NEW VARIETY OF PUNCTUM.

BY H. A. PILSBRY.

Punctum conspectum var. **pasadenæ** n. var.

Shell resembling *P. conspectum* Bld., but *more widely and openly umbilicated, and without spaced riblets,* or with them very slightly indicated.

Light chestnut colored, rather opaque. Contour about that of *P. conspectum*, the spire very low-conic, apex obtuse. Whorls 3¾ to 4, convex, separated by impressed sutures, the last more or less descending in front. Umbilicus open, easily showing all the whorls, its width contained 3⅞ to 3¾ in diameter of shell. Surface with close, fine, irregular growth-striæ, sometimes showing slight traces of wide-spaced stronger striæ, and very densely, minutely spirally striated. Aperture rounded-oval, quite oblique, the lip thin; columellar margin brought far forward and expanded. Alt. 1·15, diam. 2 mm.

Numerous specimens of this small species were found by Hon. Delos Arnold crawling upon a cement walk in front of his residence in Pasadena, California, and were communicated to the writer by Mrs. Julia E. Campbell.

In typical *P. conspectum* the umbilicus is smaller, contained 4½ to 4⅝ times in diameter of base, and the riblets are prominent, although subject to considerable variation. The dentition of the Pasadena shells is similar to that of *conspectum*. The other species of *Punctum* now known from America are *P. pygmæum* var. *minutissimum* Lea, and *P. Randolphii* Dall.

GENERAL NOTES.

Proposed Biological Station.—Professor T. D. A. Cockerell, of Las Cruces, New Mexico, has it in view to found in New Mexico a Biological Station, and health and holiday resort for scientific persons, teachers and kindred spirits.

Three years experience in this country gives the writer the highest opinion of the value of the climate for persons in the earlier stages of phthisis; while the abundance of new and interesting forms of life, especially among the insects, is remarkable. Many interesting general problems, such as those of the life-zones, can also be studied in New Mexico to great advantage.

A beginning will be made this summer if students can be found. Prof. Cockerell will be glad to hear from any who are interested in the matter, and especially from those who might be inclined to work with him for longer or shorter periods during the present summer.

Professor H. E. Sargent is now in Deteroit, Michigan (Detroit Museum of Art), engaged in preparing for public exhibition the Stearns collection of Mollusca.

ASPERGILLUM GIGANTEUM Sowb.—This species, the largest of the genus, was figured in Stearns' and Pilsbry's Catalogue of Japanese Marine Mollusks, pl. iii, fig. 1. We have lately noticed that it was renamed (in 1889, Le Naturaliste, p. 121) by M. Ménégaux, who curiously enough proposes anew the specific name given by Sowerby in 1888. The specimen is said to be from "les mers de la Chine."

PALUDINA HETEROSTROPHA KIRTLAND.—I consider this shell only as an abnormal production of *Campeloma decisum* Say. Comparatively few are found here. About ten years ago, I gathered quite a lot of them, and among the young of them which were not delivered yet, I found this abnormal form, and as near as I could guess, I found about one of this form in two or three hundred; and so came to the conclusion above stated.—L. H. STRENG.

SHELLS OF MARYLAND.—In a recent sending of land shells from Cumberland, Maryland, from Mr. Howard Shriver of that place, we find four species not before recorded from the State: *Omphalina fuliginosa* Griff., *O. inornata* Say, *Gastrodonta interlexta* Binn., and *Polygyra profunda* Say. The latter two are western species, probably at or near their (in this latitude) eastern limit. None of these were recorded in Pilsbry's Mollusks of the Potomac Valley, Proc. Acad. Nat. Sci. Phila., 1894, p. 11. *Polygyra fraudulenta* Pils. is a particularly abundant species at Cumberland, and the specimens of *Pyramidula alternata* are decidedly keeled.

NEW PUBLICATIONS RECEIVED.

ON THE MISSISSIPPI VALLEY UNIONIDÆ FOUND IN THE ST. LAWRENCE AND ATLANTIC DRAINAGE AREAS (AMER. NAT., 1896, p. 379). 2. DESCRIPTIONS OF FOUR NEW TRIASSIC UNIOS FROM THE STAKED PLAINS OF TEXAS. 3. THE CLASSIFICATION AND GEOGRAPHICAL DISTRIBUTION OF THE PEARLY FRESHWATER MUSSELS (Proc. U. S. Nat. Mus., XVIII, 1896), by Charles T. Simpson. The first of the above papers considers the origin of such Lake and Atlantic drainage forms as *Unio liebi, canadensis, borealis, hippopæus, Anodonta footiana, subangulata, benedictii, undulata*, etc., all of which are claimed to be altered Mississippi drainage types, which found their way into the Lake drainage during the period when the lakes drained into the Mississippi, and subsequently travelled eastward when the St. Lawrence outlet became established. Their advent is thus about coeval with the Glacial period. *Unio radiatus, ochraceus, heterodon, tappanianus* and *Marg. undulata* are believed to be older inhabitants of the eastern country.

The third paper mentioned above is already so condensed that any abstract is difficult to make. It deals with the questions of classifications, mutual relationships of the genera, and geographic distribution. *Margaritana* is merged in *Unio*, as the species are believed to have lost the lateral teeth by degeneration or disease. It is an error, however, to give *U. margaritifer* (not "margaritiferus") as type of *Unio;* and it should be noted that in having a series of small muscle-scars in the middle of the disk, *M. margaritifera, monodonta*, etc., differ from any Unios as well as from the *M. undulata, rugosa* group, which is more properly called *Alasmodonta*. These groups seem to be as valid genera as *Castalina*, which Simpson retains. Simpson, in common with other recent authors, recognizes two families, *Unionidæ* and *Mutelidæ*. The former containing genera *Unio, Anodonta, Prisodon, Tetraplodon, Castalina, Burtonia, Arcomaia, Cristaria, Lepidodesma*, (new genus for *U. languilati* of China), *Pseudodon, Leguminaia, Solenaia. Mutelidæ* contains *Mutela, Chelidonopsis, Spatha, Pleiodon, Brazzæa, Glabaris, Iheringella, Monocondylæa, Fossula, Myoetopoda*. Each genus is discussed in a separate paragraph, and a careful reading inclines us to place great reliance upon Mr. Simpson's conclusions. A full synonymy of each genus would have been a useful addition, for there are some generic names not mentioned in the text, probably because they prove to be mere synonyms.

The geographic provinces indicated by *Unionidæ* and *Mutelidæ* are: *Palæarctic*, including all Europe, Africa north of Sahara (except the Nile), all northern Asia, and the Pacific drainage of North America. *Ethiopian. Oriental*, including southern Asia to Japan, Philippines, Malay Archipelago and to the Solomon Is. *Australian*, Australia, Tasmania and New Zealand. *Mississippian*, the Gulf drainage, spreading to N. C. and Central America. This region is the richest in species in the world. *Atlantic*, Atlantic drainage from Florida to Labrador. *Neotropical*, the whole of South America. *Central American*, Panama to Mexico and Cuba. A map presents the areas of distribution graphically. In conclusion Mr. Simpson discusses the geological history of the groups. Students of the Unionidæ will find this paper crowded with important facts and careful reasoning from them, in the main very reliable. Our experience with other groups leads us to believe, however, that more important points will follow an anatomical study of the Unionidæ than have yet been developed.

THE NAUTILUS.

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ON THE AMERICAN SPECIES OF ERVILIA.

BY WM. H. DALL.

Very little attention seems to have been given to the genus *Ervilia*, which is composed of small, rather solid shells which are, in the recent species, frequently brightly colored, concentrically or radially striated or smooth. The soft parts are still unknown though the typical species appears to be common in the West Indies, and the largest known species is found in British and Mediterranean waters. In the forms which are normally concentrically striate or grooved it often happens that some of the specimens have the umbonal portion nearly smooth, the normal sculpture appearing only when the shell is half grown; there are also light modifications of the outline, coming within the range of individual variation. In examining the recent forms of North America and the West Indies for comparison with the fossils, the following were recognized, though the small size of the shells and their general similarity of form renders it necessary to study them under a magnifier with the greatest care and attention in order to grasp the distinctive features.

Ervilia nitens (Mont.) Turton.

This species has the valves somewhat compressed, coarsely, evenly, concentrically grooved, with faint, radial striations on the dorso-posterior surface, both ends somewhat attenuated, the posterior longer and more attenuated, the base evenly arched, the anterior end shorter, higher, with a steeper dorsal slope; the shell rather solid with a robust hinge; the pallial sinus narrow, angular in

front, and reaching beyond the vertical of the beaks, anteriorly. In general the shell is yellowish or bright pink, with occasional brownish rays. It seems to be confined to the Antilles and the southern Florida Keys.

Ervilia subcancellata Smith.

Valves much compressed, both ends somewhat attenuated, the base arcuate and prominent in the middle; the surface concentrically striated and covered with fine, distinct, radial striæ; the pallial sinus reaching to the vertical of the beaks, rather wide, anteriorly rounded; shell solid, hinge moderately strong; lon. 8; alt. 5·5; diam. 3 mm.

This species is differently shaped, rather more compressed and with a different hinge and pallial sinus from the *E. nitens*. The specimens I have seen are white or brownish and were obtained at Bermuda by Dr. Goode.

Ervilia concentrica Gould.

Shell solid, plump, with a robust hinge; the surface with strong, even, concentric riblets and narrower, even grooves between them; there are few very faint or no radial striæ; the posterior end is slightly the longer and more attenuated, the anterior shorter and higher; pallial sinus narrow, almost angular in front, just reaching the vertical of the beaks; the color is generally white, rarely pinkish or yellowish.

This species is common in moderate depths from Cape Hatteras to Key West and Pensacola, Florida. It is smaller and more lozenge shaped than *E. nitens*. Several specimens from the Mediterranean are in the Jeffreys collection under the name of the young of *E. castanea* or *E. nitens*. It is represented in the Postpliocene of North Creek, Little Sarasota Bay, Florida, by a variety less strongly striated and which seems to form the transition to the Pliocene species.

Ervilia maculosa Dall, n. s.

Shell almost perfectly oval, very thin, compressed, and almost translucent; elosely, sharply, finely, concentrically striated without radial striæ; posterior end higher, rounded, longer than the anterior; beaks low and calyculate; hinge very feeble; pallial sinus wide and rounded, falling short of the vertical of the beaks anteriorly; surface mottled with brown streaks and patches on a translucent ground. Lon. 4·5 alt. 2·7 mm.

This quite distinct form was obtained off Cape Lookout, N. Carolina in 22 fathoms by the U. S. Fish Commission. It is recognizable

at once by its very oval, compressed and translucent shell with very fine and sharp concentric groovings. So far I have not found it in the fossil state.

NOTES ON MOLLUSKS OF FLORIDA.

BY JOSEPH WILLCOX.

In THE NAUTILUS for November, 1894, the writer referred to the habits of many species of mollusks which he observed on the west coast of Florida. The present paper has been written in continuation of the same subject.

It is an interesting matter, for personal observation, to witness the persistent and relentless warfare of the molluscan forms upon others of the same family in their quest for food.

In the case of the oyster their enemies are not confined to members of the mollusca. In Florida waters they are preyed upon by numerous enemies which ply their predaceous vocation during the twelve months of the year.

Among the fishes the drum and the sheephead are the chief consumers of the oyster; the former devouring those of moderate size, while the latter confine their attention to the destruction of young oysters.

In the vicinity of the oyster beds nearly all the sheephead fish are found with ragged and freshly-cut lips caused by the sharp edges of the young oysters which they break loose from the clusters. So persistent are the sheephead, in the destruction of the young oysters, that single individuals of the latter are comparatively rare; and the survival of the species, in some localities, is, in a great measure, due to their protective habit of living in clusters.

Coextensive with the destruction of the oyster by the fishes, referred to above, their consumption appears to be as great by their molluscan enemy the *Melongena corona*.

Every oyster bed, on the west coast of Florida, from Cedar Keys to Cape Sable, is infested by these ostræophagi, which persistently prey upon the oysters as the chief article of their diet.

Their method of attack and subsequent destruction, from which there is no escape for the victim, is exceedingly ingenious, and is probably not unaccompanied by some measure of discomfort and even pain on the part of the aggressor.

The first effort in the assault, on the part of the Melongena, is the insertion of its beak or rostrum between the open valves of the oyster, when the latter is feeding. The valves, of course, are immediately closed upon the beak of the assailant, which is round and tough, resembling in form and color a leather shoe-string.

At this particular juncture the oyster appears to have the best position in the struggle for life; and if it could maintain its existence, without relaxing its muscles, the Melongena would, in time, starve to death while held in its grasp.

The position of affairs just described is probably continued for a long time, until the oyster, exhausted with the strain in the contraction of its muscles, is obliged to open its shells.

This is the opportunity which the Melongena has been patiently, or impatiently, awaiting; and its beak is immediately thrust further between the oyster shells.

It is only a question of time when the beak of the Melongena reaches the muscular portion of the oyster; and then the process of devouring it begins.

Early in the progress of this struggle for life other Melongenas assemble at the prospective feast, and insert their beaks between the shells of the oyster, and then await their opportunity for engorgement.

The writer has picked up an oyster in Little Sarasota Bay, in Florida, from which 14 Melongenas were dangling, suspended by their long beaks, which were held in the closed shells of their victim. A cluster of oysters was found, at the same place, between the shells of which were inserted the beaks of 22 Melongenas.

The Sigaretus is enabled to destroy the oyster by enveloping it in its folds, and in that manner smothering it. In the same manner the *Fulgur perversum* kills the oyster by enveloping it in its foot.

The Melongenas successfully attack and destroy large specimens of *Fulgur perversum*. They crowd on and around the operculum of the latter, and when it is opened for the admission of water for respiration, the beaks of the Melongenas are ruthlessly inserted between it and the shell; and the same method of attack is pursued as in the case of the oyster.

It is surprising to see how skillfully the Melongenas can arrange themselves, in order that the greatest number may occupy the space at their disposal at the feast.

The writer has seen a *Melongena corona* devouring a shrimp, and also a *Solen americanus*.

The only mollusk, seen to destroy the Melongena, was a *Fasciolaria gigantea* which enclosed it in its folds.

On one occasion a dead king-crab was found, lying on its back, on which many *Fasciolaria tulipa* were crowded and eating it.

An abundant food for the *Fasciolaria distans* is the *Vermetus*, (*Petaloconchus*) *nigricans*, into the tubes of which the former inserts its beak.

A WORD ABOUT SPHÆRIA.

BY EDWARD W. ROPER.

Among thousands of Sphæria examined during the past year several unique forms have been found. For example, a robust, rounded shell less than one-fourth inch long, with prominent beaks, from near Tallahassee, Florida. This is quite distinct from any species yet seen from the Gulf states. Again a very dark brown shell from southern Ohio, of the group of *S. occidentale*, but thicker and with more prominent beaks. From an unknown locality came a single specimen resembling a small *S. transversum* but with a less angular outline. Lastly from Minnesota and other neighboring states, may be mentioned a thin, orbicular, gray or light olive shell with calyculate beaks, often regarded as *S. truncatum*, but probably different from the New England shell described by Linsley. These forms have mostly come from single localities in very small numbers, and in view of the great variation among species in this genus, it would be unsafe to consider them new on such slight evidence. The writer would like correspondence with collectors having unique and doubtful Sphæria in their possession.

THE MUSSELS SCARS OF UNIOS.

BY CHAS. T. SIMPSON.

In some comments on my recent paper on the classification and distribution of the *Naiades* in THE NAUTILUS for June, 1896, I notice the statement that in having a series of muscle scars in the middle of the disk *Margaritana margaritifera*, *monodonta*, etc. differ

from any Unios; and this seems to be the character on which the writer would separate *Margaritana* generically from *Unio*.

In the former species these little muscle scars or points of attachment of the mantle are sometimes a set of round, deep punctures in the nacre, but more often they consist of slightly indented dashes, which radiate from the umbonal cavity. They vary in number from a very few to 50 or more, *and are often entirely wanting*. In some examples these scars are more or less aggregated into a sort of longitudinal row along the middle of the disk, looking like a strongly developed pallial line.

In *Margaritana monodonta* they appear usually as deep punctures, and vary from many to none and the same thing is true of *Unio hembeli*. I have not found them in *U. decumbens* or *U. lasensis*.

In 1830 Isaac Lea described *Unio trapezoides* in the Transactions of the American Philosophical Society, Volume IV, page 69, and called attention to the fact that this species possessed a strongly developed muscle scar near the center of the disk, which he then named the ventral cicatrix. It is present (sometimes double) and well developed in most specimens, feeble in others, or it may be found in one valve and wanting in the other, or absent altogether. The same is true of most of the species of the plicate group of Unios, which are all nearly related; *N. multiplicatus, undulatus, perplicatus*, etc., but I have never found these scars in the nearly allied *U. sloatianus* Lea, of Georgia, which is so close to *U. trapezoides* that Call has placed it in the synonymy of that species.[1] In *U. trapezoides* there may be one or two anterior pedal scars and they are often widely separated.

A wonderful degree of variation is also found in the number and position of the dorsal scars of many species of Unios, and in the degree of development of the scars in the pallial line. In Mr. B. H. Wright's new *Unio,—U. bursa pastoris*, from Tennesseee, the pallial line is generally composed of deep, strongly marked scars, to which the mantle is attached; in *Unio ventricosus* it is often so faint as to be scarcely discernable. I know of no character more variable and wholly unreliable as a means of classification in the *Unionidæ* than that of the muscle scars and my studies lead me to believe that it is seldom a mark of even specific value.

[1] Tr. Acad. Sci. St. Louis, VII, No. 1, p. 54.

DESCRIPTION OF TWO NEW SPECIES OF ACHATINELLIDÆ FROM THE HAWAIIAN ISLANDS.

BY D. D. BALDWIN.

Partulina Hayseldeni n. sp.

Shell sinistral, minutely perforated, rather solid, ovately conical, apex subacute ; surface shining, marked with delicate incremental striæ, and under a lens exhibiting very close, minute, decussating spiral lines ; embryonic whorls faintly cross-lined. Color generally of a uniform reddish-brown ; sometimes the coloring of the middle portion of the whorl shades into white on the apical whorls, and in some examples a white line revolves below the suture. Whorls 5½, slightly convex, narrowly margined above, the last carinated or angulated at the periphery, the angle becoming almost obsolete towards the aperture ; suture distinctly impressed and often margined above by the continuation of the peripheral keel. Aperture oblique, subovate, white within with a pinkish tinge ; peristome white, rather obtuse, thickened within, the basal and columellar margins slightly reflexed ; columella terminating in a strong, flexuous, white fold.

Length 17½ ; diam. 10 mm.

Habitat, Island of Lanai.

Animal when extended in motion longer than the shell. Mantle slate color with a brown band encircling the outer edge. Foot above and below almost white with a yellowish tinge. Tentacles white tinged with slate.

This species is allied to *P. semicarinata* Newc. which is found in another district of the same island. The latter is a light straw-colored, more conical, and invariably dextral shell. The animals of the two species are somewhat similar, but sufficiently different to warrant the separation.

We take pleasure in dedicating this handsome shell to Mr. Walter H. Hayselden, the young naturalist who discovered both it and the following species.

Amastra aurostoma n. sp.

Shell dextral, imperforate, solid, elongately ovate, spire conical, apex subacute ; surface lusterless, striated with somewhat irregular, coarse growth striæ ; the embryonic whorls finely, radiately sulcated. Color light brown, apex dark chestnut ; the lower whorls covered with a black, fugacious epidermis which is generally dense on the last whorl and more sparsely distributed on the other whorls.

Whorls 6½, somewhat convex; suture well impressed. Aperture ovate, a little oblique, of an orange yellow color within; peristome simple, acute, not thickened within, extremities united by a thick, orange tinted, parietal callosity; columella orange-yellow, flexuous, abruptly terminating in a thin, slightly curved lamellar plait.

Length, 25; diam. 12 mm.

Habitat, Island of Lanai.

Animal when extended in motion as long as the shell. Mantle dark slate, margined on the outer edge with reddish-brown. Foot above and below very dark-brown, the sides studded with large patches of darker hue, the posterior portion tinged with red. The head above and tentacles covered with almost black granulations.

The prominent features of this shell are its elongate form and orange colored aperture.

ISAAC LEA DEPARTMENT

[Conducted in the interest of the Isaac Lea Conchological Chapter of the Agassiz Association by its General Secretary, Mrs. M. Barton Williamson.]

The first week in May, the vol. of Transactions crossed the Rocky Mountains on its way east. Our members in the Eastern States have been very patient in awaiting its arrival. The address of Mr. James H. Lemon has been changed from 134 Grange Ave., to 270 Markham St., Toronto, Canada.

In the January number of THE NAUTILUS the Editors noted the publication of the Reverend George W. Taylor's, "Preliminary Catalogue of the Marine Mollusks of the Pacific Coast of Canada, with notes on their Distribution." This Catalogue will not only be found helpful to members of our chapter residing on the Pacific Coast, but useful to all members interested in the Molluscan fauna of the coast. The bulletin shows great care in bringing the nomenclature up to date. The classification adopted by Dr. W. H. Dall in his "Marine Mollusks of the S. E. Coast of the United States," has been followed by Mr. Taylor. The Catalogue is for sale by John Durie & Son, Ottawa, and The Copp Clark Co., Toronto, Canada.

Another new name is added to our membership roll, Mr. Leon Walker, Chelsea, Mass. Members will please notice that additions

to our membership are now published in THE NAUTILUS. Our Chapter is so large that the small amount charged for dues, for one member, is consumed by the time the new one has been introduced by postal card to all the members of the chapter. THE NAUTILUS is our chapter organ and no member can afford to be without it.

The Juvenile Section is reported in *The Observer*, Portland, Conn., May number page 265, under the title "Notes from Young Conchologists."

AN INTERROGATION REGARDING THE FOSSIL SHELLS OF SAN PEDRO BAY.

[An Extract from the Report of the Hon. Delos Arnold. From the Transactions of the Isaac Lea Conchological Chapter for 1903].

It is probable there are many species of shells undiscovered in the hidden recesses of our extended shores, that will be revealed from time to time as our facilities for systematic collecting are increased. This feature of the question cannot but inspire the devotees of conchology—both old and young—with a keen interest. The possibility, not to say strong probability, of being instrumental in adding new forms to the accumulating list is an ever present incentive to earnest, careful and intelligent observation. To lend color to the idea of the existence of undiscovered species in this region, is the fact that among three hundred or more species and varieties of Quaternary and Tertiary marine fossils that have been discovered in the rocks and raised beaches in the vicinity of San Pedro Bay there are many that are supposed to be extinct in this locality, and yet, the same or nearly allied species are known to be living along the shores of Alaska and Washington, and some even as far south as the northern shores of California. Among there are; *Machæra patula* Dixon, *Priene Oregonensis* Redf., *Pecten hastatus* Sby., *Nassa Californica* Conr. and others.

There are several species, also, that are occasionally found alive at Santa Cataline Id. and possibly in the water in San Pedro Bay, whose scarcity excites the suspicion that they are "in the course of ultimate extinction," or at least, in the line of departure. Among these are:

Chrysodomus tabulatus Baird.

Fusus Barbarensis Trask.

Sureula Carpenteriana Gabb.
Sureula Tryoniana Gabb.
Venus (Chione) gnidia Brod. & Sby.
Pecten (Janira) floridus Hinds.
Lucina acutilineata Conr.
Nassa insculpta Cpr.
Hemicardium biangulata.

It would hardly be safe with our limited knowledge of the mollusca of this region, at this time, to assert with positiveness that any of the supposed extinct species, are really extinct species, and yet, the fact is apparent that even those species that are occasionally found living here bear a very small relation, so far as numbers are concerned, to those that existed in the past. The fact is further apparent that along the northern shores of the Continent these same species are found in great abundance; this might suggest a probable migration.

Still the uncertainty of the matter, and the possibility of disproving the theory of extinction by an actual discovery of the living individuals here add interest and a stimulus to collectors and scientists.

If, after an exhaustive search for these missing species, it shall appear that they have really disappeared, then the interesting question arises as to the reason of their departure.

What were the conditions surrounding this locality in the Quaternary and Pliocene periods that made it possible for these forms to exist then, that are now so changed as to render it impossible for them to exist at present, and why are they still living along more northern shores?

The study of these questions may lead us somewhat out of the line of conchology and into other branches of scientific investigation, but as knowledge is what we should all covet, it might not be time misspent to look into the subject.

NOTES AND NEWS.

American Paleontology.—For some time past we have been considering plans to increase the scope of our present publication, "Bulletins of American Paleontology," in several ways, the details

of which it is not necessary here to enumerate. In order, however, to ascertain what material suitable for a purely paleontological publication may be available, we have concluded to offer a prize $50.00 for the best American (North, Central or South) paleontological article presented for publication, as a separate Bulletin, before May 1, 1897. The article must be a well written original monograph or report upon some special problem studied in the field or laboratory or both, *i. e.*, not a mere compilation from books. This report may contain from 50 to 200 pages and from 5 to 10 full page plates of the size of our Bulletins. It may be written in any language using Roman characters. The judges named below shall have the power to divide the prize in two equal parts in case of doubt between the merits of two excellent articles, or to withhold the prize in case no suitable articles appear.

JUDGES: H. S. Williams, Yale University, New Haven, Conn.; T. W. Stanton, U. S. Geol. Surv., Washington, D. C.; G. D. Harris, Cornell University, Ithaca, N. Y.

Address all communications to G. D. Harris, Department of Paleontology, Cornell University, Ithaca, N. Y.

AGRIOLIMAX CAMPESTRIS IN THE PECOS VALLEY, N. M.—When recently at Roswell, N. M., I found a few specimens of *Ag. campestris*. This is only the second locality for the species known in New Mexico, and is the first record of any slug from the drainage-area of the Pecos River.—T. D. A. COCKERELL, *Mesilla, N. M.*

THE EDITOR acknowledges receipt of living West Coast Helices from Mrs. E. P. Gaylord and Mr. Fred L. Button. They are enjoying life in the vivarium of the Academy of Natural Sciences.

NOTICES OF PUBLICATIONS RECEIVED.

A STUDY OF THE UNIONIDÆ OF ARKANSAS, WITH INCIDENTAL REFERENCE TO THEIR DISTRIBUTION IN THE MISSISSIPPI VALLEY. By R. Ellsworth Call.—(Tr. Acad. Science of St. Louis, VII, 1895). Under the above title the author has published a catalogue of the *Unionidæ* of the state of Arkansas, with partial bibliographic references and copious notes. The species are arranged in alphabetical

order, for convenience of reference, no doubt, for Mr. Call has elsewhere acknowledged and used the natural system of placing allied forms in groups. A number of the species, especially those of Lamark, are illustrated by carefully drawn wood cuts, the original and additional descriptions are given.

Lamarck's types were only briefly described by him in the Animaux sans Vertèbres, and were not figured, and as he had but a limited amount of material on which to base these descriptions, and many of his localities were erroneous much of his work naturally rests under a cloud. Lea examined most of what were believed to be his types of Naiades, and it is on his testimony that our identifications of the species of the great French Naturalist, for the most part, rest. The determinations of the Lamarckian species given in this paper agree with those of Lea.

Mr. Call has long been known as an extensive collector and a careful student of the North American *Unionidæ*, and is deservingly considered a high authority on the subject. The only criticism on his paper that occurs to the writer of this review is that one or two errors are made in identification, and that he has placed rather too many species in the synonymy. *Unio brevidens* is not the male of what Lea afterwards described as *U. arcæformis*, for although closely allied it is perfectly distinct. The former in its younger stages is more compressed, and the remarkable swelling in the posterior region of the female is always full and distinct, projecting below the base of the shell. *N. arcæformis* is always greatly inflated, is more strongly angled posteriorly, and the swelling of the female shell is not so distinct, nor does it usually project below the ventral line. It is not colored like *U. brevidens*.

Unio rennstus Lea is a solid shell, with broad, distinct, green rays, and is probably only a heavy form of *U. spatulatus*, while *U. phasi* Marsh, is more delicate, and has indistinct, wavy hair-line radiations of dull green, and a general reddish tint thoughout the shell.

In general the synonymy is quite correct, and Mr. Call has made a good move in the direction of checking the enormous multiplication of specific names that are founded on mere variations or insufficient material. The paper is a valuable and welcome addition to the literature of the North American *Unionidæ*.—C. T. Simpson.

At a special meeting of the trustees of the Detroit Museum of Art, held June 25th, a bronze medal was presented to Mr. Frederick Stearns, in recognition of his valuable gifts and untiring efforts on behalf of the Museum during the past twelve years.

THE NAUTILUS.

VOL. X. AUGUST, 1896. No. 4

A NEW SPECIES OF POMATIOPSIS.

BY HENRY A. PILSBRY.

The genus *Pomatiopsis* is peculiar to North America. All of the species occur in the temperate portion of the continent, and the whole United States, excepting perhaps parts of the Rocky Mountain region, still but imperfectly explored for small shells, is occupied by the various forms. The best-known species *P. lapidaria* Say, is as much a terrestrial mollusk as most of the Succineas. They cannot live for any length of time immersed in water, and I have drowned specimens, just as land snails may be drowned, by confining them in a vessel full of water. Information upon the other species is less definite, but *P. cincinnatiensis* at least seems to be of aquatic habits.

The genus is much more distinct than most genera of *Amnicolidæ*, the dentition being, as William Stimpson first pointed out, strikingly characteristic of the group. The shells vary from the high, turrited *Bythinella* form, to nearly as short as some Amnicolas.

The species described below is the third from the Eastern States, and the fourth species of the genus, the others being *P. lapidaria* Say, *P. cincinnatiensis* Lea and *P. intermedia* Tryon.

Pomatiopsis Hinkleyi n. sp.

Shell perforate, turrited, decidedly stouter in figure than *P. lapidaria*, but less compact and widely conic than *P. cincinnatiensis*. Olive-brown. Surface with growth-lines about as in *P. lapidaria*. Whorls 6, very convex, separated by a deep suture. Aperture

slightly exceeding one-third the length of shell, ovate, the outer lip strongly arcuate above, columellar margin flattened above; peristome continuous, the adnate parietal portion longer than in *P. lapidaria*. Alt. 6, diam. 3½ mm.

Black Falls, above Florence, Alabama (A. A. Hinkley, 1894).

The species is somewhat intermediate between *P. lapidaria* and *P. cincinnatiensis*, but more like the former, from which, however, it is very easily distinguished on comparison. The form is stouter, the aperture larger, the outer lip more strongly curved above, and the color duskier. The apex is somewhat eroded in all of the well grown specimens. The dentition is similar in general characters to that of *P. lapidaria*.

I am indebted to Mr. Bryant Walker for the specimens, which were collected by Mr. Hinkley. Upon inquiry, my correspondent quotes as follows from Mr. Hinkley's letter: "Most of the distance from Florence to the last lock of the canal there is a steep rocky bank; a few rods from the water of the river over this bank and out of it are several small streams and springs of clear water. The species under consideration was seen at most of these small streams but was not numerous except at the two falls from which they were taken. Three forms of *Goniobasis* were taken from the same streams. Now, while the *Goniobasis* were in the water, the others were not. They were taken from moss and decaying vegetation but were kept damp by the spray of the falls or by the dripping water under the rock back of the falls and the saturated moss. As I made a hurried trip the day I collected these shells, they were not examined closely, but I took it for granted they were feeding in the decaying vegetation. None of them were found beyond the reach of the spray but still they might have been hidden under the rubbish."

From this the new species appears, as Mr. Walker remarks, to be clearly Pomatiopsine in habits. In choosing a specific term for the form, I have acted upon the suggestion of Mr. Walker that the name of one of our best collectors be associated with this interesting species.

THE WEIGHT AND SIZE OF SHELLS.

BY REV. HENRY W. WINKLEY.

With the assistance of Mr. D. E. Owen, teacher of Physics in Thornton Academy, the writer has weighed a few species of minute shells. The results are given as follows:

Twelve specimens of *Astyris lunata* from Wood Hole, Mass. weighed 0.095 gms. This would make one specimen weigh about 0.008 gm. Reducing this to avoirdupois weight we have one shell weighing 0.000282 oz.

The next example is *Crithiopsis Greenii*—being the first of the species found in Canadian waters, i. e. from Prince Edwards Island. Ten specimens weighed 0.023 gm. or in ounces one specimen would weigh 0.000081 oz.

Two sets of *Odostomia seminuda* were compared. The one being, like the above, the first found at Prince Edwards Island. The others came from near Woods Hole, Mass. It was found that the Canadians weighed each 0.000048 oz. while those from Mass. weighed each 0.000105 oz. The difference in size is noticeable without weighing. This proves that Mass. is a better place to live than Prince Edwards Island. The most interesting of all is New England's conchological elephant, *Skenea planorbis*. The set weighed was found near Saco, Me. The average weight of a specimen is 0.000018 oz. At this rate it would require 56,700 to make an ounce, 907,200 to the pound, and a ton would require 18,144,000,000. At the rate of five cents each, a pound would be worth 845,360.00. I am sorry to say I cannot supply them by the ton, or pound.

After weighing, the writer became interested in size comparisons, and two species from the same region, i. e. Saco, were compared. The largest shell in my New England cabinet is *Mactra solidissima*, and the smallest *Skenea planorbis*. The Mactra weighs 17½ oz. It would require 1,004,250 of Skenea to balance the one Mactra. The surface of the Mactra was reduced to a flat as near as possible, divided into small squares, and the Skenea was placed on the small square to estimate the comparative size. Dividing an inch into sixteen squares, Skenea would find room enough for 25 on each square, or 405 to the square inch. On the total surface of the Mactra (including both sides) there would be space enough for 30,000 individuals of Skenea to rest comfortably. The above species are all marines and hence the comparisons are more interesting since conditions of life are similar. Much larger forms occur in other waters but the specimens selected represent the extremes of the New England area. I need hardly say that in commercial life these extremes are avoided and the medium sizes are of more economic value and popularity.

SOME NOTES ON FLORIDA MOLLUSCA.

BY FRANK A. WHITE.

Just before the middle of March I went on a trip to the head-waters of the Halifax river, which is one of the coast-wise waters of Florida. On that trip I had the pleasure of picking up two shells of *Argonauta argo* var. *americana*. I found them on the Atlantic Beach about thirty miles north from Mosquito Inlet.

During the past winter and spring there have been over a hundred of these shells picked up in this vicinity. I never heard of but seven having been found on this beach previous to this season.

I also found *Cyrenoides floridana* Dall. These animals were alive and in apparent health, about one hundred feet from the creek and from ⅛ to ¼ inch below the surface of the soil. The land was low and at the time of finding was wet from a copious rain. I also came across a locality where *Physa pomilia* Conr. are found, in abundance in running water.

In January, 1895, I spent some time at Crescent Beach about twelve miles south of Cape Canaveral. One day I walked south about two or two and a half miles to "the rocks" and found a large live *Cypræa exanthema* although it differs very much in contour and spots from the "*C. exanthema*" in my collection. Thinking perhaps some of the measurements might interest the readers of the NAUTILUS I submit the following:

Length 113, width 60½ mm.; height when lying with aperture down, 46 mm.; aperture at the widest place 19 mm.; spire not covered, and shows five volutions, dental plications on lip 40; plications on columella 34; lip only slightly inflexed having the inner side of lip all visible.

When found the entire shell was a rich dark brown externally; purple inside where visible. The outside showed no trace of band, spot, or growth-lines but it has faded much although kept in the dark most of the time, and now shows growth-lines more than half way round, across the back it shows three light bands and near both lips light spots. In the summer of 1881 I found one somewhat smaller of the same rich brown color and in just about the same place. I have never known of any of this species being found alive any farther north than "the rocks."

A NEW SPECIES OF BULIMUS.

BY H. A. PILSBRY.

Anctus (?) **Stearnsianus** n. sp.

Shell narrowly umbilicate, subulate, tapering, rather solid but not thick; covered with an opaque dark olivaceous-brown cuticle, indistinctly and irregularly streaked obliquely, and wanting on the fleshy-whitish earlier whorls. Surface shining, with close, fine growth-wrinkles and very minute, close and superficial spiral striæ. Spire tapering regularly from the last whorl to the obtuse apex, which is smooth (but somewhat worn) in the specimens. Whorls 7, hardly convex, with linear sutures, the last not deflexed.

Aperture contained about 2½ times in alt. of shell, long-ovate, dull purplish within, somewhat oblique; peristome white, obtuse, a trifle expanded at the edge, the margins in a plane and brought forward to the level of the front of the body-whorl; columellar margin expanded; parietal callus rather heavy.

Alt. 19, diam. 7; alt. of aperture 8 mill.

Alt. 19½, diam. 7⅜; alt. of aperture 8½ mill.

Sierra de la Ventana, Argentina (U. S. F. C.).

A peculiar species, not agreeing well with others of this group, but so far as I can see not referable to any section of *Bulimulus*. In my opinion, *Anctus* is to be grouped with *Odontostomus*, *Tomigerus* and *Anostoma*, not with the true Bulimuli.

The first whorl in this species is truncated pyramidal, with the earlier third depressed, rapidly ascending; a comma-shaped apical pit passed into the suture. The whorl just back of the upper angle of the aperture, is somewhat flattened, recalling the condition so conspicuous in *Plekocheilus Taylorianus* Rve. It is named in honor of my friend R. E. C. Stearns, who some years ago transmitted to me for identification specimens collected by the "Albatross."

LAND MOLLUSCA FROM THE REJECTAMENTA OF THE RIO GRANDE, NEW MEXICO.

BY T. D. A. COCKERELL.

A few weeks ago I collected a quantity of small land shells in the rejectamenta of the Rio Grande at Mesilla, and sent them all to Dr. Sterki, who has kindly identified them as follows:

(1.) *Hyalinia minuscula* Binn., Nineteen examples.

(2.) *H. lævuscula* Sterki. Thirteen.

(3.) *Zonitoides arboreus* Say. One, immature, weathered.

(4.) *Helicodiscus lineatus* Say. Five.

(5.) *Vallonia perspectiva* Sterki. One; small, whorls scarcely over three.

(6.) *V. gracilicosta* Reinh. (probably). Three.

(7.) *V. cyclophorella* Ancey. One.

(8.) *Bulimimus* ("*Pupa*") *fallax* Say. Fifteen.

(9.) *Pupa blandi* Morse. Eleven. "Very variable in altitude; a few smaller specimens are scarcely or not distinguishable from *P. triplicata* Studer, from the eastern continent, except in color, which, in *P. blandi* and other species of the group, is very variable." (Sterki.)

(10.) *P. arizonensis* (Gabb) W. G. B. Three. With distinct ribs.

(11.) *P. hordeacea* Gabb. Eighty-four. "Rather variable in size; one specimen is of considerably smaller diameter than the average." (Sterki.)

(12.) *P. hordeacella* Pilsbry. Thirteen.

(13.) *Vertigo ovata* Say. Twelve. Two are lower than the rest, with the base somewhat truncate.

(14.) *Cionella lubrica* Müll. One.

(15.) *Carychium exiguum* Say. One.

Mesilla is much lower down the river than San Marcial, whence a rejectamenta-collection was formerly recorded. Yet the types found are largely boreal. I was particularly surprised to come across the *Cionella*, which must surely have floated a long way. There was no vestige of any *Holospira*. *Limnæa*, *Planorbis* (*parvus* Say, and two others) and *Physa* occurred with the above land-shells, but there were not any traces of *Spharium* or *Pisidium*, nor of any operculates.

Further Records of Land Shells from New Mexico.

I am now able to offer two more lists of New Mexico shells, all identified, as before, by Dr. V. Sterki, who has been most kind in attending to them.

(1.) Shells from the rejectamenta of the Rio Grande at Rincon, N. M. This is between Mesilla and San Marcial. They were with much juniper debris.

14 *Hyalinia minuscula* Binn. 3 *Vertigo ovata* Say. "One albino?"

10 *Hyalinia lævisecula* Sterki. 2 *Succinea avara* Say.
2 *Helicodiscus lineatus* Say.
1 *Vallonia costata* Müll.
17 *Bulimimus fallax* Say. Some apparently albino.
12 *Pupa hordeacea* Gabb.
1 *Pupa procera* Gld. "Light colored or possibly albino."
18 *Pupa hordeacella* Pilsb. "Very variable in altitude, as usual."
3 *Pupa blandi* Mse. "One quite small, and like *triplicata* Stud."

There were also 9 *Planorbis parvus* Say, and 2 *Planorbis* sp. Dr. Sterki had not before seen *Pupa procera* from so far west.

(2.) Shells from debris at Lone Mountain near Silver City, N. M., about 6000 ft. alt. They may have been washed two or three miles, but no great distance, certainly.

6 *Hyalinia minuscula* Binn.
22 *Hyalinia lævisecula* Sterki.
1 *Vallonia perspectiva* Sterki.
37 *Pupa hordeacea* Gabb.
1 *Pupa hordeacella* Pilsb.
6 *Pupa pentodon* Say.
1 *Vertigo ovata* Say.

The range of *V. perspectiva* is extended.

ISAAC LEA DEPARTMENT.

[Conducted in the interest of the Isaac Lea Conchological Chapter of the Agassiz Association by its General Secretary, Mrs. M. Burton Williamson.]

Members of our Chapter who have not received the Transactions will be glad to learn that before many weeks the volume will have gone the rounds of the chapter. With two or three exceptions, members have promptly forwarded the volume after retaining it but one week, and the General Secretary desires to thank members for their promptness in notifying her when forwarding the reports.

A CHAPTER ON METHODS.

[From the report of Mr. A. H. Gardner. From the Transactions of the Isaac Lea Chapter for 1895.]

Not the smallest object to the collector and conchologist is symmetry in the arrangement of the cabinet. Nothing can appear worse than an untidy heterogenous array of specimens, which too frequently reflects the spirit of its author.

Efforts in this line do not necessarily entail expense, but, they do call for more care and work than some people like to give. Perhaps the first thing the collector thinks about after he has his specimens and has determined them, is of some arrangement whereby he can secure the safety and identity of the separate species, and on this account he casts his eyes around for trays or the bottom parts of boxes. Now there is abundance of boxes to be found but a scarcity of those that will suit his purpose, and so he frequently takes the best he can find and proceeds to form his collection with the original lot as a basis of supplies.

This was at least, my experience. I tried druggists sundries houses and dealers in these supplies but I could never get the size, shape or color I desired, until I made up my mind to make them myself and in this way satisfy my requirements, to my own satisfaction. As several people have frequently commented on their neat appearance, and as the process is comparatively easy, I conceived the idea that it might be of use to others, in our chapter, I herewith give the modus operandi.

My trays are all one half inch in depth, in width multiple of one half inch, viz.; 1½, 3, 6 inches, which I have found the largest size required; in length, they run as follows 1, 1½, 2, 2½, 3, 4 and 6 inches. They are made from what are called 8-ply blanks,—a fine white smooth card board which I purchased cut to the various sizes from the Hasting Card Company, Beekman St., New York, at very nominal prices. The first operation is the gouging of the corners thus: (In this report, Mr. Gardner has three simple cards glued on his Ms., they are all 2½ by 2 inches, and, are numbered 1, 2 and 3. One half inch from the edge of the card numbered "1," there are four corners marked in ink, making four right angles, these indicate the four lines to be scored with the knife, M. B. W.). Then with a sharp knife I score the lines from edge to edge half through, (No. 2) then cut out the corners and turn up the sides, the long ones first, (No. 3). The short sides are scored a trifle irregularly that they may lie evenly in the finished box and maintain the required size. (On each of the short sides allowance is made in order that they may stand up *within* the longer sides and make a perfect tray the same size top and bottom. The difference is about equal to the thickness of the cardboard).

I then rule a sheet of white paper with lines ½ inch apart in width, and 1 inch in length, fasten it with four pins to a board, and cover

its ruled surface with gum arabic laid on smoothly with a brush. When dry it is cut into gummed tags ½ inch wide and 1 inch long with which the sides of the trays are fastened together on the outside. Of course this is a little tedious and I found it best to set myself the task of making one dozen a day, and very soon accumulated several gross of assorted sizes, and it is an easy thing now when I am short of any particular size, to replenish the stock.

The cards to make the size of boxes given in this report should be cut to the following sizes 2×2, 4×2½, 4×3, 4×3½, 4×4, 4×7, and 7×7. They will give an appearance of uniformity to the drawers and save a great deal of space. I usually place a card ½ inch in width to just fit the inside of each tray, ruled on the top and bottom red lines, this is for the name, authority, and locality of specimens, and other data. All shells whose size will admit of it I enclose in glass vials, square at the bottom and with no neck, they are about 2½ inches long so that the cork takes up the balance of the space in the tray, and of a width to enable them to hold such specimens as *Helix tridentata*. For the smallest boxes the vials are 1¾ inches long and about ¼ inch in thickness. Here, in New York, they can be bought for about 50 to 70 cents a gross.

For the reception of the smallest species, *Vertigo Pupa*, etc., and in order to bring the characteristics of these minute shells prominently before the observer, I adopted the following plan: Equidistant from the sides of a 3×1 inch slip of card board I punched a hole with a die, made for the purpose; and then gummed this slip to another of equal size on which the surface beneath the whole was covered with black paper. The specimens were then mounted with gum in this depression and the whole covered with one of the ordinary 3×1 inch glass slips used by microscopists, those with rough edges preferred. The whole thing was then bound around its edges with slips of gummed paper 8 inches long by about ½ wide and the edges trimmed with scissors when dry. This plan also protected the shells from dust and worked capitally when examining their apertures under a low microscopic power, a very necessary proceeding when determining or explaining to others the difference in the various species.

The gum I found best adapted for mounting the shells was picked gum arabic—a saturated solution in water mixed with an equal quantity of glycerine, then filtered and a few drops of acetic acid added, this never cracks, nor shows any objectionable gloss. Want of space has compelled my relinquishing this plan, for the smallest size trays and vials, which, however, I have never found as convenient.

NOTE ON BULIMUS HANLEYI AND B. CORONATUS.

BY H. A. PILSBRY.

The two Brazilian species mentioned above are thin, unicolored, glossy shells, with the spire long, suture crenulated, columella simple and foldless, and the outer lip thin and acute. *B. Hanleyi* Pfr. was (with *B. reclusianus* Pfr.) placed in a new subgenus, *Oxycheilus*,[1] by Albers in 1850; but von Martens in 1860 referred it to *Orphnus*. *B. coronatus* Pfr. was placed by Albers in *Leptomerus*, but von Martens transferred the species to *Peronaeus*, where it has been retained by subsequent authors.

The characters of the apical whorls show at once that the reference of the species to *Leptomerus* (a section of *Bulimulus*) is erroneous; while the structure of the columella and the texture of the shell equally remove the species from *Peronaeus*.

The texture of the shell is that of such South American Stenogyroid species as *B. calcareus* Born and *B. cinereus* Pfr., etc. which have been called *Obeliscus*, but for which the name NEOBELISCUS[2] is now proposed. These, however, have a bulbous, more or less costulate apex, without apical dimple.

For *B. Hanleyi* and *B. coronatus*, we suggest the name SYNAPTERPES, the former species being the type. The conchological features of the new group are: an oblong-turrited, thin, glossy, more or less vitreous shell with crenulated sutures, rather obtuse (but not bulbous) nuclear whorl with comma-shaped apical dimple, the aperture long-ovate with thin, sharp outer lip and simple columella, not truncate below, its edge narrowly reflexed above.

I do not know that any species except the two mentioned belong to this group. Its systematic position, if we judged by shell characters, would seem to be in the *Achatinidæ* near *Neobeliscus*; but if Binney's identification[3] is correct, the jaw and dentition are considerably like those of some forms of the genus *Strophocheilus*, and, therefore, as far as their testimony goes, indicate a position for the group in the *Helicidæ*.

[1] Not *Oxychilus* Fitz., 1833, nor *Oxycheila* Dej., 1825.

[2] *Obeliscus* was restricted by Gray in 1847 (P. Z. S., p. 176) to *B. obtusatus* Gmel., a Madagascar species for which the name *Clavator* was proposed in 1860. Humphreys had previously used *Obeliscus* in another sense.

[3] See under *Orphnus Hanleyi* Pfr., in Annals of the N. Y. Acad. Sci., III, p. 115, pl. xi, fig. 10 (jaw and dentition).

NOTES AND NEWS.

MESSRS. S. H. STUPAKOFF AND GEO. H. CLAPP gave a lecture on shells at the regular monthly meeting of the Academy of Science and Art of Pittsburgh, held in the lecture room of the Carnegie Library, Pittsburgh, on Friday Evening, June 5th. It was illustrated by specimens from the collections in the Museum, and wall charts. After the lecture an adjournment was taken to the Museum. The lecture is the first of a series arranged with the idea of popularizing the Museum, which occupies spacious rooms in the Carnegie Library.

NOTE ON LIA, ALBERS.—The names *Lia* and *Leia* being preoccupied, Schaufuss proposed the term INLIACULUS for this Jamaican group of *Cylindrellidæ*, in the first edition of Paetel's Catalogue (Molluscorum Systema et Catalogus. System und Aufzählung sämmtlicher Conchylien der Sammlung von Fr. Paetel, 1869, p. 15). This will take precedence over *Vendryesia* Simpson (Proc. U. S. Nat. Mus., xvii, 1894, p. 430). FAUXULUS Schauf. is proposed for *Faula* H. Ad., a South African group of *Pupidæ*, and new names are also brought forward for *Parthenia*, *Cantharidus*, *Orphnus*, *Acicula*, *Rupicola* and some other groups. Most of these changes are unnecessary, but they seem to have escaped general notice.

NOTE ON MACTRA.—In the Saco market, a few days ago, a specimen of *Mactra solidissima* was opened, and found to have another of the same species in the gill cavity; the sizes in inches were:

1. $3\frac{1}{4} \times 2\frac{3}{4} \times 1\frac{7}{8}$.
2. $1\frac{5}{8} \times 1\frac{1}{4} \times \frac{3}{4}$.

The size of the smaller leads me to suspect that it had been some time in the larger, not as a parasite, but as partner.—HENRY W. WINKLEY, *Saco, Me.*

MR. CHARLES W. JOHNSON, junior editor of the NAUTILUS, sailed on the 13th of July for Liverpool. He will spend the summer in studying the Museums of England, France and Germany, returning in September.

MR. FREDERICK STEARNS, of Detroit, Mich., has departed upon an extended tour in South America.

NOTICES OF PUBLICATIONS RECEIVED.

DIAGNOSES OF NEW SPECIES OF MOLLUSKS FROM THE WEST COAST OF AMERICA, by W. H. Dall (From Proceedings of the U. S. National Museum xviii, 1895, pp. 7–20).

Calliostoma iridium, West Mexico.
Calliostoma turbinum, Santa Barbara Is., 100 fms.
Anaplocamus (new genus) borealis, S. of Unimak Isld., 61 fms.
"This very remarkable shell recalls a fresh-water genus at once and would easily be overlooked amid a quantity of *Aneulosa dilatata*. * * * It is probably referable to the family *Trichotropidæ*."
Solariella nuda, off Lower California, 298–455 fms.
Solariella ceratophora, off La Paz.
Rimula (?) expansa, Gulf of Panama.
Emarginula flabellum, Lower California.
Cloristes carpenteri, Gulf of Panama.
Benthodolium pacificum, Gulf of Panama.
Phos cocosensis, Gulf of Panama.
Cominella brunneocincta, Gulf of Panama.
Fusus (?) rufocaudatus, Gulf of Panama.
Tractolira sparta, Gulf of Panama to Acapulco.
This new genus seems to be a degenerate form of *Volutidæ*.
Scaphella benthalis, Gulf of Panama.
Cancellaria centrota, Gulf of Panama.
Cancellaria io, Gulf of Panama.
Pleurotoma aulaca, off Acapulco.
Pleurotomella castanea, E. from Galapagos Is.
Fucula iphigenia, Gulf of Panama.
Limopsis compressus, Gulf of Panama.
Philobrya atlantica, Off Argentina.
Callocardia stearnsii, Off Washington, near Tillamook.
Callocardia lepta and gigas, Gulf of California.
Callocardia ovalis, Gulf of Panama.
Callogonia angulata, Gulf of Panama.
Periploma stearnsii, Gulf of California.
Periploma carpenteri, Gulf of California.

All the species are from considerable depths; and many of them being of considerable interest, figures will be very acceptable. The *Philobrya* is the first marine form in which a glochidium stage, comparable to that of the *Unionidæ*, has been recognized. We have in a former issue referred to the important light on the morphology of the gill supplied by the *Callocardia stearnsii*.

THE NAUTILUS.

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NOTES ON SOME WEST AMERICAN CHITONS.

BY H. A. PILSBRY.

I.

Among some interesting small Chitons from San Pedro, California, collected by Mr. T. S. Oldroyd, which I have lately examined (through the kindness of Dr. Dall), the following call for especial notice, as they offer differences from the types figured in the Manual of Conchology.

Mopalia imporcata Cpr.

The single specimen measures 9 by 18½ mm., and is somewhat more elevated than the type of the species; color pale olivaceous, white towards the girdle, speckled on the ribs of lateral areas with brown, and with a brown patch on each pleural tract. The teeth are very distinctly thickened along the outer edges of the slits, as in the typical Callistochitons. Sculpture typical.

The color is different from that of the type, and the specimen is larger.

Ischnochiton scabricostatus Cpr.

Lateral areas with four (on one side of valve ii, five; on one side of valves iv and v, three) radial riblets, which are *very weakly*, hardly perceptibly, granose. Sutures very feebly crenate. Anterior and posterior valves with 9 slits each. Color reddish (but not at all of an orange cast), with a few inconspicuous white spots on some of the lateral areas.

The typical specimen of *I. scabricostatus* was orange with some dark sutural dots, and the lateral areas are three ribbed, some low pustules on the ribs. It was described from Catalina Island.

Both this species and the last are excessively rare in collections.

II.

A series of Chitons received from Miss Ida M. Shepard, of Long Beach, Cal., contained specimens of a *Callistochiton*, which, while allied to *C. decoratus* Cpr. of Lower California, yet differs in important respects.

Callistochiton decoratus var. **punctocostatus** n. v.

Similar to *C. decoratus* in sculpture of end valves and lateral areas; but the central areas have no wide, smooth triangle at the ridge, such as types of *decoratus* have (Man. of Conch., xiv, pl. 58, fig. 18); being somewhat irregularly pitted toward the beaks, and with rows of pits on each side of a small oblong smooth tract at the ridge; most valves pitted also on the ridge anteriorly.

III.

Finally, with numerous other interesting species collected by Dr. Benj. Sharp in Alaskan waters during the summer of 1895, there were two specimens of a new and unusually distinct form, which we dedicate to that accomplished zoologist.

Trachydermon Sharpii n. sp.

Shell oblong, elevated, carinated, the side slopes somewhat convex. Surface to the naked eye smooth; lustreless; slightly soiled white, with some faint and ill-defined brownish spots on the lateral areas, the girdle gray.

Anterior valve smooth, with some indistinct concentric grooves; the anterior slope shorter than the posterior edges; hind margin emarginate. Intermediate valves wide and short, with slightly arcuate margins at junction with girdle, hind margins emarginate. Central areas very minutely roughened by diverging wrinkles; lateral areas slightly raised, with a few arcuate faint grooves in the direction of growth-lines. Posterior valve highest at its anterior margin, the subcentral mucro but slightly projecting, the slope behind it about straight.

Interior white; valve callus strong; sinus concave and shallow, not defined at the edges; sutural laminæ but little projecting, broadly rounded, invading the sinus. Insertion plates hardly longer than

the narrowly channelled and solid eaves, sharp and smooth. Slits in valve i, 16; valves ii to vii, 1–1 or 2–1 or 2–2, the larger number prevailing on the more anterior valves; in valve viii, 13. Posterior tooth in the median valves square and well developed.

Girdle rather unevenly covered, with convex, pebbly, coarse scales, those toward the outer margin elongated, and there is a copious marginal fringe of stout hyaline spinules.

Gill-row three-fourths the length of foot, with 21 plumes on each side.

Length about 14, breadth 8 mm.

Unalashka (Dr. Benj. Sharp!).

The number of slits is unusually great, and they are doubled in some valves; the girdle scales are coarse, the marginal fringe conspicuous. These characters, together with the general smoothness of the valves externally, and the undefined, concave sinus, will readily distinguish the species. In view of its numerous slits, solid leaves and coarse girdle-scales, it is aberrant for a *Trachydermon;* but the girdle is not that of *Trachyradsia* nor *Ischnochiton*, and *the gill-row is short*, extending forward only three-fourths the length of the foot, as in the true Trachydermons. It has not the spongy eaves and sinus of *Spongioradsia.*

The slitting of the intermediate valves is variable, but mainly Radsioid In valve ii there are 2–2 slits; valves iii, iv, v, 2–1; valves vi, vii, 1–1 slits, in the type specimen.

ON THE AMERICAN SPECIES OF CYRENOIDEA.

BY W. H. DALL.

The genus *Cyrenoidea* was published in June, 1835, by de Joannis, in the Magazin de Zoologie; by a typographical error, apparently, the Latin form, which was used only once in the article, was printed *Cyrenoida.* A little later in the same year, Deshayes reclaimed the genus for his manuscript name of *Cyrenella*, which had been read to the Société Philomathique in December, 1834. The first published name, corrected as above, has been adopted, in spite of the objection to its formation as a Latin name with a Greek suffix.

The original type, *C. Dupontî* Joannis, is from the Senegal River, West Africa, and it seems that his specimen was defective, since in

Senegambian specimens I find the hinge quite different from Joannis' figure, and essentially similar to that of American species.

The first of the latter was described by Morelet in 1851, from Porto Rico, under the name of *C. americana*. It differs from the African species by its smaller and more delicate shell, its more quadrate form and proportionately shorter ligament. Some species reported from the Philippines by Sowerby I have shown to have a different hinge and separated under the name of *Joannisiella*.

The first continental American species was obtained by Hemphill in the marshes of southwest Florida (Marco, Boca Ceiga Key, and the Everglades) where it affects brackish, or even tolerably salt water, indifferently. This I named in manuscript *C. floridana* (cf. Bull. 37, U. S. Nat. Mus., 1889, No. 217, p. 50). Lastly a fine Pliocene species was obtained by Mr. Willcox and myself from the marls of the Caloosahatchie River in south Florida.

Diagnoses of the two latter follow.

Cyrenoidea floridana (Dall, MS., 1889) n. s.

Shell rounded, small, thin, very delicate, whitish or translucent with a pale, silky, yellowish, dehiscent epidermis; surface smooth, or sculptured only by incremental lines; interior margin smooth, polished; the visceral area with a dull, more or less punctate surface; pallial line indistinct, often broken, not sinuous; ligament short, brownish, external; hinge as in *C. duponti* but more delicate. Largest specimen, lon. 13·5, alt. 12·5, diameter 8·0.

The range of the species, as far as known, is from Brunswick Georgia, south to the Everglades on the east, and, on the west, north to Charlotte Harbor and vicinity.

The animal is distinctly Lucinoid, the foot is long, slender, filiform and with an ovate, swollen distal termination.

Cyrenoidea caloosaënsis n. s.

Shell large, thin, resembling *C. floridana*, but coarser, with ruder concentric sculpture, sometimes approaching undulations; more inequilateral, the anterior part relatively smaller and shorter, the anterior left bifid cardinal tooth proportionately much shorter than in either of the other species of the genus. Lon. of shell 30·9, alt. 27·0, diameter 17·5 mm.

The shell is known, so far, only from the Pliocene marls of south Florida.

All the species are very similar to one another, and differ only in minor details of form and hinge. They would, as a rule, be taken for Diplodontas except for the differences of the hinge.

EDITORIAL CORRESPONDENCE.

LONDON, August 11, 1896.

The providential occurrence of a rainy day gives me the opportunity to make good my promise to write something about the museums and collections of England before my departure next Saturday for Paris.

The main collection of shells in the British Museum (Natural History) occupy a room (or gallery, as it is called) about 140 feet in length and 40 feet wide. The shells are arrayed in 52 beautiful mahogany cases, about 8 feet long and 4½ feet in breadth. They extend longitudinally in pairs, making four rows. The cases are of the horizontal type, with inclosed drawers below. The specimens are mounted on wooden tablets, which are covered with blue-gray paper, the smaller and fragile species being in glass-covered boxes which are also placed on tablets. On each side of the room are four smaller cases, which contain special collections, viz., some of the economic uses of shells, the pearl-bearing mollusks, eggs and egg-capsules of various species, Brachiopoda, some groups of the Cephalopoda, etc. At the entrance of the gallery there are two table cases, the one on the left containing pathologic monstrosities produced by disease and the reparation of injuries, the other sections of shells showing the internal structure and mode of growth, also specimens of rock and coral illustrating the boring power of mollusks and several kinds of wood perforated by various species of boring mollusks. Near the latter, against the wall, are four upright cases, two on each side; these contain the specimens too large for the cases containing the general collection. In one of these, protected by a glass cover, you see the great *Pleurotomaria adansoniana*, from Tobago. This shell a friend of mine saw in an office in Tobago, being used as a paper-weight! but, when we wrote for it, "the bird had flown." They are evidently not made for paper-weights. Two large valves of *Tridacna gigas*, 36 inches in length and weighing 310 pounds, also greet you on entering this magnificent room, and, if it was near dinner-time, they would probably increase your appetite (since they have become the trade-mark of one of our leading restaurants); but you would soon forget the "inner man" when you got among some of the conchological gems. I have spent many hours going over the great collection, and hunting up some of those old rarities we have read about since boyhood: *Cypraea princeps*

(=*C. valentia* Perry), *C. leucodon* Brod., *C. broderipi* Gray, *C. marginata*, *Conus gloria-maris* and many of the beautiful Volutes; and looking at those strange forms obtained by the "Challenger" expedition: *Guivillea alabastrina* (Southern Ocean, 1600 fathoms), *Provocator pulcher* (105 fathoms off Kerguelen), *Volutolithes abyssicola* (150 fathoms off S. Africa, a genus so common in the Eocene), *Columbarium pagodoides* (410 fathoms off Sydney, Australia), *Lyria lutea* (275 fathoms off western New Zealand), *Oocorys sulcata*, and others. A shell that interested me very much was *Fulgur coarctatum* Sowb., two specimens from the Gulf of Mexico. It is undoubtedly a dextral *Fulgur perversum*. It reminds one of *F. rapum* from the pliocene of Florida, except that it has a prominent row of small, spine-like tubercles at the periphery. Like the few specimens of *T. carica* that are sinistral, we may only see such forms once in a lifetime. To describe the beauty and extent of the collection of land shells space would not permit, even if I could. The groups from the Philippines seem to be perfect, while the collection of *Amphidromus* recently monographed by Mr. Hugh Fulton, and which now contains his types, is a grand sight; one can hardly imagine the exquisite coloring of some of the species. Equally fine are the groups representing the African, South American and West Indian faunas. The *Nudibranchiata* are shown by an elegant series of glass models, while throughout the entire collection are wax, glass or alcoholic representatives of the soft parts of many of the principal genera.

But this is not the only collection of shells. "The alcoves round the central hall, five on each side, are devoted to the Introductory or Elementary Morphological Collection, designed to teach the most important points in the structure of the principal types of animal and plant life, and the terms used in describing them, all of which should be known before the systematic portion of the collection can be studied to advantage. This has been called the 'Index Museum.'" The Mollusca are in alcove No. VII; here is arranged an elegant series of anatomical preparations, a large series illustrating the forms of shells, and other series showing ornamentation, specific variation, muscular impressions, the hinge-teeth, opercula, etc.

The north end of the central hall is known as the Gallery of British Zoology. Here is a large collection of the Mollusca of the British Isles, occupying five of the horizontal and one upright case, the latter containing the large specimens.

I cannot close this brief description of the collection of Mollusca in this great Museum without giving you some idea of the vast col-

lection of fossil mollusks. The *Cephalopoda* occupy a room one-half the size of the shell gallery and containing 16 horizontal cases arranged transversely, while around the entire room are large wall cases. The *Gastropoda* and *Pelecypoda* occupy one-half of a room the same size as the shell gallery, including large wall cases along the side (the other half of the gallery being given to the fossil *Arthropoda, Echinodermata*, etc.). Then there is another gallery the size of this devoted to the *Cephalopoda*, that contains special collections of historical interest, or collections including a large number of types described and figured in standard monographs. The principal ones are the collection formed by William Smith, the pioneer of geology in England, the Searles Wood collection of Crag Mollusca, the Edwards collection of Eocene Mollusca, the Davidson collection of Brachiopoda, the types of Sowerby's "Mineral Conchology," and specimens belonging to the collection of Sir Hans Sloane, which was the nucleus of this great Museum.

There is also a very large collection of fossil Mollusca at the Museum of Practical Geology, which contains the material obtained by the Geological Survey of the United Kingdom, and here I wish to express my sincere thanks to Messrs E. A. Smith, B. B. Woodward and the officials of the British Museum generally, as well as to Messrs G. F. Harris, E. R. Sykes and others, who did so much to make my visit to London both pleasant and instructive.

I spent a few very pleasant hours in Cambridge with Rev. Prof. H. M. Gwatkin, who took great pleasure in showing some of his rare forms of radulæ. I cannot describe this collection, and one can only wonder at the time and careful work involved in making so many beautiful slides. It is undoubtedly the largest and finest collection of radulæ in the world. While at Cambridge, I also had the good fortune to meet Mr. A. H. Cook, of Kings College, who kindly showed me the "MacAndrews Collection." This is a collection that one could spend hours over, instead of the few minutes hastily spent in glancing at some of the important groups. The large suites showing the shell in all stages of development is a very noticeable feature, and shows what a good selection was made of the large amount of material evidently obtained by MacAndrew in his extensive dredgings. Another collection which the museum at Cambridge has recently obtained is the "Saul Collection," made by Miss Saul, of London. The collection is noted for its beautiful Cypræas. Here we see all of those mentioned as being in the British Museum,

except *Cypræa leucodon;* while it contains such rarities as *Cypræa barclayi, C. saulæ,* two specimens of *C. guttata,* large suites of *C. scottii, C. thersites, C. umbilicata* and very large and handsome series of the more common species. Both collections are still in cabinets of drawers and not publicly exhibited.

The collection of shells on exhibition in the Liverpool, or Derby Museum, as it is called, although not large, is exceptionally fine, and represents a great deal of care in its selection. A few species or genera of fossil forms closely allied to living mollusks are incorporated with the latter. Very interesting features of the museum are its aquaria, where both fresh water and marine mollusks may be seen alive. Through the kindness of Mr. Joseph A. Clubb, Assistant Curator, I spent several very pleasant hours in going over these collections.

CHAS. W. JOHNSON.

ISAAC LEA DEPARTMENT.

[Conducted in the interest of the Isaac Lea Conchological Chapter of the Agassiz Association by its General Secretary, Mrs. M. Burton Williamson.]

The summer vacation is finding a number of our members engaged in collecting and taking notes. We anticipate some fine reports next December.

The residence of Mrs. Laura N. Trowbridge has been changed from Whittier, California, to National City, San Diego County, Cal.

MARINE SHELLS ON THE SOUTHERN CALIFORNIA COAST.

[Extract from the report of Mrs. E. D. G. Campbell. From the Transactions of the Isaac Lea Conchological Chapter for 1895.]

My collecting has been done in San Pedro Bay and vicinity. Mr. Campbell hunting where I had not strength to go.

During January and February at Dead Man's Island have found a few fine specimens of *Astralium* (*Pomaulax*) *undosus* Wood and *Pleuronotus festivus* Hds.

Upon the breakwater connecting Dead Man's Island with Terminal Island, *Acmæa scabra* Nutt., *A. spectrum* Nutt., *Littorina planaxis* Nutt. and *L. scutulata* Gld. were very plentiful. At extreme low tide in the drift, on the sandy beach along the northern part of the

breakwater, I found numerous bright, perfect (dead) specimens of *Calliostoma gemmulatum* Cpr., *Modiola recta* Conr., *Scala hindsii* Cpr., *Siliqua patula* Dixon (small specimens), *Solen rosaceus* Cpr. and *Fissurella volcano* Rve., while the occasional finding of a pretty *Calliostoma gloriosum* Dall, *Erato vitellina* Hds., *Mitromorpha filosa* Cpr. or *Actæon (Rictaxis) punctocælatus* has marked the day.

During the low tides of the last month (November), alive upon the rocks at White's Point we found a few fine specimens of *Mitra maura* Swains., and *Gadinia reticulata* Sby. The under side of some of the large stones there were covered with *Astyris gausapata* Gld. var. *carinata*, which little animals would move off at such rapid pace that it required lively movements to capture them. With the *Astyris* were a few *Scala Hindsii*.

In the vicinity of Laguna near Three Arches, among *Mytilus californicus* Conr., *Purpura lima* Mart. var. *emarginata* Desh. were very plentiful, some of them larger than I had seen before. There was also one nice living *Cypræa spadicea* Gray. Upon the beach sand were several bright, large specimens of *Trivia solandri* Gray. These were dead, as were all but one of *Muricidea incisa* Brod., which were quite plentiful. *Macron lividus* A. Ad. was there, too, living upon the under side of large stones.

At Catalina on the Main, upon the beach, were several specimens of *Chrysodomus (Kellettia) Kelletti* Fbs., which had been brought in by fishermen. But the "find" which I appreciated most was that of a "baker's dozen" of living *Semele rupium* Sby., upon the rocks above extreme low tide, at a place about one mile and a half west of Laguna.

NOTES ON THE PARVUS GROUP OF UNIONIDÆ AND ITS ALLIES.

BY CHAS. T. SIMPSON.

Mr. R. Ellsworth Call, so well known as an able student of the American *Unionidæ*, has recently published a revision and synonomy of the *Parvus* group of *Unionidæ*,[1] and I wish to call attention to certain points in the paper.

The *Parvus* group is, in general, well characterized, consisting of small Unios, with brownish to blackish epidermis, rayless or feebly-

[1] Proc. Indiana Acad. Science for 1895, pp. 109–119, plates I–VI.

rayed posteriorly, usually somewhat pointed behind, the females distinguished from the males by a well-developed basal swelling, and the beak sculpture consisting of parallel, curved ridges, which are drawn in towards the hinge-line posteriorly, and are more open anteriorly. The cardinals are usually compressed, often torn and reflected upwards, and the nacre is generally brilliant bluish-silvery, becoming richly iridescent behind, but it is sometimes purple. The peculiar beak sculpture, much like that of the *Tetralasmus* group, is one of the best characters when not eroded away.

Mr. Call is right in his criticism on my paper on the *Unionidæ* of Florida, in which I placed *Unio trossulus* Lea and *U. lepidus* Gould in the *Parvus* group. At the time of writing that paper I had carefully examined all of Lea's material, all the general collection of the National Museum, much of B. H. Wright's, Mrs. George Andrews', Wm. A. Marsh's, Rev. A. Dean's and my own collection of Florida and Georgia Unios of this general type, but had not found a specimen old or young that showed the beak sculpture. Recently, in examining some specimens of *U. amygdalum* in Mr. A. G. Wetherby's collection, from Clear Lake, Florida, I noticed that the beak sculpture was perfect, and consisted of a *double loop*, hence they cannot be placed in the *Parvus* group. I may remark, in passing, that having seen Gould's type of *U. lepidus*, I should unhesitatingly pronounce it the same as Lea's *amygdalum*.

Unfortunately, Mr. Barnes' description of *Unio parvus*[2] is very brief and imperfect, and the only figure he gave of it is an outline. Much confusion exists concerning this species, and it is often confounded with *Unio texasensis*; in fact, Mr. Lea himself has placed a lot of specimens of the latter species from northern localities among the *parvus* in his own collection. *Unio texasensis* certainly extends into southern Indiana and Illinois, and well north into Missouri and Kansas. In general, *U. parvus* is smaller than *U. texasensis*, is more inflated and cylindrical, rather more elongated, and has a much more evenly rounded posterior region. The latter is almost always distinctly pointed behind.

I cannot agree with all of Mr. Call's synonomy. I have all of Lea's types of this and related groups before me. *U. marginus* Lea, and *U. cromwelli* Lea, are probably the same, and are, no doubt, members of the *Parvus* group, but are widely different from *U. parvus*, in which he places the former, as they are shorter, less inflated,

[2] Am. Jl. Science and Arts, VI, 1823, p. 174, pl. XIII, fig. 18.

and have a copper-tinted nacre. *U. paulus* Lea and *N. corrinus* Lea are very likely the same species, but I should not place them in the synonomy of *U. parvus* as Mr. Call does.

U. vesicularis Lea, of which I have before me the two original specimens on which the species was founded, is certainly not *U. parvus*. Both these specimens are dead shells, very badly eroded and in poor condition, but they are nearer to *U. amygdalum* than any of the *Parvus* group, and probably are merely a somewhat heavy, light-brown variety of that species. *Unio singleyanus* is a smooth, shining, yellowish or waxy-brown shell, sometimes tinted and rayed with green, and very different from *U. parvus*. And *U. minor* seems to me to be more nearly related to *U. vesicularis* than to *U. parvus*, under which Mr. Call places it.

Unio haleianus Lea is not noticed in this revision of the *Parvus* group, although it should undoubtedly be placed with that assemblage. It is the largest of the species, one of Lea's specimens before me being 2¾ inches long by 1½ high, and is nearest to *U. texasensis*, but is a less heavy species.

NOTES AND NEWS.

MEXICAN LAND SHELLS.—Professor T. D. A. Cockerell has sent to me a few land shells collected at San Rafael, Jicaltepec, Vera Cruz, by Professor C. H. T. Townsend. The species are:

Helicina flavida Mke. Wonderfully variable in color. Some are uniform yellow with red apex; others uniform reddish; others whitish with the spire red, or whitish below, red above, while some specimens are girt with a reddish band above the periphery, on a whitish ground. The size also varies considerably.

Glandina? A species of the *decussatus* group, not adult.

Volutaxis similaris Strebel. Somewhat larger than the type, alt. 7 mm.

Praticolella griseola Pfr.

Praticolella ampla Pfr. This Helix looks a good deal like *similaris* Fér.

Bulimulus sulphureus Pfr. Besides the ordinary unicolored form, there is one example with five reddish bands, the umbilical and basal continuous, those above interrupted into squarish spots at irregular intervals. This color-form has not before been noticed.—*H. A. P.*

MARYLAND SHELLS.—In the NAUTILUS, Vol. X, p. 23, you mention some shells not before recorded from Maryland, *inter alia*, *H. intertexta* Binn. I find, however, this is recorded from that State by Binney in his Terr. Moll. U. S., II, p. 207.—*G. K. Gude.*

MESSRS SIMPSON AND WALKER have been making a vacation journey in North Carolina and Georgia. They report the rivers too high for successful clamming.

MR. E. G. VANATTA is spending the summer at Chestertown, Md.

NEW PUBLICATIONS RECEIVED.

MR. G. K. GUDE describes a new *Corasia* from Luzon, *C. laura*, in *Science Gossip* for August. It is a pale-blue shell, another of the beautiful *H. regina* group. The following Philippine and Marianne Island Helices are figured: *Ganesella catocyrta*, *G. apex* with var. *apiculata*, *Endodonta quadrasi*, *Charopa fusca* and *Trochomorpha boettgeri* Mlldff. & Quadras; also *Pyramidula omalisma* "Bgt." Fagot, from near Barcelona, Spain. These species have not hitherto been figured.

I. A REVISION AND SYNONYMY OF THE PARVUS GROUP OF UNIONIDÆ. II. SECOND CONTRIBUTION TO A KNOWLEDGE OF INDIANA MOLLUSCA. III. INDIANA UNIV. BIOL. STA. REPORT ON MOLLUSCA (From Proc. Indiana Acad. Science for 1895). By R. Ellsworth Call. In the *Unio parvus* group, Professor Call recognizes four species: *U. parvus*, *U. texasensis*, *U. glans*, *U. amygdalum*. Alleged synonyms of *U. parvus* are: *U. paulus*, *minor*, *marginis*, *corvinus*, *vesicularis* of Lea and *U. singleyanus* Marsh. From this extraordinary synonymy it will be seen that our author belongs to the extreme "lumper" class. Some other points in the paper are equally ill-taken, but it is not worth while to criticise in detail where nearly everything is wrong. Six plates of characteristic, though rather crude figures, illustrate the forms.

The second and third papers continue Prof. Call's very praiseworthy efforts to record the distribution and variations of Indiana Mollusks, and do not admit of abstract here; but those interested in the detailed mapping of the areas of our species will be grateful for Call's good work in this field, as well as for the similar service he did in cataloguing Kansas shells.

THE NAUTILUS.

VOL. X. OCTOBER, 1896. No. 6

SOME NOTES ON THE COLLECTION OF SHELLS IN THE MUSEUMS OF PARIS, BERLIN AND AMSTERDAM.

BY C. W. JOHNSON.

The collection of shells in the Museum of Zoology, Jardin des Plantes, Paris, is one often referred to as being the only collection in which you can see the recent and fossil species side by side. One, therefore, naturally imagines what such a collection *should be*, and, as usual under such circumstances, one is somewhat disappointed. The collection is distributed as follows: Around the entire outer portion or railing of the first gallery, in a case about two feet in width, are arranged the Pelecypoda, while on the second gallery around the entire wall, in a wide, slanting case or shelf (with corals above and a series of eight drawers beneath) are arranged the Gastropoda. This necessarily scatters the collection to a great extent, and makes it very inconvenient. A collection of the recent and fossil species arranged together is very interesting and instructive, but it should be a special collection of such forms as can be readily traced back through geological time, and which anyone would consider to be the prototypes of the recent species; in other words, the primary object of such a collection should be to show the evolution of species and genera. The study of recent and fossil mollusca is now divided into well-defined specialties; no one person can cover with success more than a few closely related groups, faunæ or formations; so it seems to us that a large collection should be arranged accordingly. The paleontologist must be a geologist, also;

he cannot ignore stratigraphy; therefore, the collection most convenient to him is one arranged geologically; again, he is making a special study of the tertiary mollusca, and has, for instance, a collection of Paris Basin fossils, he would not want to travel two or three hundred linear feet, on two or three different galleries to determine his material. Neither would the collector of recent shells want to delve among the overwhelming mass of fossils to name his collection. I think that we can therefore lay aside this plan (which is advocated by many) as being entirely inconsistent with our present system of investigation. The specimens in the Museum are mounted on tablets, the recent on white and the fossil on yellow, the label being pasted on the lower edge of the tablet.

The collection of mollusca in the Museum of Natural History of Berlin, presents many features of interest. It occupies one-half of a large room, that is divided into small alcoves by tall, upright cases. All of the alcoves open into a passage-way along the side of the room, leaving three sides for the display of specimens. Each alcove is about 20 x 30 feet, and in the center of each is a long horizontal case, with drawers beneath, containing an exhibit of the land and fresh water shells of Germany, and the mollusca of the North and Mediterranean Seas. The latter are arranged longitudinally in a series, the one above the other. The conditions of the two seas being so different, the two collections form a very interesting comparison. The general collection is arranged in the upright cases in cardboard trays, above which the printed label is held by a small card holder. In the upper part of the cases are a series of enlarged drawings of the animals, radulæ, jaws, darts, etc. On top of the cases is a light iron framework, on which are hung excellent charts of the "Weichthiere," showing the anatomical features of the leading groups. Throughout the entire museum great emphasis is placed on geographical distribution. At the entrance to the rooms is a large chart of the world, each faunal region having a different color. Under each chart is a series of the labels used in the museum, the labels having a wide colored border to indicate the different faunæ. Small charts are also placed among the specimens, the areas inhabited by certain species being colored.

In the Zoological Garden at Amsterdam, are two museums of natural history. The one devoted to the fauna of the Netherlands contains a very good collection of the shells of Holland. The other occupies the second floor of a long building, extending each side

from a central hall. Around the walls of these two rooms are arranged the birds and mammals, while in the center in two longitudinal rows of table cases is a splendid collection of shells, a collection that any museum should be proud of. One can get an idea of the space occupied by the following figures: Each case was about 2½ x 4 feet, and of these there were 144. In hastily going over this collection, certain families and genera were represented by magnificent specimens, and seemed almost complete, the most noticeable being the Pectinidæ, Veneridæ, Cardiidæ, Crassatellidæ, etc. Among the Volutidæ and Conidæ were many of the rarer species, while the Cypraea were graced by the presence of *C. princeps* and *C. guttata*. Very interesting in showing color variation was the very large suite of *Nanina citrina*. But my time was too limited to do justice to these grand collections, and, at the time of my visit, the curators were either on vacation or absent for the day. Our readers will therefore please pardon the incompleteness of these brief descriptions.

INFLUENCE OF ENVIRONMENT UPON THE FORM AND COLOR OF HELIX ALTERNATA.

BY C. C. ORMSBEE, MONTPELIER, VT.

The *Helix alternata* is one of the most abundant of the larger forms of New England land shells, and, in its distribution, it extends over nearly the whole of the United States. Yet, owing to its habits, it is not as familiar as many of the more rare species. It is seldom, if ever, seen crawling upon the ground, after the fashion of other so-called snails, but nearly, or quite, always found snugly hidden in some old log or stump, or piece of rotten wood, which, by the way, forms its food.

It is extremely nocturnal in its habits, feeding during the night and never stirring during the day time, unless disturbed, in which case it will crawl to the nearest place of concealment and resume its slumbers. It never ventures from its home except during the breeding season, and hence, when one is found, others may generally be found near by. In color the *H. alternata* is one of the most beautiful shells, being striped by alternate bands of light and dark of different shades, from which fact the common name of "tiger-snail" has been given to it.

Its favorite location is between the bark and wood of a decaying log or stump, and it always selects a cool, shady and rather moist spot. It prefers maple, elm or ash. I have never found it in connection with any of the resinous varieties of wood.

Now, different kinds of wood in decaying, form products of varying shades of color. Thus decayed maple is almost black; elm is dark brown; ash is light brown; beech is still lighter, and birch has a reddish tinge. It is no less true that the shells of the *H. alternata* differ in shade and resemble that of the wood in which they are found, and which forms a part of their food. Thus those found in maple are almost black; those in elm are dark brown; those in ash are light brown; those in beech are still lighter, and those in birch have a reddish tinge. I have shells in my collection extending through almost every gradation of color, from black to ashy-white. In some the black stripes predominate and almost obliterate the white ones. In others the black stripes are almost wholly wanting, and in a few they are replaced by reddish colored stripes, indicating in every case the nature of the hiding-place of each individual.

Again, the bark of decaying trees clings much more tightly under some conditions than under others, and this has a marked effect upon the upper surface of the shell. I have one shell which is almost as convex as the *H. albolabris*. I recollect that it was found in a cavity where its upper surface could never be touched. Another was found in a narrow crevice, where it had barely room to squeeze itself, and its upper surface is perfectly flat, and it might well be taken for a subspecies. Between these extremes every variation of angle may be found, all seeming to result from a greater or less degree of pressure. Or, rather, having been governed by the height of the crevice in which they developed.

Theoretically, the supposition may have one or two slight objections which it is not necessary to mention, but it is based upon several hundred observations, and I believe it to be correct.

TWO NEW PISIDIA.

BY DR. V. STERKI.

Pisidium pauperculum n. sp.

Mussel of moderate size, rather oblique, moderately to rather strongly inflated; beaks slightly posterior, moderately large and prominent, rounded; scutum and scutellum slightly marked; edges

acute or acutish, not pinched; superior and inferior margins moderately curved, posterior well rounded or slightly truncated, joining the inferior without any marked angle; antero-superior margin sloping, oblique, slightly curved, meeting the inferior at an angle situated rather inferior, more distant in the adult than in younger examples; surface very finely striated, polished; color pale or yellowish to greenish-horn, sometimes whitish or straw in old specimens; shell thin, translucent; hinge moderately strong; cardinal teeth of the right valve moderately curved, its posterior end thickened, those of the left valve lamellar, almost equal, the superior rather short, slightly oblique and little curved; lateral teeth rather strong; ligament short, thin.

Long. 3·2, alt. 2·7; diam. 1·9 mill., in the average.

It has a wide geographical distribution, and is one of the most common Pisidia, having been seen from Massachusetts: Winchester (E. W. Roper); New York: Mohawk, Herkimer County, Erie Canal (E. W. Roper, A. Bailey, Dr. Jas. Lewis); Hudson River (R. E. C. Stearns); Pennsylvania: Philadelphia, in different waters (M. Schick); New Jersey: White Pond, dredged (Pilsbry and Rhoads); Michigan: Ann Arbor, High Island Harbor in Lake Michigan; East Saginaw, Pine Lake, dredged (Br. Walker); Grand Rapids (L. H. Streng); Wisconsin: Fox River (Geo. T. Marston); Minnesota: Clearwater and Mississippi Rivers, Heath Lake (H. E. Sargent); fossil, at White Pond, N. J. (Pilsbry and Rhoads).

Our species is one of modest appearance, and yet somewhat unique. Being so common, it has evidently been overlooked, or taken for younger specimens of some others, owing to its want of striking features; hence the name given to it. Almost always the mussel is more or less coated with a blackish or rusty substance in a rather characteristic way, especially over the beaks and upper part, even when found in company with other Pisidia not thus coated, so that this is a feature of the species, usually independent of the habitat. Yet sometimes all specimens in a place are found clean, e. g., those (dredged) from White Pond, New Jersey. Dead shells are of a rather characteristic plumbeous-gray color.

The species is variable, though being more constant in each place. There are marked differences in size and shape, prominence of the beaks and color. Especially notable is a form from Michigan, with less curved superior and inferior margins, the posterior end more abrupt, obliquely, so that the outline of the mussel resembles an ob-

lique parallelogram; others, from Michigan and Minnesota, are very high, the altitude equalling or even exceeding the length. Some of these local forms may prove to be true varieties.

This Pisidium has caused considerable trouble, correspondence and controversy for a long time. Almost two years ago it was recognized as a well-defined species, and given its present name. Then Mr. E. W. Roper obtained a type specimen of *Pis. ferrugineum* Prime, from the Museum of the Boston Society of Natural History, which he kindly sent me for comparison, and we were both satisfied at once that it was identical with the present species. Several examples, of T. Prime's own hand, also named *P. ferrugineum*, from "New York," in my collection, probably none of them mature, are of the same species. After this, the present name was suppressed, although it was evident that all these Pisidia were very far from being congruent, as to size and shape, with the author's description and figures of *Pis. ferrugineum*, in Mon. Pis. and Mon. Corbiculadae. Among the thousands of specimens seen from New England and New York, none could be referred to these descriptions, and so necessarily the question arose: What, and where, is the true *P. ferrugineum* of Prime[1] Last winter, Mr. Roper received several lots of Pisidia from Cambridge and Waltham, Mass., and from Maine, and obliged me by forwarding them for examination. Among them there was undoubtedly the long sought for *Pis. ferrugineum*, in every particular conforming with the author's description as well as the figures in Mon. Pis. (Pl. XII, figs. 8, 9, 10). Now we knew also that *Pis. pauperculum* was distinct and deserving a name of its own. The mixing up of the two species by Prime, is explained by the fact that both of them are usually covered with a dark or blackish "ferruginous" substance, in the same way, giving them the same outward appearance, the more so as in some forms or specimens of *Pis. pauperculum* the beaks are rather high and prominent, though rounded, and not "tubercular," without ridges (Conf. the figures cited above). Under the impression that they were identical, the author could say that *P. ferrugineum* was one of our most common species, while properly restricted, it seems to be rather rare.

Pisidium scutellatum n. sp.

Mussel of medium size, rather high, oblique, markedly protracted downward in its anterior part, well rounded, rather strongly in-

[1] The author himself could not be consulted, since he had given up, long ago, the study of these mussels.

flated; beaks much posterior, rather large, prominent rounded; superior margin short, little curved, or almost straight, scutum and scutellum well marked, forming projecting angles; the other margins well curved, or the posterior very slightly truncated, anterior end well rounded, or with a slight indication of an angle; surface polished, with irregular striae and some coarse lines of growth; shell thin, transparent, of a yellowish-horn to amber color, often grayish or brownish-horn in old specimens, and whitish on the beaks; nacre glassy, inner surface microscopically rugulose; hinge fine, short, cardinal teeth lamellar, the one in the right valve moderately curved, its posterior end thicker; the inferior in the left valve curved, the superior little so or almost straight; lateral teeth very short, very abrupt, pointed, thin, little projecting into the cavity of the mussel; ligament small.

Long. 4·0, alt. 3·6, diam. 2·8 mill.

Long. 3·3, alt. 2·8, diam. 2·4 mill. or less (deep water form).

The center of its distribution is in the region of the Great Lakes, where it seems to be common, especially northward, in the great and small lakes and rivers. It has been dredged from deep water in different places: Pine Lake, 5–11 meters; Lake Michigan, off New York Point, 24 meters; also taken from the stomachs of white fish of Lake Michigan. These deep water forms, almost all dead shells, were first seen among materials sent by Mr. Bryant Walker, in 1894. Later, fresh specimens in lots from different places in Michigan were sent by Mr. Bryant Walker, L. H. Streng and Geo. T. Marston; from different waters of the Mississippi drainage, in Minnesota, by Mr. H. E. Sargent. A few specimens, in two identical lots, in Br. Walker's and Roper's collections, from Shendon, Montana, at an elevation of 9000 feet, have much resemblance with our species, yet differ in some points, and it will take more materials to ascertain whether they are identical or not.

This is one of our most characteristic Pisidia, distinguished, beside its surface features, color and the configuration of the hinge, by its oblique shape and the much larger anterior part. This character it has in common with *Pis. virginicum* Gmel. and *walkeri*: the former of these is out of the question; the latter species is much more elongated, its beaks are much smaller, the outline is more angular, and the surface dull, from microscopic lamellae, but even.

Pis. scutellatum is somewhat variable: the largest specimens seen, from Orchard Lake, Mich., are 4·5 mill. long. Those from deep

water are the smallest and most inflated, and their beaks are commonly more prominent; some of them have crowded striae of growth.

New Philadelphia, O., Sept., 1896.

ISAAC LEA DEPARTMENT.

[Conducted in the interest of the Isaac Lea Conchological Chapter of the Agassiz Association by its General Secretary, Mrs. M. Burton Williamson.]

NOTES ON SOME SHELLS OF PUGET SOUND.

[Extract from the report of Mrs. M. Drake. From the Transactions of the Isaac Lea Conchological Chapter for 1895.]

In January, I went out to Gig Harbor, but the tides were not good and I got few shells. About seventy *Pterorhytis foliatus* were found at Point Richmond, some of them quite large with rich brown bands. We find this shell at quite low tide, clinging to the rocks in much the same way as *Purpura crispata*, and its operculum is very much like that of the Purpura, only it is of a deeper brown and stronger. A horn is on each one of its three wing-like varices. As it grows in strong currents, its shell is heavy and not easily broken.

I also collected (dredged) some young *Pecten hastatus* which are plain in color, and without the lovely spines of the adult. We found them attached to kelp. The young are attached to kelp by their byssus, while the larger ones are free swimming, and can move quite rapidly through the water. We take most of them in several feet of water, with a dip-net, at low tide.

We find four species of Saxidomus, they are *Saxidomus nuttalli*, *S. squalidus*, *S. aratus* and *S. brevisiphonaria*. As the last name indicates, that species has short siphons, and it is more rounded, shorter and has a stronger shell. I found two species of Cardium at Brown's Point, one being in somewhat deeper water than the other, with a rougher, heavier and plainer shell. The animal is also different. By the way, how can conchologists be sure of the differences and resemblances of closely allied shells without studying the living animals?[1] I am sure I could not have seen so much beauty

[1] Here is where we amateurs may add to the general knowledge by studying the animal in its habitat while it is yet alive.—M. B. W.

in shells had I not studied the animals in them and learned of their friends and their enemies, their food and manner of reproduction. I have also learned that when we find certain species we may expect to find there certain other species, either because both like the same conditions of life, or one may prey upon another.

Lepeta concentrica was one of my new finds in April. It was dredged from 100 feet of water and was clinging to stones, to which *Waldheimia pulvinata* and the eggs and young of *Placunanomia macroschisma* were also attached. *Placunanomia macroschisma* grows to a large size here, four inches across, and of a lovely green tint inside. The animal is a bright orange in color, and is good eating.

During March and April we collected several thousand of the finest *Purpura crispata* I have ever seen—pure white, orange, brown, striped and banded, smooth and foliated, huge and infantile, one can hardly tell how variously beautiful they are. I have given two entire drawers in my cabinet to them. I have one in color exactly like a violet snail.

During May we found several live *Acmæa mitra*, whose "white caps" had a most decided green color. They are larger than the southern ones. I got five shells, which were new to me, from Lemon's Beach, on the Narrows—*Eulima rutila*, a shell of rare beauty both in form and color, being pure white at the apex and bright rosy pink at the base; *Eulima falcata*, pure white and larger than *E. rutila; Axinea intermedia*, larger than described in west coast shells; one Lucina, unknown at Washington, and some fine *Semele rubroradiata* which live in the little sandy pit-holes of a hard cement reef which is bare at low tide. Here, too, we found many live *Psammobia rubroradiata*. Both kinds of these red-rayed clams, especially the latter, told us where they lived by spouting up small streams of water at intervals.

In company with a friend I went to Fort Defiance where we found *Acmæa digitalis* living in the crack of a granite rock. We found *Cryptochiton stelleri* and an unknown Chiton, whose shell is salmon-colored on the inside. Cryptochiton is very abundant here at certain times, when they come ashore to breed. We have collected several hundred of them at a place, and a month later not one was to be seen. Our largest was thirteen inches long. Most of them are brown, but some are almost white. We found them on rocks and flat on the pebbly beach at extreme low tide. We found them

quite hard to clean properly. The Indians are fond of the sole-like strip which protects the insides, and are fond of the eggs which are very numerous. These animals look so much like the rocks on which they cling, that few of the frequenters of the beach knew the animal when we showed it to them.

NOTES AND NEWS.

GREEN-HOUSE SHELLS.—This spring I found some *Zonites glaber* Stud. in one of the green-houses of this city. It was identified for me by Dr. W. H. Dall. *Arion hortensis* Fér. was found at the same place and identified by Mr. H. A. Pilsbry. *Zonites lucidus* Drap is found in all the green-houses of the city.

P. B. RANDOLPH, *Seattle, Washington.*

NOTE ON LEDA CAELATA HINDS.—This species was described by Hinds in the Geology of the Voyage of the Sulphur, p. 64, pl. 18, fig. 13, 1844, and Proc. Zool. Soc. London for 1843, p. 99. But Conrad had already described a fine species of *Leda* from the Claiborne sands under this specific name, in the Am. Jour. Sci., Vol. XXIII, p. 343, Jan., 1833. This, in December of the same year, was renamed *brogniarti* by Lea, Contr. to Geology, p. 82, pl. 3, fig. 61. Consequently the species of Hinds requires a new specific name. As there is already a *L. hindsii* of Hanley, I propose to substitute for *caelata* the specific name of *taphria*, while *Leda brogniarti* Lea must retain the prior name of Conrad.—W. H. DALL.

CALLISTA VARIANS HANLEY, IN EASTERN FLORIDA.—Mr. J. J. White, of Rockledge, Fla., reports the finding of numerous specimens of this species in Lake Worth, on mud flats near the Inlet. This seems to be the first finding of this West Indian species in Florida.

NEW PUBLICATIONS RECEIVED.

DIAGNOSES OF NEW MOLLUSKS FROM THE SURVEY OF THE MEXICAN BOUNDARY, by W. H. Dall (Proc. U. S. N. Mus., xviii, pp. 1–6).

Patula strigosa var. concentrata, New Mexico; a small race, further southward than any other reported.

Epiphragmophora arizonensis, near Tucson, Arizona.

Epiphragmophora hatchitana, Hachita Grande Mt.

Epiphragmophora arnheimi, California.

Polygyra chiricahuana, Arizona.

Polygyra mearnsii, New Mexico.

Holospira crossei, pilsbryi, bilamellata, mearnsii, veracruziana, all from New Mexico and Mexico.

Unio mitchelli Simpson, a Texan species collected by Hon. J. D. Mitchell.

Cerion pineria, Isle of Pines (S. of Cuba).

LIST OF DUPLICATES OF JAPANESE SHELLS COLLECTED BY FREDERICK STEARNS (Detroit, 1896). A list for purposes of exchange, which may be obtained on application by those having shells, echinoderms, corals, etc., to offer for Japanese shells.

DIAGNOSES OF NEW TERTIARY FOSSILS FROM THE SOUTHERN UNITED STATES. By W. H. Dall (Proc. U. S. Nat. Mus., XVIII, pp. 21–46, 1895). This paper deals mainly with new or misunderstood species of Bulloid Tectibranchs, of *Terebra* and of *Conus*. A new section of *Bullina*, *Aberospira*, is proposed for a new Chipola species; and *Wakullina* is a new subgenus of Cantraine's genus *Curolia*. A general discussion of the Terebridæ of our tertiaries precedes the descriptions of new forms. The preliminary remarks under *Conus* have a vastly wider application than to the particular genus under discussion, and cut at the root of a false method in much paleontologic work of both hemispheres. We refer more especially to this paragraph. The italics are our own: "*The general rule that local faunæ are derived from pre-existing faunæ of the same general region is a good guide*, and a careful comparison of the fossils with the recent types will often assist materially in determining the relations of fossil forms. *The identifications which travel to distant faunæ for representatives*—as, for instance, the Indo-Pacific fauna for Haitian fossils—*are usually wrong*, and all Gabb's identifications of this sort will be modified by further and more careful study. *Analogous characteristics are often purely dynamic in forms of different lineage, subjected to similar conditions, in widely separated localities*. Where modern faunæ differ in the races of any genus which they contain, the antecedent fossils in the same regions are not likely to be much more nearly related." We have, for some years, been endeavoring to persuade our German friends of the truth of this general doctrine as applied to their tertiary land snails, but without much success thus far; so that it is peculiarly refreshing to find an acknowledged master stating the result of his broad experience in other groups, in diction so unequivocal as the above extract.

OBITUARY—B. SCHMACKER.[1]

A letter just received from Shanghai, China, announces the death of B. SCHMACKER, ESQ., of that city, in Yokohama.

Mr. Schmacker was a most enthusiastic conchologist. It was his aim and purpose to close up all his business affairs next winter and devote the balance of his life to his shells. During his long residence in the far East he had collected extensively in China, Japan, and the islands of the coast, and had, at the time of his death, probably the finest private collection of oriental land and fresh-water shells in the world.

From time to time, as his business engagements permitted, he published papers upon various conchological topics. I can now only recall certain pamphlets upon Formosa shells, Chinese Clausiliae, Chinese Helices, and, I believe, a paper upon the Molluscan fauna of the island Hainan.

Much of his literary work was done in connection with Boettger and von Mollendorff. He told me a year ago that it was his purpose to write a comprehensive work upon Chinese land and fresh-water shells, and that it was to that end that he had made such extensive collections in China and the neighboring islands. I doubt if anyone could have been better qualified for this undertaking.

Personally, Mr. Schmacker was a most charming man. He was kindness itself, and his greatest happiness seemed to be to give others pleasure. He had a keen sense of humor, and was a most agreeable conversationalist. Unfortunately, he was somewhat deaf; but I believe it was only the disagreeable things he could not hear.

He was manager of the great German trading firm of Carlowitz & Co., of Shanghai, and was a man of some wealth.

His death will be mourned by a host of friends in Asia and Europe, and his loss will be felt by the brotherhood of conchologists all over the world.

JOHN B. HENDERSON, JR.

Bar Harbor, Me., Sept. 17, 1896.

[1] We take the liberty of publishing the above letter from Mr. John B. Henderson, Jr., bringing us the sad news of the death of one of the most capable of Oriental conchologists. During a short visit to Philadelphia some years ago, Mr. Schmacker became known to us; but it is not alone as an excellent conchologist, but as a man of rare and attractive personal qualities that we have valued his friendship and regret his untimely death.

THE NAUTILUS.

VOL. X. NOVEMBER, 1896. No. 7

CASCO BAY.

BY REV. HENRY W. WINKLEY.

The two most famous collecting grounds on the coast of Maine are Eastport and Casco Bay. The writer having spent several summers at Eastport, devoted his energies this year to Casco Bay. From the city of Portland to Cape Small the distance is perhaps thirteen miles. From the mainland to the outer islands is some six miles. This area is said to contain 365 islands. A fortunate location was secured on one of the outer islands, in a central position as regards the longer axis of the Bay. The naturalists of the expedition were the writer and his two enthusiastic and constant companions Frank H. and Robert L. Winkley aged 10 and 7½ respectively. The shores are for the most part rocky, affording occasional tide pools rich in animal life. The bottom is of every variety, giving opportunity for any taste the mollusca may display. Land shells abound on the outer islands. Singularly they find a favorite home here while on the main land they are exceedingly scarce. We visited, for land shells, Eagle, Brown Cow, Jewells, inner and outer Green and Cliff Islands; on all but outer Green we obtained good results. The most curious of this group is the famous Brown Cow. In the midst of rough ledges,—an out post fronting the open sea,—this mere spot, rises with perpendicular cliffs to a height of at least fifteen feet. The approach must be made in calm weather, and at low tide. We had a half hour's visit and such a harvest! The top of the island is one half covered with grass, the other half is a clump of bushes. *Helix hor-*

tensis covered the leaves and branches of these bushes, the varieties being the yellow and five banded. On the ground *Pyramidula alternata, Polygyra albolabris* and *Succinea obliqua* were abundant. We obtained the famous wine colored variety of *P. albolabris*, and among the specimens discovered a set banded with fine lines, like *P. multilineata*. Time was precious and we collected expediously as the tide was coming in. We escaped from the island with a slight ducking from the surf, but happy are the results. On Green island a few specimens of *H. hortensis* were found, among them two full grown forms, which had for some reason started to grow again; extending from the finished lip was a continuation of the outer whorl, but of a dirty cream color and rough with ridges. On one of the islands Frank discovered the home of the albino *P. alternata*, a valuable prize. Shore collecting gave us a beautiful series of the various varieties of *Purpura lapillus*, and some of the specimens were the largest we have seen. We also found *Buccinum, Skenea planorbis, Turtonia minuta, Rissoa aculeus, Lacuna vincta*, and the common shore varieties. Considerable time was given to dredging in depths from seven to twenty-five fathoms. One summer is far too short to exhaust this region, but many localities were dredged with good results. A dozen to fifteen new forms were added to the cabinet, and at least fifty duplicate sets, to represent the Bay, found places in the collection. Five species of chitons were found, including *Amicula Emersonii*; a few fine specimens of *Pecten magellanicus* were dredged, among them one that had received an injury and in repairing had turned the edges of both valves upward so that they grew at right angles to the natural plane. The interesting genus Bela revealed a half dozen or more species, *harpularia* being the most abundant. Brachiopods were found occasionally, and sponges, shrimp, echinoderms and other invertebrates were abundant, but with much regret at not having the means to care for them they were returned to the sea. A list of results would contain all of the common forms. The more rare species included the genera Thracia, Astarte, Nucula, Modiolaria, Crenella, Cylichna, Margarita, Odostomia, Lunatia, Velutina, Astyris and others.

Since the above article was written I have read with much interest the article on "*Helix alternata*" by Mr. Ormsby. I do not wish to take anything from his statements, but to add one or two concerning that species. The islands of Casco Bay are good to stand a man on his head, figuratively if not literally, for he meets with circumstances

which upset his former ideas. Land shells are very scarce in the state of Maine, at least in the parts I have visited. As a rule two or three specimens of the larger species, would be all one would find after a careful search, not so, however, on the small islands. *Pyramidula alternata* occurs in great profusion. *Polygyra albolabris* and *Helix hortensis* are also abundant. *P. alternata* occurs on one island, some distance from any trees, just above high water mark, its only shelter being rocks and small raspberry bushes. In this location some two hundred, including the albino, were found. On another island it occurs in the woods but crawling on the ground, so numerous is it, that one can hardly step without crushing the shells. Furthermore it was found feeding on animal matter, dead crabs and shells left by the crows were covered with hungry individuals.

THE SYSTEMATIC POSITION OF SPHYRADIUM ("PUPA") EDENTULUM Drap.

BY DR. V. STERKI.

For some time, it has been my opinion that this species (= *Vertigo simplex* Gld.) has not its proper place under Pupa. The shell, though Pupa-like in its general aspect, shows two marked differences from all groups of that genus as well as all Pupidæ. In the first place, its aperture is radial, while in the Pupidæ it is lateral, or tangential, from the columellar wall being prolonged to the periphery of the penultimate whorl, or even beyond it. In the second place, the peristome in Pupidæ is more or less everted, generally with a more or less distinct lip, or at least the margin is "finished up," in mature specimens, while in *edentulum* the peristome is straight and simple, and the margin always thin and sharp, as it is in Patula, etc., and in the Zonitidæ.

This view is now confirmed by the examination of the radula. The teeth are small, comparatively, and the cusps of all are very short and small. There are r+21 (20) in a transverse row, and 116–127 such rows were counted. The centrals are tricuspid, the laterals all bicuspid, except the last which is a minute nodule; in the others there is no difference of laterals and marginals but that the plates of attachment become shorter towards the margins, and

evanescent in the outer teeth. The radula is 0·55 mill. long, 0·14 wide, and so one tooth measures about 0·0045 × 0·0035 mill.

This is so radical a difference from the Pupidæ that our species can no longer be placed under that family. It comes nearest *Punctum pygmæum* Drap.,[1] the radula being of the same type, and also the jaw is of the same formation, being quite low and composed of distinct plates.

As to the generic name, Sphyradium Charp. 1837(=Columella West., Edentulina Cless., both 1876, teste Westerlund) must be used.

An interesting analogue is "Pupa" neozelanica Pfr., with much the same form of shell, which Mr. H. Suter, a few years ago, has shown to be no Pupa, but a Charopa.

It may be added that the American form is absolutely identical with the palæarctic, even showing the same wide range of variation. There is no need, then, to name it Sph. "edentulum simplex." Just so, to mention it by the way, *Punctum pygmæum* Drap. is identical on both continents, and so it is equally useless to name it *P. pygmæum minutissimum*.

LIST, WITH NOTES, OF LAND AND FRESH WATER SHELLS COLLECTED BY DR. WM. H. RUSH IN URUGUAY AND ARGENTINA.

BY HENRY A. PILSBRY AND WILLIAM H. RUSH.

In presenting this list of land and fresh water shells from Uruguay and Argentina, perhaps it will be well to state precisely the localities at which collections were made, especially so from the Uruguay River, which region seems to have been omitted from the report of D'Orbigny. The U. S. S. Yantic, to which the writer was attached, arrived at Montevideo, Uruguay, in January, 1892. The public park, El Prado, of the city proved to be the richest region near by; the suburbs of the town were rich in *Helix lactea*, as, indeed, were many places in Uruguay and Argentina; several large tracts are preserved for the cultivation of them for the supply of the Italian markets. The Cerro, which is quite a prominent hill on a

[1] In the radula of one specimen of *P. pygmæum* r+17 teeth were counted in a transverse row, r+16 in another, and 80 (78) rows were found. The laterals, except the last one or few, were bicuspid. (Conf. E. S. Morse, Pulmonifera of Maine, p. 27, pl. 8, fig. 71.).

small peninsula opposite the main city, and from which Montevideo, "The mount, I see," derives its name, contained nothing special, but the plain back of it yielded several land species, and the small runs and creeks many fresh water forms, in some of which, when dry, the whole bottom was found to be covered with dead *Planorbis*. Maldonado Bay is about 20 miles nearer the sea, in Uruguay, and was the only place in which the dredge was used with good results as showing the extreme southern limit of several West Indian species. Gorriti Island, in that bay, was a treasure for *H. lactea*, and was abundantly supplied with *Strophochilus lutescens* King and *Bulimulus gorritiensis* Pils. Near the small town of Maldonado, was found *Amphidoxa costellata* D'Orb. in a small grove of native trees, about the only one met with. Most of the trees of any size in the immediate neighborhood of Montevideo and Buenos Ayres, are the introduced eucalyptus. Upon the visit to Buenos Ayres, Ensenada, etc., the only thing noticeable was the extreme abundance of *Ampullaria canaliculata* Lam. and its varieties, in all stages of growth from the egg upward. The Rio Parana, upon which the ship went as far as Rosario in Santa Fé province, did not yield much, principally for the reason that the ship was there during a revolution, when excursions always have an element of danger, as all the hoodlums of the town are turned loose with Winfield rifles. It was only when the ship went up the Uruguay River as far as Paysandu that things began to be interesting, but the time was too limited, This region proved to be extremely rich in undescribed *Potamolithus*. The collecting was easy, as all that was required was to pick up any stone at extreme low water and scrape the specimens off with the right fore-finger into the collecting basket. The first visit to the water's edge at Paysandu, resulted in finding *P. Rushii* Pils., which was found to be untigured in D'Orbigny, and so few in number that one or two trips more were taken especially to find them, but only with limited results, so it can be considered scarce. Nearly all the other forms were abundant. The means of living there are so easy that it was found a hard matter even to hire the amphibian small boy to collect *Unionidæ*. A trip, by a well-organized party, up the river to its source, would yield valuable results. Only three specimens of *Vaginulus* were found, and these among the ruins of an old hide building in Maldonado. The plain back of Buenos Ayres did not yield such an abundant supply as one would expect from D'Orbigny's remarks, but possibly that was owing to the extreme dryness of the season while we were there.

HELICIDÆ.

Helix aspersa Müll. British cemetery at Buenos Ayres, Argentine Republic.

Helix lactea Müll. Gorriti Island, Maldonado Bay. Cultivated for food. This species was already abundant in Uruguay when d'Orbigny was there in 1826, and the date of its introduction could not then be ascertained.

Strophocheilus oblongus Brug. var. Fray Bentos. The apex is blunter than in typical *oblongus*, more as in *S. capillaceus* Pfr.

Strophocheilus lutescens King. Gorriti Island, Maldonado Bay. Originally described from Maldonado. The eggs vary in size, especially in length, measuring from 6·5 x 9·2 to 6·2 x 7·6 mm.

BULIMULIDÆ.

Bulimulus gorritiensis Pils., n. sp.[1] Gorriti Island, Maldonado Bay, under stones.

Bulimulus Rushii Pils., n. sp. Montevideo, plain back of Cerro, on thistles.

PUPIDÆ.

Odontostomus dentatus Wood. Montevideo, Uruguay, on thistles and close to ground, on plain back of the Cerro.

ENDODONTIDÆ.

Amphidoxa (Stephanoda) costellata d'Orb. A small grove of native trees near Maldonado, Uruguay. Abundant.

SUCCINEIDÆ.

Omalonyx unguis d'Orb. Locality not noted.

Omalonyx convexa Mart. Creek in Prado, Montevideo.

VAGINULIDÆ.

Vaginulus solea d'Orb. Near Maldonado, Uruguay.

PHYSIDÆ.

Physa Sowerbyana d'Orb. Creek in Prado, Montevideo.

CHILINIDÆ.

Chilina flaminea Maton. San Gabriel's Island, in the Rio de la Plata, opposite Colonia, Uruguay.

Chilina Rushii Pilsbry, n. sp. Uruguay River, at Fray Bentos, Uruguay. Distinguished by its angular shoulder.

[1] See Man. Conch. (2), XI for description and figure of this and the next species. The other new forms will be described in Proc. Acad. Nat. Sci. Phila. and the next number of NAUTILUS, space being lacking in this number.

LIMNÆIDÆ.

Limnæa viator d'Orb. Montevideo: creek in the Prado.

Planorbis heloicus d'Orb. Montevideo, back of Cerro. The typical and a large less shining form, diam. 10 mm.

Planorbis peregrinus d'Orb. Montevideo, back of Cerro.

Planorbis paropseides d'Orb. (?). Creek in Prado, Montevideo. Agrees well with d'Orbigny's description and figures, but on account of the locality *may* be a different species.

Planorbis castaneonitens Pils. & Van., n. sp. Near Maldonado.

ANCYLIDÆ.

Ancylus obliquus Brod. & Sowb. San Gabriel's Island, on stones in Rio de la Plata.

The specimens vary considerable in degree of curvature of the apex, but are apparently all referable to this species, which was originally described from Chili.

AMPULLARIIDÆ.

Ampullaria neritoides d'Orb. La Plata River, San Gabriel's Island, Uruguay; Uruguay River at Paysandu. Specimens with the interior pure white as well as the usual purple form.

Ampullaria canaliculata Lam. Rio de la Plata at Buenos Ayres, Palenno and Ensenada; Parana near Rosario and at Paraiso. The specimens vary from true *canaliculata* to the varieties *insularum* and *australis*.

Ampullaria sp. A small form, not determined, occurred in the creek in the Prado, Montevideo.

Ampullaria Roissyi d'Orb. Parana River near Rosario, Santa Fé province, Argentina.

Ampullaria Spixii d'Orb. Parana River near Dos Hermanos ("Two brothers") Island.

AMNICOLIDÆ.

Littoridina australis d'Orb. Creek in the Prado, and in a small spring back of the Cerro, Montevideo. We follow the usual identification in this case, although not at all sure of its correctness. The larger specimens measure as much as 8½ mm. alt.

Littoridina charruana d'Orb. (?). San Gabriel's Island.

Littoridina Isabellei d'Orb. (?). San Gabriel's Island, with the preceding.

Potamolithus Rushii Pilsbry, n. sp. Uruguay River at Paysandu, Uruguay.

Potamolithus Iheringi Pilsbry, n. sp. Uruguay River at Paysandu, Uruguay.

Potamolithus microthaumus Pilsbry, n. sp. Uruguay River at Paysandu, Uruguay.

Potamolithus Hidalgoi Pilsbry, n. sp. Uruguay River at Paysandu, Uruguay.

Potamolithus dinochilus Pilsbry, n. sp. Uruguay River at Paysandu, Uruguay.

Potamolithus Buschii 'Dkr.' Ffld. Uruguay River at Paysandu, Uruguay; Rio de la Plata at San Gabriel's Island.

Potamolithus tricostatus Brot. Uruguay River at Paysandu, Uruguay.

Potamolithus conicus Brot. Uruguay River at Paysandu, Uruguay.

Potamolithus Orbignyi Pilsbry, n. sp. Uruguay River at Paysandu, Uruguay.

Potamolithus lapidum d'Orb. Fray Bentos.

Potamolithus lapidum v. *supersulcatus* Pilsbry. Rio de la Plata at San Gabriel's Island.

Potamolithus Sykesii Pilsbry, n. sp. Uruguay River at Paysandu, Uruguay.

Potamolithus bisinuatus Pilsbry, n. sp. Uruguay River at Paysandu, Uruguay.

Potamolithus bisinuatus v. *obsoletus* Pils.

Potamolithus gracilis Pilsbry, n. sp. Uruguay River at Paysandu, Uruguay.

Potamolithus gracilis v. *viridis* Pils. Uruguay River at Fray Bentos.

CYRENIDÆ.

Corbicula limosa Maton. San Gabriel's Island.

Corbicula coloniensis Pilsbry, n. sp. Rio de la Plata above Colonia, Uruguay. A larger, more trigonal form than the preceding species.

Sphærium sp. undet. Creek in the Prado, Montevideo.

Pisidium sp. undet. " " " "

Pisidium sp. undet. " " " "

UNIONIDÆ.

Unio parallelopipedon Lea. Rio de la Plata at Colonia, Uruguay.

Unio charruana d'Orb. Lake Potrero, near Maldonado, Uruguay.

Unio variabilis Maton. Uruguay River at Fray Bentos.

Unio praeformis Lea. Rio de la Plata at Colonia. The rugæ on the posterior slope mentioned by Lea as perhaps inconstant, are present in the specimens collected.

MUTELIDÆ.

Monocondylæa Pazii Lea. Colonia, Uruguay.

Monocondylæa lentiformis Lea. Colonia, Uruguay.

Glabaris siriones d'Orb. Rio San Carlos, Uruguay.

Glabaris latomarginatus Lea var. *felix* Pils. Colonia, Uruguay.

Glabaris rubicunda Lea. La Plata River at Colonia, Uruguay; Uruguay River, Paysandu.

Glabaris lucidus d'Orb. La Plata River at Colonia, Uruguay.

Glabaris trapesialis var. *cygneiformis* Pils. Pond and a small creek near Maldonado.

Glabaris trapesialis var. *exoticus* Lam.

Anodonta exotica Lam. An. s. Vert., vi, 1819, p. 87; Delessert, Rec. de Coq., pl. 13, f. 1 (figure of type).

Anodon scriptus "Fer." Sowb., Conch. Icon., pl. 4, f. 9 (1867).

It is narrower than *G. trapesialis*, long, the anterior end very narrow, angled at end of hinge-line; posterior muscle-scar quite near the sinus at edge of hinge ligament, connected therewith by a short impression.

Rio San Carlos, Uruguay. Rather small specimens, but agreeing with the figure of type in Delessert's Recueil.

Glabaris Forbesianus Lea. Rio de la Plata, Colonia, Uruguay. Lea's figure was from a deformed shell, and the specimens would hardly have been recognized as *Forbesianus* had it not been for the kindness of Mr. Simpson, who compared with the types.

ISAAC LEA DEPARTMENT.

[Conducted in the interest of the Isaac Lea Conchological Chapter of the Agassiz Association by its General Secretary, Mrs. M. Burton Williamson.]

Members of our Chapter will please bear in mind the fact that the annual reports are due in December. We anticipate some fine papers this year as our members have been enthusiastic in their study of shells.

Yearly dues are payable in December, and promptness in this respect will be appreciated by the officers of the Chapter.

The annual election of officers occurs on the last Wednesday in December. Officers to be elected are the President and General Secretary. Write the names of your choice for these two officers, and send them to the General Secretary. The present incumbent for the last named office declines re-election, and would suggest that the office be filled by a member east of the Rocky Mountains.

EXTRACT FROM A NOTE BOOK.

[Extract from the report of Mrs. M. F. Bradshaw. From the Transactions of the Isaac Lea Conchological Chapter for 1895.]

A pleasant ride through beds of wild flowers, sweeping miles of barley, or golden avenues of mustard, brought us to the seashore at Newport, Orange County, California. Here begins a peninsula of several miles in length, and in width but a narrow strip of sand, formed by the bay, into which empties the Santa Ana River. Our destination was down this strip some three miles from the little town.

The road was on the bay side, and low sand dunes, covered with wild flowers we had never seen before, lay on one side, on the other the muddy shores of the bay, literally covered with *Cerithidea californica*.

In the afternoon we drove down the hard beach on the ocean side of this narrow peninsula for a mile or more, then crossed over the low dunes to a little "lake" made by the receding tide leaving the sand, or rather mud, dry all around this little depression. Here was our hunting ground. We proceeded to dig in the mud for live shells and, to my surprise, brought out not only clams and scallops but Naticas and Muricidæ. And here I found my first *Nassa tegula*. While Cerethidea laid high and dry and apparently dead, acres and miles of them, the Nassas kept under the edge of the water, walked about quite lively, and when disturbed went quickly down into the soft mud and out of sight.

Chorus belcheri had been taken out of that pond in numbers, but M. S. had exhausted the supply before we came. There were a

dozen or more *Pteronotus festivus*, about three inches long, and they were in the bottom of the pond, under two or three feet of water.

Monoceros engonatum and *Conus californicus* were raked out of the mud near the edge, though not in great numbers.

I had always thought Muricidæ were rock shells, and I wonder what they were doing here in this vile mud. Conus I have found in pools among the rocks, but only one in a place and never but four.

Which is their home, the muddy bottom of a bay, or the clear pure pools among the rocks? I confess to being disappointed in the creatures I found living in such a degraded way. Yet they had beauty of color and of form; perhaps are more pleasing than the same number of the prettiest shells I could select from those I got among the rocks.

Crepidula rugosa was there in great numbers, built into towers and knots upon some old valve of a Pecten, or even upon an old shell of their own kind. They are not a very dignified mollusk, but I had never found any alive before, so was glad to find them and learn their mode of co-operative house-keeping, of which I was in ignorance. Doubtless every shell friend I have knew this habit of the Crepidula, knew it so well as never to think of mentioning it, though freely giving me the shells.

* * * A friend has awakened my interest in "strays," so I will mention two which came under my observation on this trip. One was a Fusus, three or more inches long, which Mr. S. picked up on the ocean beach near the wharf. It was yellow but had been white, I think.

The other was a large Arca, which a lady who lives where we were stopping picked up on the bay shore. It was dead, but the two valves lay close together; was quite perfect but the epidermis was all worn away. It measured 8½ inches in circumference one way, and nine inches the other way, and the straight hinge line was 2 inches. I have nothing like it, so do not know its name. This lady had lived there for years but had never found any other like it. She was quite ignorant of habitat, so had no idea she had found anything of peculiar interest.

At Arch Beach I have found two or three small Arca valves among the drift, and this past summer found one valve about an inch long, which is similar to an *Arca fasciata* from Australia.

Pecten hastatus is now occasionally found at Newport, on the ocean beach. All I have seen are far more brilliant in color than those from Puget Sound. They are the richest shades of rose pink and crimson, both valves alike or nearly so.

SOME LAND SHELLS OF MICHIGAN.

[Extract from the Report of Mr. H. Smith. From the Transactions of the Isaac Lea Conchological Chapter for 1895.]

I live on the bank of the St. Joseph River, about 25 miles from Lake Michigan. I find here *Helix thyroides* Say, *Helix elevata* Say, *H. multilineata* Say, *H. leai* Ward, *H. hirsuta* Say, *Patula solitaria* Say, *P. alternata* Say, *Pupa armifera* Say, *Planorbis trivolvis* Say, *P. bicarinatus* Say, *P. exacutus* Say, *Succinea ovalis* Gould, *Selenites concavus* Say, *Cumpeloma integra* Say, *Hyalina electrina* Gould, *Pomatiopsis cincinnatiensis* Lea. I am indebted to Prof. Pilsbry for aid and encouragement. He identified a good many of my shells for me, and advised me where to get literature on the subject. Prof. Keep also helped me and sent me some specimens.

I found what might be called a "colony" of *Patula alternata* on a big stone pile, they seemed very plentiful at that place, and I did not see them anywhere else. The stone pile is gone now, and I shall have to look elsewhere for the pretty shells. The *Helix elevata* I found in a colony on the steep river bank, under the bushes among the leaves.

ODOR OF SNAILS.

It may not be known to every conchologist, that some of the Helices have odors peculiar to them.

We find here, *Mesodon ptychophorus*, *Patula strigosa*, *P. solitaria*, *Triodopsis multilii* var. *olneyæ* in the same locality. The *Patula solitaria* has so strong an odor, like *Mephitis mephitica*, that I supposed at first they fed on *Ictodes* (*Symplocarpus*) *fœtidus*. Always the same odor and at all seasons.—MARY P. OLNEY.

THE NAUTILUS.

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PURPURA LAPILLUS, VAR. IMBRICATA.

BY R. E. C. STEARNS.

Nearly sixty years ago I detected in the interstices between the granite blocks that formed the seawall on the outerside of Harrison Avenue in Boston, where said highway touches the waters of the South Cove in the immediate vicinity of the South Boston bridge (as it then existed), numerous specimens of *Purpura lapillus:* the entire surface of all the specimens was evenly and beautifully imbricated, and the specimens were of a dingy white color.

Here was a colony quite distinct in sculpture from the usual examples, as seen at numerous places along the coast in the neighborhood of Boston. I compared them at the time with the series of this species, as exhibited in the table cases of the Boston Society of Natural History; at that date the museum of said society contained no examples with the above sculpture characteristics, nor have I seen any since among the hundreds of specimens I have collected and handled. I made pen and ink drawings at the time, but both shells and drawings have long since passed from view and went, perhaps, to what Mr. Mantalini called the "demnition bow-wows." It is not at all uncommon to find *P. lapillus*, its varieties and allied forms, imbricated, more or less, but the specimens referred to and contained in my museum when I was a boy, were closely and evenly imbricated throughout, over the entire surface.

NOTES ON NEW SPECIES OF AMNICOLIDÆ COLLECTED BY DR. RUSH IN URUGUAY.

BY H. A. PILSBRY.

Full descriptions of the new forms collected by Dr. Rush will appear as soon as illustrations can be prepared. Meantime, the following notes on the Amnicoline species may be of service.

The South American fresh water Hydrobioids fall into three or four genera: POTAMOPYRGUS Stimpson, apparently confined to the extreme northern border of the continent, and perhaps to be regarded as a straggler from the Antillean and Middle American fauna. LITTORIDINA Eydoux & Souleyet, a characteristic South American genus of slender, acute shells, usually called "*Paludestrina*," "*Hydrobia*" or *Heleobia* Stimp. LYRODES Doering, possibly a group subordinate to *Potamopyrgus*. LITHOGLYPHUS of authors, stout of figure, thick and strong, the American forms with the lip expanded or having an external varix, or contracted by a callous deposit within the posterior angle in fully adult examples. These seem to me to differ conchologically from the European types sufficiently to call for generic distinction, and the new term

POTAMOLITHUS

may be applied to them. Type *P. Rushii*.

The genus *Cochliopa* Stimpson, with two Central American species, *C. Rowelli* Tryon and *C. Tryoniana* Pils., is like *Potamolithus* in the solidity of the shell, but it is heliciform and umbilicated. *Lacunopsis* and *Jullienia*, two Cambodian genera, are evidently near akin to the South American *Potamolithus* (see Journ. de Conchyl. 1881, p. 1).

The peculiarly striking modifications of the species of this genus are scarcely paralleled in recent fresh water prosobranchs outside of Lakes Tanganyika or Baikal. They cannot well be appreciated without the aid of figures, which the writer intends publishing as soon as practicable. Until then, the species may be discriminated by the following diagnoses, which for more ready reference have been cast into the form of a key. The characters of previously known species are much abridged.

1. Columella with a longitudinal groove or pit; outer lip with a strong varix.

a. Depressed; periphery with a strong, cord-like keel; back of body whorl gibbous below suture; umbilical area moderate or large, bounded by a keel. Alt. 5·2, diam. 6 mm. P. RUSHII n. sp.

aa. Globose, without keels; periphery rounded; no ridge or hump on the back; umbilical area small, with angular edge; yellowish or olivaceous-brown, unicolored or with subsutural and superperipheral green bands. Alt. 5, diam. 5·4 mm. P. HIERINGI n. sp.

II. No groove on face of the columella.

a. With 5 or 6 spiral keels, all, or the upper two with acute tubercles; operculum with several whorls. Alt. 8–9, diam. 10 mm. P. MULTICARINATUS Mill.

aa. Shell carinated or angulate, without tubercles.

b. Peripheral keel visible on the penultimate as well as the last whorl; lip expanded or varixed.

c. Trochoidal, with acutely, straightly conic spire, compressed median peripheral keel, a small subsutural carina, and a basal keel defining a very large umbilical tract. Aperture much contracted, the lip varix very high, recurved above periphery, the highest point of recurved lobe connected with lip-edge by a short oblique rib. Alt. 5·2, diam. 6 mm. P. MICROTHAUMA n. sp.

cc. Trochoidal, with high conic spire and flattened base and acute peripheral keel; surface smooth above and below the keel, whorls flat above, the base slightly convex; umbilical area very narrow, inconspicuous; lip varix narrow, near the lip edge. Alt. 5, diam. 5 mm. P. HIDALGOI n. sp.

ccc. Elevated turbinate, with an acute peripheral keel, convex above and below it; lip expanded. Alt. 5, diam. 5 mm. P. PERISTOMATUS Orb.

bb. Peripheral keel or angle concealed on the penultimate whorl.

c. Lip varix very strong, recurved above; periphery hardly angular, base convex, back of body whorl with a spiral rib below the suture; aperture much contracted; no columellar area defined. Alt. 5, diam. 5½ mm. P. DINOCHILUS n. sp.

cc. Varix, expansion or contraction of the lip rather weak or inconspicuous.

d. Keeled or angular at the basal periphery, rounded or flattened above the keel.

c. Columella wide and heavy; alt. 4·6, diam. 4·4 mm. P. BUSCHII 'Dkr.' Ffld.

cc. Columella narrow; alt. 4·3, diam. 3·2 mm. P. CONICUS Brot

dd. Body whorl squarish, the angles rounded; columella rather wide; umbilical crescent defined by a carina; lip with a narrow varix. Alt. 5. diam. 4½ mm.

P. ORBIGNYI n. sp.

ddd. A carina at the basal periphery, and two approximate keels on the back above.

P. TRICOSTATUS Brot.

dddd. Periphery and base well rounded; a wide shallow sulcus or two low carinæ on the back above. Alt. 5·5, diam. 4·8 mm.

P. LAPIDUM SUPERSULCATUS n. v.

aaa. Whorls rounded, without spiral keels, angles or sulci.

b. Globose or globose-conic; peristome not nicked or sinuous.

c. Not banded; last whorl rounded; aperture slightly contracted P. LAPIDUM Orb.

cc. 3-banded: lip and columella thin.

P. PETITIANUS Orb.

bb. Ovate, the outer or basal lip sinuous or nicked.

c. Outer lip expanded or flaring, its face thickened, with two or three nicks or sinuses. Alt. 5, diam. 4·3 mm. P. SYKESII n. sp.

cc. Outer lip thin, unexpanded.

d. Outer lip produced in a broad tongue or lobe, a deep rounded sinus above and below. Alt 5, diam. 4 mm.

P. BISINUATUS n. sp.

dd. Similar, but the upper sinus obsolete.

P. BISINUATUS OBSOLETUS n. v.

ddd. Much more slender; outer lip retracted at insertion above, sinused at base. Alt. 4·6, diam. 3·1 mm. P. GRACILIS n. sp.

dddd. Similar, but with a rounded sinus in the outer lip above; green.

P. GRACILIS VIRIDIS n. v.

The operculum of *P. multicarinatus* Miller has more whorls than those of the other species, and may eventually be placed in a new genus.

P. bisinuatus might be regarded as an immature stage of *P. Sykesii* were it not that until the lip expansion of the latter is fully developed no trace of sinuation occurs, the sinuses being developed in the thickened margin beyond the expansion.

The variety of *P. lapidum* described and figured by Strobel (Mater. Malac. Argent.) from a single shell, does not seem to have sufficiently tangible characters for recognition as distinct from typical *lapidum*.

P. dimorphus closely resembles *P. microthauma* in characters of the lip varix and aperture, and it may possibly prove to be a form of that species when extensive series of each are collected; but the other features of the shells are so strikingly different and so constant in the series before me, that their union would not be justified with present knowledge.

Certain forms of *P. Bushii* have two weak keels on the back and offer an approach to *P. tricostatus*, and the two may prove to be specifically the same, although proof is lacking that this is the case. In *P. Buschii* the keels or sulcus on the back are weaker when present, the umbilical crescent is larger and angular, and the form less elevated.[1]

[1] Since the above table has been in type, I have received Mr. E. R. Sykes' notes on certain species which he was so kind as to compare at my request, with d'Orbigny's types in the B. M. "*Potamolithus lapidum*. Compared with the typical series your shells differ a bit in the aperture being somewhat pyriform, while those of the museum series are more rounded. Still they are, I think, the same species. There is only one tablet, and this contains one of your variety [*supersulcatus*] mingled with the rest, as also one specimen which is not the same species but may be *Petitiana*.

"*P. Sykesii*. I think that this is only a form of Petitiana; there are however only two specimens, both immature, of this last species in the museum." [I had supposed d'Orbigny's shells were mature, and therefore separated *Sykesii* on the ground of its peculiar peristome. It remains to be seen whether adult *Petitiana* will prove to have the same characters, but I agree with Mr. Sykes that it is likely].

P. gracilis. This is distinct from *picium*, which is a thinner and slighter-built species, [and does not show the same apertural characters.]

DESCRIPTIONS OF SOME NEW SHELLS FROM THE NEW HEBRIDES ARCHIPELAGO.

BY C. F. ANCEY.

Endodonta (?) tenuiscripta Anc.

Shell much depressed, lenticular, very sharply keeled at the periphery, thin, not much shining, of a somewhat silky appearance, openly but very widely umbilicated. Spire convex, apex obtuse, with 5 regularly and slowly increasing whorls, barely convex and furnished with a linear and appressed suture, the last one slightly impressed above and below the very acute keel, slightly convex above, more so beneath. Umbilicus circular, exhibiting all the volution (1½ mill. wide), surrounded by a very obtuse angle. Aperture rather oblique, securiform, somewhat sinuous, very much angular at the end of the carina, not deflexed in front. Margins distant scarcely connected by a very thin shining deposit. Sculpture very fine, consisting of oblique and very fine crowded lines of growth. Color fulvous, with numerous fine and irregular stripes of a brown tint, larger on the last whorl.

Greater diam. 6½, less. 6, height 3 mill.

Island of Mallicolo, New Hebrides (E. L. Layard).

This shell is evidently related to my *Patula Glissoni*, described several years ago from the same group of islands. According to Mr. Pilsbry's new arrangement, this should perhaps be rightly located in *Endodonta* with the species now considered, unless it may eventually prove to belong to *Flammulina*. *E. tenuiscripta* is a very beautiful little shell, recalling the Hawaiian *E. lamellosa* which is very much like it, but wanting internal laminæ. It looks like a small *Trochomorpha* and especially *Pararhytida* on a very small scale, but is perhaps nearer to Crosse's *Helix trichocoma*, from New Caledonia.

From its ally, *Patula Glissoni*, found in the island of Vate, New Hebrides, it may be easily distinguished from its larger size, much more acute keel, different style of color, planulate whorls and other differences.

Melania vatensis Anc.

Shell imperforate, turrited, somewhat shining, rather solid, fulvous with irregular and more or less interrupted longitudinal brown stripes and dots and lighter suture on the two last whorls. Ground color frequently more obscure at the base. Spire long, pointed,

entire, conic, with very regular outlines. Whorls 12–13, convex, regularly increasing, furnished with small warts, becoming obsolete at the base of each whorl and disappearing on the two last ones and sculptured with fine incised spiral sulci more crowded towards the base of the shell. Suture impressed, canaliculate on the last volutions. Body whorl broadly oval, rounded, often more convex below its middle. Aperture oval, angular above, not much effuse nor oblique, scarcely sinuous, livid within. Columellar edge thick, regularly arched. Operculum as usual in the genus.

Long. 30, breadth 10, height of aperture 9 mill.

Island of Vate, New Hebrides (E. L. Layard).

This has been submitted for identification to Dr. A. Brot, the regretted author of many papers on *Melanians* and he wrote me that he received the same shell from Dr. W. D. Hartman under the erroneous name of *Melania marici* Gass. He was unacquainted with the shell from Vate and thought it may prove to be an undescribed species, so that I venture to give a name to it, under Dr. Brot's undisputed authority.

Neritina coccinea Anc.

Shell solid, oblong, not shining, reddish-yellow, without markings, tinged with orange near the aperture, finely striated, not spirally sculptured, convex but not globose. Spire distinct, obtuse, lateral, entire, consisting of two whorls only, very rapidly increasing, the last one very large, transversely oval. Suture linear. Aperture oblique, with the superior edge long and elliptical connected with the basal by a large flat and thick callosity of a dull whitish or livid color. Margins not remote. Outer margin acute. Septal area without teeth. Operculum red, thin.

Diam. 6½, height 5, do. of aperture 4½ mill.

Island of Vate, New Hebrides (E. L. Layard).

This very pretty little species is quite different from any one I know of. It may perhaps be allied to Pease's *rubida*, from Tahiti, but is very much larger.

NEW AMERICAN UNIO.

BY WM. A. MARSH, ALEDO, MERCER CO., ILLINOIS.

Unio Askewi, new species.

Shell smooth, subrotund, somewhat inflated, inequilateral; sides slightly constricted, rounded before, subtruncate posteriorly, with

or without rays, rays obscured. Substance of the shell thick and solid; beaks small, with a few rather coarse, concentric undulations; ligament rather long and dark brown; epidermis reddish-brown; growth lines rather coarse and slightly raised; umbonial slope obtusely angular; posterior slope angular, with a raised ridge from beaks to posterior end, slightly biangulated; cardinal teeth large, erect, compressed and corrugate; lateral teeth short and slightly curved; anterior cicatrices distinct and deep; posterior cicatrices distinct; cavity of the shell deep; cavity of the beaks moderately deep; nacre white or rose-color; soft parts unknown.

Habitat: Village Creek, Hardin Co., Texas; Sabine River, Texas.

This shell seems to be between *U. beadleianus* Lea and *U. chickasawhensis* Lea, and bears some resemblance to *U. chunii* Lea. It is more triangular than *U. beadleianus*, and more solid, with a different epidermis and teeth; it is much more inflated and more angular posteriorly than *chickasawhensis*, and it differs in being less heavy in the beaks and in the outline of the shell.

One specimen was received many years ago from Mr. A. G. Wetherby, from Village Creek, Hardin Co., Texas, and many specimens, lately, from Mr. H. G. Askew, of Austin, Texas, who is an earnest worker in this family of shells, and in whose honor I name this shell.

ISAAC LEA DEPARTMENT.

[Conducted in the interest of the Isaac Lea Conchological Chapter of the Agassiz Association by its General Secretary, Mrs. M. Burton Williamson.]

Kindly bear in mind the fact that this is the month when our reports are due, also annual dues and election of officers, as noted in the November issue of THE NAUTILUS. The tardiness of some of our members in reporting last year delayed the issue of our volume of Transactions. Some of our members are always prompt in reporting, and the General Secretary appreciates their readiness to *conform with the rules of the Chapter.*

[From the report of Miss Nelson. From the Transactions of the Isaac Lea Conchological Chapter for 1895.]

My interest in shells dates as far back as I can remember, when my brother and I played on the banks of the stream at our old

home, and gathered a good many varieties of fresh-water and land shells which I have always kept.

Ill-health has prevented my doing much collecting the past year, and my attempted exchanges have been unfortunate in almost every case. However, I do not consider a "collection" the most important part of *any* study, though I must confess it adds pleasure to it. Last July I very much enjoyed the class in conchology taught by Mrs. Shepard, and found profit also.

I spent one afternoon capturing what mollusks I could besiege in their homes in the sand and mud at the mouth of the river above Alamitos, stopping long enough at "Devil's Gate" to waylay with a hatchet a few of the inhabitants of the soft rock, such as *Pholadidea penita* Conr., and *Platyodon cancellatus* Conr. *Nassa tegula* Rve., *Cerithidea sacrata* Gld. were enjoying a promenade on the mud, and it seemed a pity to end their happiness, unless I accept the belief of Agassiz, Cuvier and others in the immortality of animals.

I noticed a good many small holes in the sand, some with little mounds around them, like those made in the earth by some of the insect world, and, I found, on excavating them, that some of my little molluscan friends were at the bottom of the contrivance for breathing. I brought to light *Donax flexuosus* Gld., *Liocardium substriatum*, *Lyonsia californica* Conr. and *Heterodonax bimaculatus* D'Orb.

HENRY D. VAN NOSTRAND.

It is with regret that we record the death of Mr. Henry D. Van Nostrand, which occurred at his residence in Glen Ridge, N. J., on the morning of the 8th of October.

Mr. Van Nostrand was born in New York City about 73 years ago, and was long actively engaged there in mercantile business as a member of the firm of J. & H. Van Nostrand, wholesale grocers, which was founded near the beginning of the present century by his father.

Early in life he became interested in the study of conchology, and began a collection of shells which will rank with some of the best private collections in the country. The nucleus of it was that of the late John A. Redfield, which he purchased from Mr. Redfield about 40 years ago.

Until within a few years, Mr. Van Nostrand resided at Greenville, near Jersey City, N. J., where he was a prominent and highly esteemed citizen. There, in his beautiful and hospitable home on the shore of New York Bay, he entertained many noted conchologists, including the great collector, Hugh Cuming.

He was one of the earliest members of the New York Lyceum of Natural History, and among his intimate associates were Messrs. Redfield, W. G. Binney, Robt. Swift, Wheatley and Haines, but his closest friend was the late Thomas Bland, for whom he had a most affectionate regard which was reciprocated by that distinguished naturalist. After the death of Mr. Bland, Mr. Van Nostrand raised a fund to provide for the monument which now marks his grave in Greenwood Cemetery, Brooklyn, near that of Mr. Redfield. He frequently expressed to the writer his affection for the memory of his deceased friend, and only a short while before his death planned a visit to Mr. Bland's grave, which he was not able to carry out.

Mr. Van Nostrand's cabinet is rich in many families, both marine and terrestrial, particularly so in cones, olives, volutes, cypræas and mitras. It also contains the larger and better portion of the Bland collection of West Indian land shells, the labels of which are in the hand-writing of Mr. Bland. It also contains many choice specimens obtained from the Perry Expedition. It is to be regretted that Mr. Van Nostrand made no provision for the disposition of this truly valuable collection which should adorn some one of our great public institutions. Several species of shells have been named in his honor, among them *Helix Van Nostrandi* Bland, of our southern States.

A gentleman of the old school, a kind and generous friend, he will be missed and his memory cherished by those whose good fortune it was to know him.—S. Raymond Roberts.

[Communicated.]

THE AMERICAN ASSOCIATION OF CONCHOLOGISTS.

A number of representative members of the American Association of Conchologists in various parts of the country, having expressed their desire to renew the activity of the Association, the initiative was taken by a gentleman of Philadelphia, not a former officer,

who invited several of his brother conchologists to meet at his board to discuss the outlook.

As some readers are not aware of the circumstances, it may be well to state that the Association was originated in 1890, for the purpose of encouraging and advancing conchological study in America by concerted effort and mutual assistance. It rapidly attained a much larger membership than its originators had anticipated; and the correspondence of the President and other officers became so large as to be a serious burden. Moreover, the original articles or "constitution" stated that there were to be no membership dues, so that the expense to the officers named for postage, etc., was not inconsiderable.

Although the pages of the NAUTILUS were freely used for Association communications, it was found necessary to print lists of the members, their addresses and specialties, for general use. This expense was met by the officers on the first occasion, and the second list was printed by generous subscriptions from various members throughout the country.

These conditions, together with business engagements and ill health which prevented the first President of the Association from continuing to give his time in the generous measure required, led to the present inactive condition of the Association.

So much for the past. With these conditions in view, it was the unanimous judgment of the assembled conchologists that "Rule 3" of the former by-laws should be stricken out, and an annual membership fee of (say) $1.00 be fixed, to defray expenses of the Association, such as postage, printing of Reports, to contain lists of members, Treasurers' statements, and information useful to the membership at large.

Should this meet with the approval of the members, it will be necessary to elect a Treasurer, not originally provided for by the rules. It is believed that these modifications, by providing ample means for communication between members, will lead to a renewed and healthy growth of the Association.

All members of the Association are requested to consider the conditions above set forth, and freely submit their views thereon to the Secretary, (Charles W. Johnson, Wagner Free Institute of Science, Philadelphia), who will report the same at a meeting of the Association to be held at the call of the officers, date to be announced hereafter, to pass upon these amendments to the Rules. It is desired

that such communications be sent before the 20th of the present month.

NOTES AND NEWS.

CHOANOPOMA (CTENOPOMA) BAHAMENSE SHUTT. AT KEY WEST.—When at Key West, some years ago, Dr. Wm. H. Rush, U. S. N., collected specimens of a small land operculate which he found living with *Chondropoma dentatum*. The species proves to be *C. bahamense*, described from the island of New Providence. Compared with specimens from that locality, the Key West shells are smaller—alt. 8–9, diameter 4½–5 mm.—but identical in sculpture and form. It is a light, fleshy-yellowish shell, with quite indistinct narrow interrupted bands of well-separated brownish dots, closely longitudinally ribbed, but not latticed, having no fine spiral sculpture, only coarse, very low revolving sculpture, hardly visible on most specimens except around the umbilicus. The lip is flat and there is a little reflexed "hood" above the upper angle of aperture in fully mature shells. Operculum calcareous, with tangential lamellæ. It is easily separated from *C. dentatum* by the lack of decussated sculpture. This is a species new to the United States fauna.

—*H. A. P.*

LIMNÆA BULIMOIDES LEA RESISTING DROUGHT.—Specimens of a very short-spired form of this species were lately received from Mr. Geo. H. Clapp, with the following note: "They were collected by my cousin, Geo. H. Pepper, from a water-hole that appeared to be dry most of the year, near Farmington, New Mexico, on September 20, 1896, and reached me, packed in cotton, on October 5. On the 4th of this month (November) I dropped them into warm water to soak them loose from the cotton, and about two dozen out of 50 or more came to life. They had been *out of water 45 days!* The shells spend nearly as much time out of the water as in it, frequently crawling to the top of the glass in which I keep them." Out of 4 specimens sent alive, packed in dry cotton, one revived at once upon being placed in water, after an additional journey, dry, from the 6th to the 9th of November. The survivor has a translucent or almost water-colored body, closely peppered with opaque white; eyes black; tentacles opaque white; a dark stripe on back starting between tentacles. With the Limnæas were some of the little bivalve Phyllopod crustacean, *Estheria mexicana* Claus.—*H. A. P.*

THE NAUTILUS.

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TO CONCHOLOGISTS.

"The night is starry and cold, my friend,
And the New Year bright and bold, my friend,
Comes up to take his own."

NINETY-SIX has rolled by, and with it THE NAUTILUS almost completes another volume. We had hoped to tell you at this festal season that conditions were becoming more favorable for the development of the NAUTILUS in northern latitudes. The NAUTILUS is all right in deep water, but the cold winter winds of adversity seem to be too much for it, and by April it is usually ashore and pretty well broken up. The editors come to its rescue, and with paper sails, on which there is a little printing, writing and a few figures, start it again on its yearly voyage. But the editors are getting tired of furnishing sails. We don't mind putting them on—in fact, we'll do all the work cheerfully, only give us the material.

We are not asking for a gift, but merely suggesting to you that to pay the price of a year's subscription, now due, is not only a seasonable action on your part, but a positively meritorious one as well.

Our editorial of last January seems to have been taken as a joke, judging by the results in hard cash. We do assure you, friends, "this is no joke." THE NAUTILUS *is ashore now.* Are you going to help it ont of the breakers? Is the tenth voyage to be the last? It depends upon you.

We wish you all a Happy New Year.

H. A. P. & C. W. J.

NOTES ON THE LAND SHELLS OF QUEBEC CITY AND DISTRICT.

BY A. W. HANHAM.

In this district the Isle d'Orleans may be considered the only rich collecting ground in species; all the following, with one or two exceptions, having been taken there, while many of the small species have not been observed elsewhere. The other good localities in the district are: St. Joseph's (deLevis) for *Vitrina*, *Vallonia*, and *Vertigo;* St. Romauld's for *Polygyra* and *Vertigo;* the Plains of Abraham for the introduced *Helices*, ribbed *Vallonia*, and *Pupa armifera* Say, and a ravine off the River St. Charles, near the city, for *Vitrina*, some of the *Zonites* and *Succinea*.

It may be stated here that the Isle d'Orleans lies in the St. Lawrence, about five miles below the city. The island is twenty-one miles long by one or two broad, and during the summer months there is a regular ferry serviee; only a few miles of the end nearest the landing have been worked.

On May 25, 1893, the day after my return from Barachois, Gaspé, I distributed nearly fifty young *H. hortensis* L. (from a quarter- to a half-grown) along the top of the cliff bordering the Plains of Abraham; this is where both *H. cantiana* Mont. and *H. rufescens* Penn. seem to thrive. On July 29 I noticed two full-grown specimens, both the plain yellow form, and, on September 15, another, this one banded. I see no reason why this locality and climate should not suit *H. hortensis* L., as it has, without doubt, the other introduced species. I have a record of this Helix being taken as far as far up the St. Lawrence as Little Métis.

Selenites concava Say. Local, throughout the district.

Limax agrestis Müll. Common.

Limax campestris Binn. Rather local.

Limax sp. Rare; in two or three places only (Lake Beauport and Isle d'Orleans).

Vitrina limpida Gould. Taken in three localities only: abundant under cliff close to the St. Lawrence River at St. Joseph's; a small colony near St. Romauld's, and some fine ones from the banks of creek running into the river at St. Charles.

Zonites cellarius Müll. In drift on Isle d'Orleans, and a few up the St. Charles River. None living, but many shells containing the animal.

Zonites nitidus Müll. Quite rare, a few from banks of creek, St. Charles River.

Zonites arboreus Say. Plentiful, but not often in good condition.

Zonites radiatulus Alder. Plentiful.

Zonites binneyanus Morse. Well-distributed, but never abundant.

Zonites ferreus Morse. Both rare and local.

Zonites exiguus Stimpson. Woods, Isle d'Orleans, very abundant.

Zonites fulvus Drap. Fairly abundant.

Zonites multidentatus Binn. Isle d'Orleans only; rare.

Tebennophorus carolinensis Bosc. Occasional.

Pyramidula alternata Say. Widely distributed, but only common on side of cliff, Isle d'Orleans.

Pyramidula striatella Anth. Common everywhere.

Pyramidula asteriscus Morse. Plentiful in a piece of swampy wood, Isle d'Orleans, area of distribution very limited, and no trace elsewhere in district. I got a good supply of these shells by taking home a quantity of dead leaves and débris, and sifting them during the winter evenings.

Helicodiscus lineatus Say. Rather abundant under accumulations of dead leaves in damp woods.

Acanthinula harpa Say. Exceedingly common in a small, rather dry clearing (covered with a little low bush and bracken) between woods, Isle d'Orleans. Eearly one morning, after a very damp night, Mr. Latchford took a number off the trunks of the small trees in this clearing. On mainland, traces found in two widely separated localities.

Punctum pygmæum Drap. Fairly common.

Helix rufescens Penn. Very abundant throughout the city, especially on the cliffs and city walls. Extends along the cliff some distance up the St. Lawrence; a large colony noticed at St. Sauveur; a few up River St. Charles, and a small colony on the Isle d'Orleans, close to the ferry landing. Recorded from Levis by the Abbé Begin. This species appears to be spreading rapidly.

Helix cantiana Mont. Common on cliff bordering Plains of Abraham and extending to the citadel. Not noticed in the city.

Polygyra albolabris Say. Well distributed, but not common.

Polygyra albolabris var. *maritima* Pils. Some half-dozen examples, apparently this variety, taken here.

Helix dentifera Binn. Local, but where found at all, more plentiful than *albolabris* or *sayii*. At St. Romauld's a small colony was

discovered on the cliff side on May 9, 1893, all still in hibernation. In the more elevated parts of a small piece of rather swampy woods off the St. Foye road, not far from the city limits, this shell was rather common. Living shells all presented a more or less worn appearance, the tooth was often lacking in seemingly full-grown individuals, and they seldom approached in size, and were generally more fragile, than those occurring on the Isle d'Orleans. From this I should judge that their surroundings were not exactly healthy or suitable ones, and they no doubt owe their existence here to the fact of the wood being a private preserve, comparatively undisturbed by man or beast. No other Mesodon was seen here.

This good species was first taken in the vicinity of Quebec City by Mr. Latchford, of Ottawa, Ont., the occasion being a visit to the Isle d'Orleans on August 16, 1891. Since that date a good number have been taken there, all, without exception, on the cliffs on both sides of the islands; at some places within a few yards of high water mark of the St. Lawrence River. On the cliff side having a northern exposure, the vegetation is decidedly rank, and where there is a good deal of moist, shaly rock mixed with dead leaves, etc., live specimens are sure to be plentiful and in fine condition.

On May 27, 1893, chiefly from an old unused path on the cliff side, I made the following capture: *Selenites concava* Say, 66; *Pyramidula alternata* Say, 59; *Polygyra albolabris* Say, 1; *Polygyra dentifera* Binn., 71; *Polygyra sayii* Binn., 29; *Polygyra monodon* Rack., 15; *Succinea obliqua* Say, 9—all good and mostly living shells.

Polygyra sayii Binn. This species is more widely distributed than *P. dentifera* Binn. along the cliff side on the mainland (northern exposure only). On the island it occurs with *M. dentifera*, but never in abundance (except on the above-mentioned occasion). It has also been taken rarely in the woods which cover a good part of the island. This species appears to be more hardy than the other *Polygyra*: it does not go into hibernation nearly so early in the fall. Unfortunately, eaten shells are rather too conspicuous.

It took me a whole season to get used to the habits of these species, so as to know just where to look for them, often going home nearly empty-handed when I had really been in the midst of them. When hibernating, they are most easily seen, the beautiful white (sometimes pinkish) lip of *P. dentifera* Binn. catching the eye when exposed to view. Early in the spring, when just out, they are more

difficult to find, as they adhere to the dead leaves, and, unless felt, may then easily be turned over and lost.

Polygyra monodon Rack. This species is well-distributed and very common in places on the cliff side at the Island. I have a record of 140 specimens taken November 12, 1892, and have found 20 or more all together—in fact, on the cliff side, either in the fall or spring, it is usual to find these large families buried together in the loose, shaly rock. At other places where I have collected, it has been unusual to find more than a pair together. A few of my Isle d'Orleans specimens are very fine, and have the umbilicus unusually large.

Polygyra monodon Rack, var. *fraterna* Say. A few approaching this variety were taken in the neighborhood of the Gomin swamp on the mainland.

Vallonia pulchella Müll. Common on the mainland at foot of cliffs, and on the Plains of Abraham, also observed on the Island.

Vallonia costata Müll. Occurs with *pulchella* on both sides of the St. Lawrence River, but is not so plentiful.

Vallonia excentrica Sterki. Local, at foot of cliff at St. Joseph's with *pulchella*, not observed elsewhere.

Vallonia labyrinthica Say. Chiefly from the Island, and generally from the dryer parts of the woods.

Pupa armifera Say. Recorded by the late Abbé Provancher as being common on the Plains of Abraham; it may be taken there in some abundance with *Vallonia* from under pieces of rock. I have taken single examples on the Island and at Levis.

Sphyradium simplex Gould. Rare, Island d'Orleans.

Vertigo milium Gould. A few on the mainland, more common on the Isle d'Orleans.

Vertigo ovata Say. Fairly plentiful in some localities.

Vertigo gouldii Binn. Rare, Isle d'Orleans.

Vertigo ventricosa Morse. Rare, Isle d'Orleans.

Vertigo pentodon Say. Isle d'Orleans, local. This shell has a habit of coating itself with dirt, like *Succinea avara* Say, and consequently it is difficult to find.

Vertigo bollesiana Morse. Common on mossy rocks under cliffs at St. Joseph's and St. Romauld's. A form taken with this, Dr. Sterki calls the New England variety.

Vertigo curvidens Gould. Isle d'Orleans, rare.

Ferussacia subcylindrica L. Two easily separated forms of this species are found in the district; one occurs everywhere and is abundant, the other has only been taken in damp woods on the Isle d'Orleans, and is a larger shell.

Succinea avara Say. Local.

Succinea ovalis Gould. Not at all common. Both these species are smaller in size as compared with specimens from western Ontario.

Succinea obliqua Say. The ravine running into the St. Charles River is a splendid place for this shell. During hibernation I have, on several occasions, taken 200 fine specimens in a short time, and some are the largest I have ever seen or captured. I am inclined to think that some of them would pass for *Succinea totteniana* Lea; there certainly appear to be two forms. In cleaning some of these shells taken on November 8, 1891, a few of the finest living specimens contained the peculiar parasite, reference to which is made by Dr. Dall, in his useful pamphlet, "Instructions for Collecting Mollusks, etc." (*Leucochloridium*).

Carychium exiguum Say. Very common in decaying vegetation in woods and all damp places.

NEW LOWER CALIFORNIAN BULIMULI.

BY H. A. PILSBRY.

Bulimulus hypodon n. sp.

With the general form of *B. spirifer* Gabb, this smaller species differs in the more convex lateral outlines of the spire and the much shorter body-whorl, which in a dorsal view is not produced and oblong, but short and transverse, and with the suture ascending somewhat toward its termination. Whorls 7½, surface with an oily polish, only slight growth-lines, but under the lens showing close, *fine incised spiral striæ, without trace of granulation.* Aperture slightly over half the total alt.; *peristome very broadly and flatly reflexed,* recurved at the edge, the margins joined by a rather heavy callus, but without defined edge. Columella distinctly truncate *at base;* internal lamina well-developed, thin, *triangular.* Color almost white, the cuticle with an extremely faint buff tint. Alt. 25, diam. 12·5 mm.; alt. of aperture (including peristome) 13, width 10·2 mm.; width of reflexed outer lip 2·3 mm.

Lower California, exact locality unknown.

Bulimulus lamellifer n. sp.

General form of *A. spirifer*; waxen white or light brownish; the surface more or less granulose, as in examples of *B. spirifer*. Whorls about 6½. Aperture over half the altitude usually, but sometimes less than half; the lip-ends conspicuously approaching, joined by a short callus; peristome broadly expanded and reflexed, much as in *spirifer*. Columella showing from the aperture a sharp, oblique lamina; this lamina becoming very high internally, projecting in a square or bisinuate plate. The type measures, alt. 32, diam. 15 mm.; but they are very variable in size, the smallest seen being 23½ mm. long. The square or emarginate internal plate differs conspicuously from the corkscrew twisted fold of *B. spirifer*, and is apparently a constant character. Seventeen specimens examined.

Lower California (W. M. Gabb).

These forms are evidently different from *B. spirifer* Gabb, *B. bryanti* Cooper and *B. vesevanus* Dall, the species of this group described by American naturalists. A careful comparison with the descriptions of *B. lapidivagus, dentifer, subspirifer* and *dismenicus* of Mabille, causes me to consider these also as specifically distinct from the forms described above. Illustrations will appear in the next number of the *Manual of Conchology*, in which the other North American Bulimuli will also be figured.

NEW AMERICAN UNIONIDÆ.

BY WM. A. MARSH, ALEDO, MERCER CO., ILL.

Unio superiorensis n. sp.

Shell smooth, obovate, slightly inflated, inequilateral, rounded before, oblique, obtusely angular behind, with or without rays, rays when present interrupted by lines of growth. Substance of shell thick, beaks small, with a few rather coarse undulations; umbonial slope flattened, ligament long, dark brown; epidermis dark olive; growth lines very close, quite prominent, cardinal teeth large and solid, compressed and nearly smooth, double in left valve and widely separated; lateral teeth long, thick and nearly straight, anterior cicatrices deep and rounded, posterior cicatrices confluent and well impressed. Cavity of shell deep; cavity of beaks deep and rounded; nacre white, sometimes shining.

Habitat: Michipicoton River, upper shore of Lake Superior, Canada.

This shell is more closely related to *U. borealis* A. F. Gray than any other I know of; it is not so much inflated as that species, it is more transverse on both dorsal and ventral portions; when the rays are present they differ entirely; the posterior portion of the shell is flatter, it is more oblique in outline, the cardinal teeth are much smoother and more compressed, the cicatrices are deeper and more rounded, shell cavity shallower, the lines of growth are very much more numerous and closer.

It bears some resemblance to some varieties of *U. luteolus* Lam., but differs entirely in the teeth, growth lines, epidermis, outline of shell, and cavity of beaks and shell, from any variety of *luteolus* I ever saw.

Several years ago, Mr. James H. Ferris, of Joliet, collected a number of these shells at the locality given, and I was never satisfied that they could be placed, even as a marked variety, with any described species.

ON SOME SINISTRAL LAND SHELLS.

BY C. F. ANCEY.

The following are several sinistral specimens of normally dextral species, nearly all included in my own collection. Some of these monstrosities are still, I think, unrecorded. In addition to these, I must say that I have collected, in 1884, in the mountains near Héas, Pyrenees, a *dextral* example of the usually sinistral *Buliminus quadridens* Müller. This is also in my collection. From the list given below, it appears that sinistral monstrosities are much more scarce in operculate land shells than in *Helicidæ*, and, besides the well-know reversed *Cumpeloma decisum* Say (=var. *heterostropha*), still rarer in fluvatile shells.

Helix (*Xerophila*) *trepidula* Servain (Dept. du Bouches-du-Rhône, S. France).

Helix (*Xerophila*) *ericetorum* Bourg. Oued-el-Hakoum, south of Berrouaghia (Algeria).

Helix (*Euparypha*) *pisana* Müll. South France.

Helix (*Tachea*) *nemoralis* L. Bundoran, Ireland (from Mr. Brockton Tomlin).

Helix (*Macularia*) *vermiculata* Müll. Marseilles, France (in Mr. M. Sollier's collection).

Helix (*Pomatia*) *pomatia* L. West France.
Helix (*Pomatia*) *aspersa* L. Marseilles.
Helix (*Mesodon*) *thyroides* Say. Connecticut.
Leucochroa candidissima L. var. *major* Brg. Near Boghari, (Algeria).
Leucochroa candidissima L. (typical). Marseilles; Algeria.
Zonites algirus L. Montpellier, south France.
Rumina decollata L. var. *major*. Near Berrouaghia, Algeria.
Pupa (*Torquilla*) *bigorrensis* Charp. Cazaril, Hautes-Pyrénées.
Pomatia crassilabrum Dup. Cauterets (Hautes-Pyrénées), Assat (Basses-Pyrénées).
Ditropis planorbis Blanford. Tinnevelly.
Achatina panthera Fér. Mauritius.
Gibbus lyonnetianus Pallas. Mauritius.
Nanina (*Dyakia*) *javanica* Fér. Java.
Nanina (*Dyakia*) *duplocincta* Bttg. Java.
Limnæa peregra Drap. England.
Campeloma decisum Say. New York.

COCHLICELLA VENTRICOSA Drap., NEAR CHARLESTON, S. C.

BY WM. G. MAZYCK.

On the afternoon of October 27, last, I found a small colony of this species living under a fallen fence post on a lot in the rear of the United States Life Saving Station, in the town of Moultrieville, on Sullivan's Island, at the entrance to Charleston Harbor, S. C.

The discovery is one of peculiar interest, presenting a problem of somewhat difficult solution. The island is quite small, being only about four miles long, with an average width of some 300 yards and an average height above mean high water of only about six feet. The only natural growth of shrubbery is on the end, where there is a dense growth of stunted myrtles. Moultrieville covers about one-half of the Island. The lot upon which the specimens were found is destitute of any vegetation, except a stunted growth of a coarse low grass, somewhat similar in appearance to the ordinary lawn grass; there is no garden nearer than half a mile, and that contains no plants of foreign importation. There is absolutely nothing in the environment to suggest congeniality, and the spot is

apparently most unfavorable to the propagation of the species, which is entirely isolated as far as yet observed. The entire island was submerged for about ten hours to an average depth of about two feet during the hurricane of August 27, 1893, and almost all vegetation was killed at that time, a circumstance which leads to the opinion that the species is of very recent introduction. The terrestrial species of mollusca so far observed on the island are:

Polygyra espiloca Rav.	*Pupa fallax* Say.
Triodopsis hopetonensis Shutt.	*Pupa pentodon* Say.
Cochlicella ventricosa Drap.	*Succinea campestris* Say.
Vertigo rugosula Sterki.	*Succinea inflata* Lea ?

I have a single dead specimen of *Mesodon thyroides* Say, most likely washed from the neighboring mainland, and a few specimens of *Stenogyra decollata* L., certainly brought from Charleston, where it is abundant.

ISAAC LEA DEPARTMENT.

[Conducted in the interest of the Isaac Lea Conchological Chapter of the Agassiz Association by its General Secretary, Mrs. M. Burton Williamson.]

UNIOS.

[Excerpts from the Report of Dr. W. S. Strode. From the Transactions of the Isaac Lea Conchological Chapter for 1895.]

* * * * To the Spoon River, only three miles away, two or three hurried visits have been made. With one exception only the usual shells of this stream were found. I was fortunate in striking a new bed of Unios. It was in a little bayou six feet wide and about three deep by twenty long, just above a rough ledge of lime and sand rock. The environment was suitable to many species, and the mud and sand at the bottom of this little cove was literally packed with them. In half an hour I had thrown out on the clean, white sand several bushels of various species, as *Unio tuberculatus, anodontoides, plicatus, rectus, ligamentinus, luteolus, occidens, gibbosus, lacrymosus, pustulosus, trigonus, alatus, gracilis, ebenus, laevissimus, complanatus, rugosa, donaciformis,* and several of the gigantic *multiplicatus* peculiar to this stream. Some of these species had been so long in this still water, and were so hoary with age that they were moss grown. When I had thrown out about all the little bayou contained, I selected the finer specimens of such species as I

cared for, and then returned the rest to the water for future use. From one of the *U. occidens* I took one of the finest pearls that I had ever seen. It was a perfect oval, very lustrous, and about the size of a small buckshot. The exceptional shell found in the bayou was *Margaritana confragosa* Say, not heretofore reported in this stream, though they are not uncommon at Liverpool on the Illinois River. Two or three young shells were found, which is a good indication that the parents were somewhere about. In a pool in the shade of a long bridge at Bernadotte, I found a large number of *Pleurocera elevatum* Say and a few *Somatogyrus subglobosus* Say.

* * * * A collector in Texas has also sent me some fine specimens, a list of which may prove of interest to the members of the Isaac Lea Chapter of the Agassiz Association: *Unio nodiferus, U. manubrius, U. rotundatus*, very large and fine; *U. purpuratus, U. aureus*, also a variation of the same; *U. Mitchelli*, said to be found only in Guadaloupe River; *U. tampicoensis, U. hydianus, U. berlandierii, U. perplicatus, U. speciosus, U. tuberculatus, Anodonta leonensis, A. stewartiana.* The *U. manubrius* is the long lived mussel, burying itself and living for months in the banks and beds of streams after they have dried up. The *U. tuberculatus* is the purple nacre variety. These are all from Jackson and Victoria Counties, and from Guadaloupe and Brazos Rivers, Skull, Colleto, Spring and Garcitas Creeks, and Ripley, Bluett's and Manchoula Lakes.

Of the smaller species I also received the following: *Sphærium elevatum, Polygyra texasiana, Praticolella berlandieriana, P. griscola, Polygyra auriformis, Physa mexicana, Vitrea electrina, Bulimulus schiedianus.*

While at Niagara Falls in August I found Goat Island rich in Helices. The *Polygyra albolabris*, large form, was particularly noticeable. Early in the morning great fine ones were to be seen crawling about over the leaves and in the crevices of the rocks in the almost impenetrable shade of the thick forest that covered the island. * * * *

I append the list or the Unionidæ of the State (Illinois). Later I will issue a printed list with localities. I am indebted for much valuable information and assistance to Messers. Hinkley, Ferris, Marsh and Wolf, of Illinois; to Dr. Leach, of Michigan, and the late Dr. Stein, of Indiana. Some of the species in the list are doubtless synonyms, as *Unio zigzag* and *U. donaciformis, U. occidens*

and *U. ventricosus* and some others. But as the authorities have not agreed on this matter, I have included them as separate species. (As Dr. Strode will issue a complete printed list of the Unionidæ in some other form, the list as added to his report is not reproduced here.—M. B. W.)

NOTES AND NEWS.

A LARGE DECAPOD.—I have been greatly interested in an immense Cephalopod which came ashore about five miles south of Jack Mound, Anastatia Island. Only the stumps of the tentacles were left, as it had been dead for, perhaps, days. The body proper measured 18 feet in length, 11 feet in breadth and 3½ feet thick above the sand as it lay soft and flattened on the beach. Of course there is no way of knowing how long the tentacles were, but, judging from the size of the body, the arms must have been of enormous length.—DEWITT WEBB, M. D., St. Augustine, Fla.

ARMATURE OF HELICOID LAND SHELLS.—Under this title Mr. G. K. Gude, of London, is contributing a series of important articles to *Science Gossip*. The Indian genera *Corilla* and *Plectopylis* have thus far been discussed, their peculiar internal barriers figured, and the specific characters more fully worked out than in any former publication. In the first paper (September, 1896) a new species of *Corilla*, *C. Fryæ* Gude is described, and the armature of *C. humberti* Brot for the first time figured. A key to the species of *Corilla* is given in the second paper; and in the third, which has just appeared (November, 1896), the discussion of *Plectopylis* is commenced. The work promises to be very valuable to Helicologists, and we hope that Mr. Gude will succeed in procuring a sufficient number of specimens to make it complete.

SAD DEATH OF AN ORIENTAL BY HALIOTICIDÆ.—In the November *Popular Science Monthly*, Margaret Wentworth Leighton relates that while she was living in San Francisco, "A Chinamen went out on the rocks at low tide to gather some [Haliotis]. As he attempted to wrench one from its home his hand was caught between shell and rock, and so firmly held by the animal that he could not escape the rising tide and was drowned." West coast collectors should take warning. Don't fool with *Haliotis cracherodii* without having by you a crowbar or at least an ax, lest you should perish miserably like this child-like and bland Celestial.

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ON THE GENERIC POSITION OF BULIMUS GALERICULUM MOUSS.

BY H. A. PILSBRY.

This species was described by Mousson in his Land- und Susswasser-Mollusken von Java, 1849, p. 34, from near Pardana, Java, from a single specimen collected by Zollinger. In von Martens' edition of Die Heliceen the species is placed in *Geotrochus*, with the Cingalese forms later referred to *Beddomea*. Pfeiffer in his arrangement of the land snails in Malak. Blätter for 1855, p. 162, makes *galericulum* the sole species of a new section of Bulimi. *Pseusopartula*. The name he later corrects to *Pseudopartula*. In the Nomenclator Hel. Viv. he includes with *galericulum* in *Pseudopartula* (which is here made a subsection of *Geotrochus*), the New Caledonian species grouping around *B. sinistrorsus* Desh.

It is evident from this that *B. galericulum* is the type of *Pseudopartula*. On comparison with *Ariophanta dohertyi* Aldr., I find that that species also belongs to the same group; and here likewise must be placed *Helix nasuta* Metc., which has the same conchological features. As to the systematic place of *Pseudopartula*, I am in doubt. In the absence of information upon the soft anatomy, the group might be placed either next to *Papuina* in *Helicidæ*, or in the *Bulimulidæ* or the *Zonitidæ*, although it is evident that it has no affinity with the typical Ariophantas. Conchologically, it is well-characterized by the trochiform, sinistral, obliquely perforate shell; thin in texture, milky subtranslucent, the surface with fine spiral incised striæ, apex smooth and blunt, aperture extremely oblique and with well-reflexed peristome. The species are:

1. PSEUDOPARTULA GALERICULUM (Mouss.). Moll. Java, p. 34, pl. 3 fig. 5.

1*a*. PSEUDOPARTULA GALERICULUM var. GEDEANA (Bttg. MS.). More elongate with the peripheral angle subobsolete. Alt. 19½, diam. 12 mm.

2. PSEUDOPARTULA DOHERTYI (Aldrich). Nautilus, VI, p. 90, pl. 2, f. 1, 2. Sumatra.

3. PSEUDOPARTULA NASUTA (Metc.). Man. Conch. (2), II, p. 21, pl. 3, f. 42. Borneo.

For the group of *B. singularis, sinistrorsus, turgidulus*, etc., Montrouzier's name DRAPARNAUDIA may be used.

TIMOTHY ABBOTT CONRAD.

Born in Trenton, N. J., June 21st, 1803, died in the same city, August 9th, 1877.

To most conchological students, and especially to those interested in Cretaceous and Tertiary shells, the name of Timothy Abbott Conrad must be more or less familiar; and yet few, perhaps, are aware of the labor performed by him in searching the tombs of long vanished species, and presenting to the world in a series of papers the story of their origin, development and final extinction.

In this work he was one of the foremost America pioneers, and doubtless, the very first to note, from careful observation of their molluscan forms, the absolute relationship of the several outcropping Cretaceous beds ranging from northern New Jersey to southern Alabama. Nor was he less successful regarding recent species, since very many of these, native to the East and West coasts of America, were first studied, figured, and described by him, his skill in drawing being no less remarkable than his talent for investigation.

Personally he was a man of plain appearance, exceeding shy and sensitive, but withal a "good hater" and a true friend. Much of his time was devoted to literary pursuits other than scientific, and there are still extant a few copies of his poems, many of which show superior merit both in construction and sentiment.

Owing to failing health for several years preceding his death, he was often subjected to attacks of mental and physical depression, and it was in relation to this fact that the subjoined verses were

written and addressed to him. The present time, when renewed interest in Conrad and his labors has lead to the republication of his chief works, seems an appropriate occasion for their presentation.

TO TIMOTHY ABBOTT CONRAD,

Poet and Scientist.

Oft as the sons of Greece and Rome
Returned victorious from afar,
Their tyrants shouted "Welcome home!"
The while they shared the spoils of war.

It mattered not that other lands
To yield them wealth must lie in chains;
And naught, forsooth, were crimsoned hands,
So other's hearts impressed the stains.

But where are now those soldiers brave,
Both they who lost and they who won?
They sleep forgotten in the grave,
Their names and nations dead and gone.

Not so have slept the gems of thought
Born unto men far down the years;
These live—while deeds of valor wrought
In battle have dissolved in tears.

The world indeed has wiser grown
Since Error's clouds such shadows cast;
And few now dare to build a throne
Upon the ruins of the past.

"Grim visaged war," rapine and strife,
May clutch awhile their less'ning lease;
But knowledge is the soul of life,
And knowledge hails the reign of Peace.

To force of brutes, whose right is might,
Eternal thought has ceased to yield;
The Day has dawned that rules the Night;
Fair Science now commands the field.

With valiant hearts, and lips compressed,
Her sons are wheeling into line,
And woe betide the sable crest
Of Error when their strokes combine.

No nobler chief their legions know
Than thou, whose victories I sing;
No prouder wreath can men bestow
Than round thy memory will cling.

As bard or sage thou art the peer
Of men embalmed in storied song,
Who, holding truth and virtue dear,
Both lived the right and scorned the wrong.

Upon the fairest diadems
Of Poesy thy name is cast;
And, graven on Creation's gems,
Thy fame will live while ages last.

Will live in myriad laurels won
From sands, and marls, and strata old,
And shine as brightly as the sun
In medals wrought from mental gold.

Long o'er thy path may honors shed
Their cheering rays, and may the years,
As on they come with gladsome tread,
Bring smiles to thee in lieu of tears.

And when at last thy life shall glide
Beyond the outer rim of Time,
May heaven's gates swing open wide
In welcome to its joys sublime.

JOHN FORD.

Philadelphia, January, 1873.

ISAAC LEA DEPARTMENT.

[Conducted in the interest of the Isaac Lea Conchological Chapter of the Agassiz Association by its General Secretary, Mrs. M. Burton Williamson.]

In conformity with Art. V of the Constitution of our Chapter the election of President and General Secretary occurred on the last Wednesday in December at the home of the latter. All members residing in Southern California were invited to be present. The Hon. Delos Arnold presided in the necessary absence of the president. The votes were canvassed, and the following were declared elected.

President, Professor Josiah Keep, Mills College, California.

General Secretary, Mrs. M. Burton Williamson, University, Los Angelos Co., California.

The Executive Committee consists of the President, General Secretary and one other member (Art. IV). The Hon. Delos Arnold has been appointed a member of the Committee.

The following have been appointed Secretaries of the various Sections:

Section A.—Marine Shells of the West Coast, Prof. Keep, Mills College, Cal.

Section B.—Marine Shells of the East Coast, Mrs. E. P. Wentworth, Portland, Maine.

Section C.—Land Shells east of the Rocky Mts., Mr. James Lemon, Ontario, Canada.

Section D.—Fresh Water Shells east of the Rocky Mts., Dr. Wm. S. Strode, Lewistown, Ill.

Section E.—Land and Fresh-Water Shells west of the Rocky Mts. (Secretary not yet chosen).

Section F.—Fossil Shells, Hon. Delos Arnold, Pasadena, California.

Section G.—Juvenile Section, Mrs. M. P. Olney, Spokane, Wash.

Section H.—Microscopic Shells, Mrs. T. S. Oldroyd, Los Angelos, Cal.

Section I.—Marine Shells of the Southeastern Coast, Mr. J. J. White, Rockledge, Fla.

Mr. J. J. White, the popular proprieter of White's Cottage, Rockledge, Fla., makes the following generous offer to our chapter members. He will send *Strombus pugilis* or *Cardium isocardia*, or both if desired, to any member of the Chapter who will send stamps for their postage. This offer holds good until his stock of them is exhausted.

The name and address of a new member, Miss Lena L. Perrine, B. A., Valley City, N. D., was unavoidably crowded out of the January issue of THE NAUTILUS.

MY SNAILERY.

[Report of Miss C. Soper. From the Transactions of the Isaac Lea Conchological Chapter for 1895.]

Partly from choice, partly from necessity, I have followed the suggestion given by one of the members in last year's "Transactions," and have studied the shell life found in my "ain countree," and I want to tell some of the members who live far from the sea-shore, what delightful possibilities there are collecting and studying shells at home.

With the exception of a couple of weeks spent at Santa Barbara last summer, I have had no opportunity for collecting ocean shells, and as my "finds," at that place were very meagre, being confined to some live *Chama exogyra*, and a queer little slipper shell, I should have no report to give were it not for my family of snails, which I have had for nearly a year.

Last February, I found in an old cactus stump near Gabriel about 120 dead specimens of *Helix tudiculata*—7 or 8 large ones, the remainder being above a half of an inch in diameter. One or two small live ones were found, and they were treasured carefully in an old flower pot which was kept in a saucer of water. A little later the sexton of the cemetery, whose interest I had enlisted, found for me a fine large specimen of *H. tudiculata* near one of the hydrants. This was a large addition to my small family, which had already become the object of a great deal of attention from myself and others. * * * In March, in company with a friend, I went to the Arroyo Seco, near Pasadena, in search of helices. My friend had found their home one day when she was digging ferns, and learning of my desire to find some live snails, kindly piloted me to the place.

We found 20 or more, nearly all full grown of *H. tudiculata* and *H. Truskii*. Right here let me say that I think snails display exquisite taste in their choice of a home, at least some varieties do.

I am as much or more interested in photography than I am in conchology and I have found that the haunts of these humble creatures are nearly always in spots that delight the heart of a photographer. Pretty shady nooks, old gnarled trees and stumps, fern lined—which by the way, might contain water snails—broken down fences, and, overgrown hedges, are places equally attractive to the conchologist and the "disciple of the tripod." I cannot think of two studies that can be pursued more harmoniously than conchology and photography.

I have yet to experience the pleasure of a trip to the seaside with my camera and shell basket.

But, to return to the snails. The flower pot besides being too small was not a very satisfactory place for them. In some way, they would manage to span the distance between the pot and the edge of the dish which was kept full of water, as a means of keeping them at home, and, some of them were constantly escaping. I procured a large cheese box, filled it with leaf-mold, planted several varieties of ferns in it, transferred my snails to their new home.

In order to keep them there, I put around the box which I had first placed on another box to make it higher, a fence of wire netting about three feet high, and, far enough from the box, so that Mr. Snail could not get out without crawling down to the floor and then up the screen—a feat which only a very few have accomplished. Before I got this safeguard I had many long searches for miscreant members, under the bed, and similar places.

But, in spite of their roving disposition, they seemed fairly comfortable and happy, sleeping mostly during the day-time, and foraging at night. They ate a great deal of bread and lettuce, and the ferns shared with them the frequent showers of water which they received.

As has already been hinted, this snailery of mine is kept in my bedroom and I have spent many hours late at night and early in the morning, as well as during the day, watching its interesting inhabitants.

They are very particular about their personal appearance when they are not hibernating, keeping themselves, or rather their shells, bright and clean by "mouthing" them all over, I believe I have sometimes seen them performing that office for one another.

Early in May they began to lay eggs—depositing them mostly in a little hole and covering them with earth, although some were apparently indifferent about the matter. The eggs of *H. Traskii* were somewhat smaller than those of *H. tudiculata*, and resembled very much, in size, shape and color, homeopathic pills. They hatched in about 3 weeks, the baby snails seeming to know their way out of the case or shell. Is it not probable this forms the first meal?

The tiny things did not live very long, and I could not notice any perceptible growth. The conditions were not favorable, I suppose.

Early in the Summer the old snails began to go into Summer quarters, and they were soon all asleep except my dear, little glossy-brown *Glyptostoma*. I had found him in Santa Anita cañon. He kept watch all summer over the other sleepers. He would sometimes disappear for a week at a time—buried in the ground, but I have never seen him attach himself by an epiphram to the sides of the box as the others do.

All Summer they remained impervious to the freqent sprinklings which they received, but when the first rain came one night in early November, four or five of them woke up and began to investigate matters. They seemed to appreciate some bread and lettuce, but went to sleep again during the dry weather which followed.

Each rain brought some of them to life, and during a long and recent rain, nearly every one of them "came to."

A few of them have died since awakening out of their sleep, but I think their time had come, for they were regular old patriarchs. I have not noticed any addition to the growth of the larger ones, but the smaller ones especially little "Glyp," have made quite an addition to their houses. The newly formed shell looks soft and is almost transparent.

Perhaps I will tire those who know all about raising snails, by my long description, but, I hope there will be some to whom my report will be of interest, and who will find as much pleasure and profit in in a Snailery as I have found.

COMMUNICATION.

To all readers of THE NAUTILUS, the editorial note on the first page of the January number suggests the possibility that the pleasant monthly visits of this modest but valuable little journal may stop with the current volume. Are we as conchologists going to allow

this to happen? We have the cheerful assurance of the editors that they are willing to do their part, but it remains for us to do ours. No steam engine can be run without steam, no matter how faithfully the engineer may polish the metal work and oil the bearings. And let me add that no journal can maintain its existence without the expenditure of hard cash, as well as careful thought and labor on the part of the editors. To be sure, in the present instance the cash is the smaller part of the outlay, but some one must furnish it.

THE NAUTILUS is the only journal in the country devoted wholly to the interests of conchologists, and whose columns are open to our notes and exchanges. It rests with us, the conchologists of the country, to help the NAUTILUS into deep water. The subscription price is a trifling amount and surely we receive far more in return. I for one shall miss the NAUTILUS if it is discontinued and I know that others will. Let us *pay up* if we have not already done so and get our friends to subscribe as well. W. J. R.

Oakland, Cal., Jan. 6, 1897.

IN MEMORIAM—JOHN H. CAMPBELL.

It is with feelings of regret and sorrow that we record the death of our late fellow conchologist Mr. John H. Campbell, which occurred on January 15th. As is known to most of our readers, Mr. Campbell was the first President of the American Association of Conchologists, and it was mainly owing to his energetic nature that the Association, during the time of his activity, exercised a wide influence and stimulated many naturalists to more earnest study of conchological subjects.

For several years Mr. Campbell made a special study of the *Cypraeidæ*, and his collection of these ocean gems is doubtless the largest and finest in America.

Mr. Campbell was born in Philadelphia, March 31st, 1847, graduated from the Central High School in Feb., 1864, and admitted to the Philadelphia Bar, April 4th, 1868. He was elected a delegate at large to the Pennsylvania Constitutional Convention and served throughout the sessions of that body in 1872–3. In 1873 he became identified with the Catholic Total Abstinence Union, and for eleven years was the honored President of the Philadelphia branch of that organization. When the magnificent fountain erected by the society, largely through his efforts, was unveiled in Fairmount Park, July 4th, 1877, it was he who made the presentation address.

Mr. Campbell was also a member of several other prominent associations, among which may be mentioned the Academy of Natural Sciences, Philadelphia Atheneum, and Pennsylvania Historical Society. He was the author of several valuable papers, but perhaps the chief literary work of his life is the History of the Hibernian Society, a noble volume published about four years ago.

To his bereaved family we present an assurance of our deepest sympathy, trusting that He who tempers the winds to the shorn lamb will comfort and cheer their sorrowing hearts. *J. F.*

NOTES AND NEWS.

PLANORBIS NAUTILEUS L. IN AMERICA.—The occurrence of this well-known European species in the United States has hitherto rested upon its discovery at Ann Arbor, Michigan, by De Tarr and Beecher, who described it as new under the name of *Planorbis costatus*.

Several years ago, among some *Vallonia pulchella* Müll., purporting to come from Eaton, N. Y., a single specimen of this *Planorbis* was found. The collector of these specimens was unknown, so that no further information was obtainable, and, in view of the possibility of some accidental mixture of specimens, I have refrained from making a record based on a single example, which might be erroneous. Recently, however, I have received specimens of this species about which there can be no doubt, and which, taken in connection with the Michigan locality, render the New York citation fairly probable. Mr. O. A. Nylander, of Caribou, Me., is the fortunate discoverer of the new locality for this beautiful little species. He writes that he found it in Barren Brook, Aroostook County, Maine, in three or four inches of water under logs and bark associated with *Planorbis parvus, bicarinatus* and *trivolvis*. It hardly seems possible that in this locality, so remote from foreign commerce, the species could have been introduced by human agency. And in this connection it is a fact of some significance, that in the same brook is found a small *Pisidium*, which Dr. Sterki says is apparently identical with the European *P. milium* Held., and that the only other known American locality for that species is northern Michigan.

It is possible that the small size of the shell and its superficial resemblance to a very young *Planorbis exacutus* Say, has caused it to be overlooked by collectors, and that it will be found to have substantially the same range over the northern part of this continent as other circumpolar species.—BRYANT WALKER, Detroit, Mich.

A NEW VARIETY OF HELICINA PLICATULA PFR.—*H. plicatula* v. *christophori*. Like *plicatula* in sculpture, but the umbilical region is decidedly concave, excavated around the smaller callus, which does not fill it as it does in *plicatula*. Color uniform dark reddish (like *H. occulta* Say). This very pretty *Helicina* was collected by Dr. Wm. H. Rush, U. S. N., at the island of St. Kitts. A large number of specimens were taken. It differs constantly from *H. plicatula* of Guadelupe in the particulars mentioned.

H. A. Pilsbry.

SOUTH AMERICAN VOLUTIDÆ.—Dr. H. v. Ihering gives a valuable review of the Volutes of this region in the July–August number of the Nachrbl. D. M. Gesellschaft. Critical notes on the classification may be summed up with the conclusion that the group is a very natural one, with transition-forms between the extremes. v. Ihering believes *V. jerussaci* to be a variety of *V. brasiliana*. The tertiary species of Chili are believed to be *Cymbiola* (*Scaphella*) forms, and two new species are described from the Eocene St. Cruz formation, of which one, *V. ameghinoi*, is stated to be certainly the ancestor of the recent *V. brasiliana*. It should be mentioned here that the Eocene age of the Santa Cruz beds is doubtful. They are more likely Miocene. The Cymbiolas are stated to have arisen from Aleithoë-like progenitors, but whether these belong to the Volutoid or the Scaphelloid series as defined in Dall's pioneer study, remains undecided.

CAMPELOMA DECISUM SAY, REVERSED.—A series of this species, collected by Mr. W. W. Jefferis, of Philadelphia, at Fort Edward on the Hudson River, N. Y., has been carefully examined for me by Miss Jennie E. Letson for sinistral specimens, with the following results: Out of 681 specimens, mainly adult, but including those from one-fourth grown, up, none were sinistral. Out of the 410 shells of the uterine young 3 were sinistral, slightly over 0·73 per cent. Probably all who have collected Campelomas have noticed the greater proportion of sinistral examples among the young shells. This doubtless indicates that the reversed condition is an unfavorable one for maturation. The proportion of sinistral adult shells in this locality must be very much smaller, judging by the negative result obtained; but, of course, data are lacking for its determination.—*H. A. P.*

HAWAIIAN LAND MOLLUSKS.—Mr. E. R. Sykes has given descriptions of new species of *Macrochlamys*, *Endodonta* and *Achatinellidæ* in Proc. Malac. Soc., II, pt. 3. The status of the name *Microcystis*

Beck is elucidated; the conclusion is reached that *ornatella* Beck should be considered type of *Microcystis*. The small one-colored Polynesian Zonitoid forms, generally placed in *Microcystis*, are referred to the genus *Macrochlamys*, Bens.

YOUNG PYRAMIDULA STRIGOSA.—During the past August I cleaned 50 *P. strigosa* and found in each of them from 6 to 15 young shells. Have cleaned hundreds before and never found but one.—*Mary P. Olney, Spokane, Wash.*

NOTE ON THE GENERA OF S. AMERICAN AMNICOLIDÆ.—In writing upon this subject in the November NAUTILUS, the papers by Dr. H. von Ihering on *Die Gattung Paludestrina* (Nachrbl. D. Mal. Gesellschaft, VII, 1895, p. 122), and *Zur Kenntniss der Gattung Lithoglyphus* (Malak. Bl. VII, 1885, p. 96) should have been mentioned, as they are the most important contributions to our knowledge of the anatomy of these forms yet made. In regard to the nomenclature adopted by von Ihering, one criticism may be made: he states that *peristomata* Orb. is type of *Paludestrina*, "weil d'Orbigny nicht nur in seiner Voyage Am. Mér., sondern auch 1835 im Mag. de Zool. den Namen Paludestrina verwandt und dabei als erste Art *P. peristomata* beschreiben hat." This is not the case, for in Magazin de Zoologie d'Orbigny describes the South American forms under the generic name *Paludina*, and does not mention *Paludestrina*, which was first brought forward in the Voyage. As there stated, the type must be "Paludina" acuta, of France. Von Ihering follows Fischer in the wrong spelling "Littorinida" (as though derived from *Littorina*) of Eydoux and Souleyet's *Littoridina*; a name evidently intended as a hybrid of *Littorina* and *Paludina*.—*H. A. P.*

ANATOMY OF SULCOBASIS.—Messrs. William Moss and Wilfred Mark Webb have examined the genitalia and dentition of two species of this subgenus, *Chloritis (Sulcobasis) stirophora* and *C. (S.) rehsei*, recording their results in *The Journal of Malacology* V, no. 3. They found both to possess a short spur, in addition to the flagellum, at the point of junction of vas deferens with epiphallus, and there was no penis-papilla, but the walls of its lumen are wrinkled. The top of the tail in *stirophora* has a median row of large tubercles, only part of which are cleft, instead of a continuous impressed line as in *Chloritis* species previously described. The spiral sulci, which gave name to the section, do not occur on the base of the shell in *C. stirophora*, and are, therefore, not characteristic of the group.

PUBLICATIONS RECEIVED.

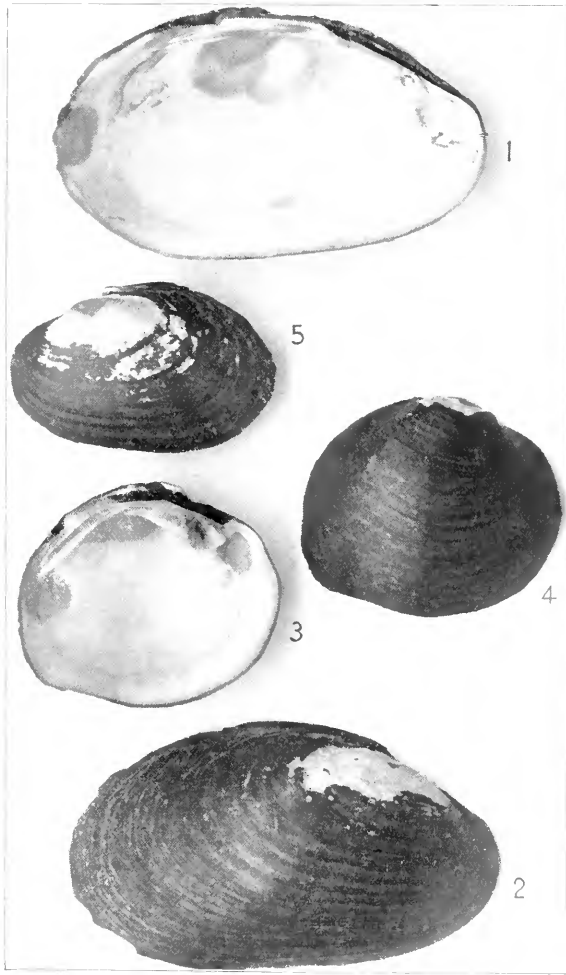
A BIOLOGICAL EXAMINATION OF LAKE MICHIGAN, etc. (Bull. Mich. Fish Comm., No. 6). A brief resumé of the malacological results in the vicinity of Charlevoix, Mich., by Mr. Bryant Walker, is given on pp. 96–99.

THE MOLLUSKS AND BRACHIOPODS OF THE BAHAMA EXPEDITION OF THE STATE UNIVERSITY OF IOWA (Nat. Hist. Bull. S. U. I., IV, No. 1). By W. H. Dall. New forms are *Murex nuttingi, Cerion niteloides, Liotia centrifuga, Carditella smithii*, the latter from Bermuda. *Cerion mumiola* Pfr. is recorded from Tortugas, "probably the result of transportation by sea drift. If living at Tortugas it would add a new species to the fauna of the U. S." The new species are figured.

ON THE CORRECT POSITION OF THE APERTURE IN PLANORBIS, by F. C. Baker (Cincinnati Soc. N. H., XIX, p. 45). By the examination of young specimens and broken adults, Baker concludes that all the larger species examined are sinistral, the small ones dextral; these terms being used in their old senses. The late work of Fischer and others on cognate inquiries is not referred to.

THE ANATOMY OF SPHÆRIUM SULCATUM LAM., by Gilman A. Drew (Proc. Iowa Acad. Sci., 1895). A thorough and useful paper, illustrated by plates of details and a reconstructed figure from sections. No useful abstract can be made; it may be mentioned, however, that a vestige of the byssal gland persists in the adult. The typhlosole is not strongly developed. Sphærium is hermaphroditic but the ova and sperm are produced by distinct follicles, the ova-bearing being fewer and among the most posterior. A useful but not exhaustive bibliography is given.

CONTRIBUTIONS TOWARD A LIST OF PAPERS RELATING TO THE NON-MARINE MOLLUSCA OF THE HAWAIIAN ISLANDS, by E. R. Sykes (privately printed). Includes scattered papers, other than general or monographic works, and within this scope seems to be a nearly or quite complete bibliography. In a footnote on p. 5 Mr. Sykes calls attention to an error in a date given in the Proceedings of the Academy of Natural Sciences of Philadelphia, but in so doing commits an equal error himself, misquoting the date actually given in the Proceedings.—*H. A. P.*



1, 2, 5, Unio Superiorensis Marsh.
3, 4, " Askewi Marsh.

THE NAUTILUS.

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ILLUSTRATIONS OF NEW UNIONIDÆ.

Plate I, figs. 1. 2, 5, *Unio superiorensis* Marsh. For description see NAUTILUS for January, 1897, p. 103.

Figs. 3, 4, *Unio Askewi* Marsh. Description in NAUTILUS for December 1896, p. 91.

Figures are natural size. The specimens illustrated have been placed by Mr. Marsh in the Museum of the Academy of Natural Sciences of Philadelphia.

LIST OF SPECIES COLLECTED AT BAHIA, BRAZIL, BY DR. H. VON IHERING.

IDENTIFIED BY W. H. DALL.

The following species of shells were collected under the direction of Dr. H. von Ihering at Bahia, except when otherwise stated, and were forwarded to the National Museum for identification. This list includes only the doubtful species which could not be named with the literature available at the San Paulo Museum. Dr. von Ihering will eventually publish a complete list of the Brazilian coast fauna; meanwhile these identifications may be useful for reference. The remarkable thing about the collection, made 500 miles south of Cape San Roque and 2,200 miles beyond the mouth of the Amazon, is its typically Antillean character, resembling the fauna of the Bahamas. This indicates (if there be no uncertainty as to the

provenance of the specimens) that the present distribution of the coast fauna antedates the present volume of the Amazonian discharge, since it would seem incredible that so many thoroughly littoral species should be able to cross the present area of some hundreds of miles of fresh water in either direction. A few species marked with an asterisk are inserted on Dr. v. Ihering's authority.

Melampus flavus Gmel.
Bulla striata Brug.
Terebra cinerea Born, San Paulo.
Conus verrucosus Hwass.
Conus mus Hwass.
Conus daucus Hwass.
Drillia albinodata Reeve.
Drillia albocincta C. B. Ads.
Mangilia limonitella Dall.
Olivella jaspidea Gmel.
Olivella nivea Gmel.
Marginella bullata.*
Marginella largillierti.*
Volvarina fusca Sby.
Mitra nodulosa Gmel.
Turbinella ovoidea Kien.*
Fasciolaria aurantiaca Lam.*
Leucozonia cingulifera Lam.
Pisania pusio var. jancirensis Orb.
Tritonidea tincta Conr. (!)
Nassa vibex Say, Rio.
Nassa ambigua Mtg.
Anachis albella C. B. Ads.
Anachis catenata Sby.
Nitidella nitidula Sby.
Columbella mercatoria L.
Murex pomum Gmel.*
Coralliophila galea Ch.
Sistrum nodulosum C. B. Ads.
Purpura hæmastoma Lam., typical, Rio Grande do Sul.
Purpura hæmastoma var. trinitatensis Guppy.
Janthina communis Lam.
Janthina exigua, Bahia.
Tritonium tritonis var. nobile Conr.
Tritonium femorale L.
Tritonium chlorostomum Lam.
Lambidium oniscus L.
Ranella ponderosa Reeve.
Cassis tuberosa.*
Dolium perdix* L., replacing D. galea of San Paulo.
Trivia suffusa Gray.
Cypræa cinerea Gmel.
Strombus pugilis L., Bahia and southward.
Strombus costatus Gmel. (not south of Bahia, v. Ihr.).
Strombus gallus L. (not south of Bahia, v. Ihr.).
Cerithium literatum Born.
Cerithium algicola C. B. Ads. ?
Cerithium atratum var. variabile ? Ads.
Modulus modulus L.
Siphonium nebulosum Dillw.
Vermicularia spirata Phil.
Petaloconchus irregularis Orb.
Crepidula plana Say.
Amalthea antiquata L.
Capulus incurvatus Gmel.
Polynices porcellana Orb.
Polynices lactea Gmel.
Polynices caudidissima Recl.,* replacing the next.

Polynices brunnea Link., San Paulo.
Polynices rufilabris Rve.*
Natica canrena Lam.
Natica pusilla Say (!).
Natica sulcata Lam.
Acmæa onychina Gld.
Phasianella minuta Anton.
Uvanilla americana Gmel.
Astralium tuber L.
Omphalius hotessierianus Orb.
Calliostoma jucundum Gld.
Calliostoma jujubinum Gmel.
Subemarginula octoradiata Gmel.
Fissurella rosea Gmel.
Fissuridea alternata Say.
Plicatula ramosa Lam.
Spondylus spathuliferus var. inermis.
Pecten ornatus Lam.
Mytilus exustus Lam.
Botulina opifex Say.
Arca jamaicensis Gmel.
Arca imbricata.*
Arca auriculata.*
Arca candida Ch., San Paulo.
Lucina costata Conr. .
Chama congregata Conr.
Cardium lævigatum L.
Venus pectorina Lam. (also S. Paulo).
Venus cribraria Conr.
Venus circinata Born.
Venus subrostrata Lam. (beaui Recl.).
Cytherea varians Wood.
Dosinia concentrica Born, S. Paulo.
Lucinopsis tenuis Recl., S. Paulo.
Tagelus mollis Gould, Rio Grande do Sul.
Tagelus gibbus Spengl. (+ platensis Orb.).
Macoma constricta Brug.
Mactrella Iheringi Dall, n. sp., San Paulo.
Semele reticulata Gmel.
Bouchardia rosea Mawe (Rio ?).

Mactrella Iheringi n. sp.

Shell thin, white, inflated, with small and prominent beaks, externally with fine concentric, and a few irregular, radial lines, and a silky-yellowish epidermis, the beaks median, smooth, with an obsolete posterior keel, the lunular region widely and deeply impressed; hinge of the subgenus, the pallial sinus angular, reaching to the vertical of the beaks. Lon. 65·0; alt. 52·0; diam. 32·0 mm.

ISAAC LEA DEPARTMENT.

[Conducted in the interest of the Isaac Lea Conchological Chapter of the Agassiz Association by its General Secretary, Mrs. M. Burton Williamson.]

Volume 8 of the Transactions has begun its annual round of the Chapter members. It will be some time before every member has

received the book, but extracts from it will be found in this department of THE NAUTILUS from month to month. Our Chapter cannot afford to do without THE NAUTILUS.

On page 112, February number, under "Section C" the name of the city (Toronto) was omitted in Mr. Lemon's address.

Members of our Chapter interested in West Coast mollusks, will find Dr. Wm. H. Dall's bulletin on "Diagnosis of New Species of Mollusks from the West Coast of America" valuable. It contains 27 new species and 2 new genera. The shells were collected by the *Albatross* from points as far north as Tillamook, Washington, to the Gulf of Panama, excepting one species dredged off the Argentine coast. In this species *Philobrya*, instead of the more familiar *Bryophila* is used for the genus, the reason for this is given. A *Nucula* is described as being "one of the largest known." Two orbicular species of *Periploma* are described. Mention of this bulletin will be found in the August number of THE NAUTILUS.

Another publication of the National Museum is Charles T. Simpson's comprehensive work upon the Naiades, entitled "The Classification and Geographical Distribution of the Pearly Freshwater Mussels." The title will convey to our members some idea of its scope. The genus *Margaritana* is placed with the genus *Unio*. A comparison of *Unio pressus* and *Margaritana ragosa* is presented. The various areas of the Naiades are given, Europe, Asia, Africa, America and the islands of the seas, also a map showing distribution. The Geological age of *Unios* is noticed, and the bulletin contains many references to the books and pamphlets written on the pearly freshwater mussels. It is a valuable contribution to molluscan literature.

A TRAY OF SHELLS FROM DENMARK.

(Extract from the report of the President, Prof. Josiah Keep. From the Transactions of the Isaac Lea Chapter for 1895.

(In the report of the President, Professor Keep, he has given minute instructions in reference to an exchange of United States shells for European forms by an illustration. He tells the members of our Chapter how he sent some West Coast Mollusks to a gentleman in Copenhagen, the return of his box filled with foreign shells

from the North Sea, the value of Latin and Latinized terms in nomenclature the world over, and of the difference of geographical names written in Danish. This article is also illustrated with pen and ink drawings of the shells mentioned in his report. These are are all omitted from the following paper. M. B. W.).

Now as to the shells themselves. There were no large specimens, the largest bivalve being a fat horse mussel *Modiola modiolus* var. *umbilicata*, about four inches long. The shell is white and thin, the epidermis brown and glossy, with a tendency to become hairy near the front of the shells. It greatly resembles the Modiolas of our coast. *Cyprina islandica*, three inches long, is a nearly circular bivalve, with strong hinge teeth and external ligament, and in shape it greatly resembles an ordinary quahog. The whole exterior, however, is covered with a black epidermis which makes it look like a monster *Cyclas* from our brooks.

Of gasteropod shells the largest is the historic *Fusus antiquus*, the "waring buckie" that Woodward speaks of, which used to be employed as a lamp, the slender canal being just fitted for a little wick. This *Fusus* is an elegant shell, tapering equally at both ends, the whorls well rounded, and the surface divided into minute cheeks. It seems like an old friend from beyond the sea, and tells the story of children at play in the little Shetland cottages, listening to the mysterious roar of the sea in the shell, while the strange lamp sheds a faint ray over the humble scene. Happy shall we be if we make our specimens tell us stories of the land across the seas from which they come!

Of Pectens there were five species. *P. opercularis* a round regular shell, white within, marked by about twenty ribs, and the surface cut into myriads of little projections, like the teeth on a cross cut file. *P. varius* is more one sided, like our *P. hastatus*. Within the shell is of a magnificent royal purple, while the outside of its thirty ribs is dark and dingy. Both of these species have shells about two inches across. A smaller kind, *Pecten pes-lutræ*, the "otter's foot," has only five ribs, and they are more like waves than typical ribs. The shells are shining white within, while the outside is red on one valve and gray on the other.

Of Cockles there is the pretty little *Cardium edule*, strong and smooth, and the spiny *C. echinatum*, about the size of a hen's egg, and whose ribs are set with a multitude of little sharp saw teeth. *Mya arenaria* is present also, having a shell rather more dense and

firm than those of its brothers which flourish so finely in San Francisco Bay. A slender curved specimen of *Solen ensis*, the length of one's finger, is present from its home in the sands of the "Skagen," while its little cousin *S. pellucidus*, is almost as thin and transparent as tissue paper. Quite the opposite from this are the heavy black shells of *Astarte compressa* from Greenland. This northerner seems heavily clad to resist the waves of his native region.

The principal limpet is *Patella vulgata*, a large, heavy, conical shell, with a sharp apex and rather distinct ribs. There is also an oblong sea weed limpet, *Helcion pellucidum*. Naturally you will find *Nassa reticulata* present, a plump, checked shell about an inch in length; also that sharp corkscrew *Turritella terebra*.

Macoma baltica is a thick shelled, short and stout little Dutchman, whose interior is as rosy as the coming of dawn, and whose very redness shines clear through its white exterior. There are other tellens, small, flat and thin, also some small top-shells of which *Trochus cinerarius* is chief. It is interesting to note that almost all the shells were named by the great Linné, and we are carried back to the cheery northland, where he explored and studied and wrote not for his time alone, but for future generations as well.

Of freshwater shells there is the great *Planorbis corneus*, an inch and a quarter across, the little button-like *P. umbilicatus*, the thin-shelled, inflated *Limnæa ovata* and that odd little three-cornered mussel *Dreissena polymorpha*. This shell is shaped like a large beechnut, and from one side comes out a byssus of fine black silk. Note what Woodward says of this little creature that has strayed from its home in southern Russia, and has even entered the iron water pipes of London.

Helix pomatia, the great edible snail, adds two large shells to the collection. I have just obtained some live specimens of this species which were imported by San Francisco grocers, and intend to try to domesticate them. My Danish collection contains several other species of Helix, e. g., the well known garden snails, *H. nemoralis* and *H. hortensis*, so common in England. There are also several small forms, like *Helix hispida* and minute kinds like *Zua lubrica*. Finally there are specimens of the singular genus Clausilia, with their long slender, many whorled little shells, whose apertures are set with teeth, as if to keep the poor little creature inside his prison house, or more probably to keep his enemies out.

In all, my collection contains 62 species, and as I examine them from time to time, I not only see many interesting shells, whose names are all as common to the conchologist as household words, but I am also transported in imagination back to those northern regions whence came the early ancestors of our Anglo-Saxon forefathers.

POSTAGE ON SPECIMENS OF NATURAL HISTORY.

In THE NAUTILUS, Vol. VII, p. 58, September, 1893, we have had something to say on the subject of postage on specimens of natural history to foreign countries. We have there detailed the efforts made by the Academy of Natural Sciences of Philadelphia to obtain lower rates, explaining that the present regulations of the Universal Postal Union permit such specimens to be mailed only at letter rates. It is indeed true that many countries have Parcel Posts, the charges for which are lower than those for letters. The aim of the Academy has been to secure the adoption by the Postal Union of a proposition offered by the U. S. Post Office Department that specimens of natural history be admitted to the international mails at the rates for, and under the conditions applicable to, samples of merchandise. This proposition was, however, rejected at the last International Postal Congress of Vienna.

At the International Congress of Zoology, held at Leyden, Holland, in September, 1895, Dr. Chas. Wardell Stiles, official delegate to the U. S. Government, offered resolutions, which were subsequently adopted, that the Swiss Government be requested, through its delegate to the Congress of Zoology, to propose to the next International Postal Congress an amendment to the regulations thereof whereby specimens of Natural History shall be carried in the mails of the Universal Postal Union at the rates for samples of merchandise; that an appeal should be addressed to all the delegates and members of the Congress of Zoology to bring this amendment to the notice of their respective governments, so that those governments should instruct their delegates to the Postal Congress to act favorably upon the same; that copies of these resolutions be sent by the Secretary of the Congress of Zoology to all governments forming part of the Universal Postal Union and which were not represented at the Congress of Zoology.

In accordance with these resolutions, Dr. Stiles suggested to the committee of the Academy in charge of this matter of postage that, although it is probable that the U. S. Government will vote in favor of this proposed amendment, seeing that it is the same proposition which the United States had presented at Vienna, the cause would be helped by the Academy adopting resolutions in favor of this proposed amendment and requesting the Postmaster-General at Washington to instruct our American delegates to vote in favor of it.

This the Academy has done; but other American scientific bodies should join in the work, adopt similar resolutions and send them to our Postmaster-General that he may know that the students of natural history in the United States eagerly desire such a reduction in postage rates. The next International Postal Congress meets at Washington on the fifth of May next. The purpose of this article is to urge all those who read it to use such means and influence as may be at their command to help in the accomplishment of this end.

For the guidance of those who will aid in the manner suggested, a translation of the original French text of the amendment referred to is as follows:

"Amendment to Article XIX (samples) 4, of the Regulations of Details and Order.

5. Objects of natural history, dried or preserved animals and plants, geological specimens, etc., of which the transmission has no commercial interest, and the packing of which conforms to the general conditions concerning packages of samples of merchandise."

If this amendment be adopted by the Postal Congress, specimens of Natural History can be sent to countries of the Universal Postal Union at the rate of one cent for every two ounces.

IN MEMORIAM—HENRY MOORES.

It was not until recently that we learned of the death of our old friend, Mr. Henry Moores, of Columbus, Ohio, which occurred on October 1, 1896, in his 85th year. A correspondent of Say, Amos Binney, Conrad, Lea, Haldeman and others, we might well say that he is the last of the "old school."

Born in Hudson, N. Y., June 13, 1812, he went to Columbus, Ohio, in the fall of 1843. Remaining there until the following spring, he moved to Albany, N. Y. Here he remained until September, 1845, when he married and returned to Columbus, residing there continuously until his death, with the exception of a trip to California and a year's residence in Dayton, Ohio.

He was an earnest and enthusiastic naturalist, being interested in both the recent and fossil forms. Mr. Moores discovered and named the following new species of *Unionidæ: Anodonta hockingensis; A. sommersi; A. hydei; A. freidi.* Dr. Lea named, in his honor, *Succinea mooresi.* A fossil crinoid, *Zeocrinus mooresi* Whitfield, and a fossil bivalve from Carbon Hill, *Sekizodus mooresi* Miller were respectively dedicated to him.

There was also one snail discovered by him in Texas, and named, by Mr. Binney, *Helix mooreana.* Some of the shells in his collection were collected over a hundred years ago by early scientists; one bears the date 1778, and many are wrapped in pieces of newspapers dating as far back as 1850 and earlier. Like many others, Mr. Moores caught the gold fever in 1849, and some of the specimens in the Ohio State University Museum were collected by him then.

His own private catalogue of species is a work of scientific value for its accurate arrangement and modern classification.

As a reward of his industry his cabinet contained over thirty-three hundred species of land, fresh water and marine shells, about one thousand species of fossils and about two hundred and fifty varieties of minerals.

But the industry of one man may be better understood when it is said that it took three days' solid work for a drayman with horse and wagon to move the collection from Mr. Moores' former home on W. Rich street to the University, after he had spent nearly five weeks in packing them in boxes and preparing them for the transfer. The real scientific ability of the collector is shown in the fact that every specimen that could be labelled bore its card, giving all data necessary for any person to take it up and study it understandingly. This one feature adds more to the value of the collection than anything else possibly can, except first-class specimens, and those of this collection are of the best. If it were necessary to choose between poor specimens with full and accurate data and good ones with no labels, it is often that the scientific student would choose

the former. But there is no need of such a choice here, for both quality and accurate data abound, as well as quantity, giving all that the most thorough student might require.

The purchase was made by the Ohio State University, principally for the shells, to place them in the room for the department of zoology, and the fossils were a secondary consideration, but when Dr. Orton saw the fine number of specimens that were to be added to the university collection as new species, as well as the great number of desirable duplicates, enabling numerous exchanges, he was forced to remark, "Oh this makes us rich. This is material that we had not counted upon." The assistant geologist has been busy until the present time on the Lower Silurian specimens alone, or only those found in the vicinity of Cincinnati, and in working over them and cataloguing them for the museum he has entered over one hundred species from that locality alone that had not formerly appeared in the University collection. Of the Devonian fossils, found near Columbus, there is an immense number; especially are the fossil corals very fine and nicely cleaned, but it yet remains for work in the near future to tell how many specimens may be found among them that are new to the museum collection.

There is the most complete set of carboniferous specimens, from Carbon Hill, Hocking County, O., that the world knows. It was in this locality that Mr. Moores did most of his field work in palæontology and made some of his most valuable discoveries.

But the part of the collection with which Mr. Moores has more recently done his entire scientific work is to be found now in the department of zoology. All possible varieties of shells from all over the world have been collected, labelled and arranged by this indefatigable naturalist. These specimens vary from the beautiful pink and green radiating "sun shell" of the Atlantic coast to the plain and lowly house of our ordinary, slowly plodding snail, or from the thick, glossy and bright colored shell of the tropical region to that of the more sombre hue of the arctics.

We are indebted to the kindness of his daughter, Mrs. A. S. Humphreys, for greater part of the above information.—C. W. J.

NOTES AND NEWS.

PLANORBIS NAUTILEUS L.—Referring to Mr. Walker's interesting notes on this species in the February number of THE NAUTILUS, I may say that a few were taken at Hamilton, Ontario, in 1889. In

the report of the Conchological Division of the Biological Section of the Hamilton Association contained in the Journal and Proceedings of the Association for the Session 1889–90, the following note on *Planorbis nautileus* appears:—

Occurs in a small piece of marsh at the junction of Hamilton Bay (Lake Ontario) and the Desjardines Canal. A very tiny shell, the smallest water shell known to me; is hairy. The Rev. G. W. Taylor in naming it states that this is identical with the English *P. nautileus*. From its small size is difficult to find; if an introduced shell it would be interesting to know by what agency it reached its present habitat. Do not know that it has been taken anywhere else in North America. I found the shell among layers of dead leaves and on the stems of reeds in a few inches of water; not many were met with, but as it required considerable patience, especially in such moist surroundings, special search for them was only made on one or two occasions. The Dundes marsh is of large area, and I dare say the species occurs throughout it.—A. W. Hanham, Winnipeg, Man.

PUBLICATIONS RECEIVED.

Dragages effectues par l'Hirondelle et par la Princesse-Alice, 1888–1895, par Ph. Dautzenberg et H. Fischer (Mém. Soc. Zool. France, 1886, pp. 104, pl. 7). An important paper on the deep sea Gastropod fauna of the Eastern Atlantic, supplementing the extensive works of Jeffreys and Watson. Most of the dredging was done around the Azores Islands, where besides numerous new species of many genera, a considerable number of forms first described from the western Atlantic and Gulf of Mexico occurred, such as *Pleurotoma sigsbeei*, *centimata*, *serga*, *conutropis* Dall, *chariessa* Watson, *Sipho profundicola* Verrill and Smith, *Coralliophila lactuea* Dall, etc. Among the more interesting new species described are two Mitromorphas, *Kryptos elegans* Jeffr. mss., *Iphitus cancellatus* and *tenerrimus*, *Danilia affinis*, some fine species of *Solariella* and *Calliostoma*, a *Turcicula*, two Fissuriseptas, two species of *Propilidium* and an *Acmæa* (Azores, 1,385 meters!); the latter probably not really belonging to this genus.

The figures are for the most part very good examples of heliotype work, but in some cases lack clearness of detail. Messrs. Dautzen-

berg and Fischer have left little to criticise in the text, although we could wish that they had assorted the new *Pleurotomidæ* into subgeneric groups.—H. A. P.

Descriptions of Tertiary Fossils from the Antillean Region, by R. J. Lechmere Guppy and Wm. H. Dall (Proc. U. S. Nat. Museum, XIX, pages 303–331, Plates XXVII–XXX, 1896). In the preliminary remarks Dr. Dall gives stratigraphically the source of the various fossils described. The Pliocene material was obtained from Moen, Costa Rica. The Caroni beds of Trinidad, the deposits at Bowden, Jamaica, and in Haiti, and the Chipola beds of Florida which have long been referred to the Miocene, are here placed in the Upper Oligocene, no strictly Miocene strata being recognized in the Antillean region. The Gatun beds of Conrad and Hill on the Panama Isthmus are Eocene, and contain a fair proportion of the species common to the Claibornian of Ala. and the Upper Tejon of Cal. "The list of Tertiary fossils of the West Indian region, prepared by Mr. Guppy in 1874, comprised some 250 species of fossil mollusks, but the fauna is much richer than this, since in one day at the Bowden beds, Messrs. Henderson and Simpson procured over 400 species. A significant proportion of these appear to have survived little changed, or to be represented by closely analogous species in the recent fauna of the West Indies." In this paper 43 new species are described by Mr. Guppy and 19 by Dr. Dall, besides notes on a number of well known and doubtful species.—C. W. J.

On the Genus Remondia Gabb, a group of Cretaceous Bivalve Molluscs, by Timothy W. Stanton (Proc. U. S. Nat. Mus., XIX, pages 299–301, pl. XXVI). The type of this genus is *Remondia furcata* Gabb. "The genus has been recognized in the Manuals of Conchology and Paleontology, and placed in the Trigoniidæ by Tryon, Zittel and Fischer, though the latter remarks that it would perhaps be better placed near *Isocardia*." Mr. Stanton places it in family Crassitellidæ or Craesitellitidæ, as the family is now called.

New and Interesting Eocene Mollusca from the Gulf States, by Gilbert D. Harris (Proc. Acad. Nat. Sci., 1896, pages 470–482, pls. XVIII–XXIII). This paper relates to new and interesting forms in the "Lea Collection of Eocene Mollusca" in the Academy of Natural Sciences of Philadelphia. Seventeen new species are described and a number of specimens that are much finer than the types, have also been figured.

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THE IANTHINAS.

BY CHARLES T. SIMPSON.

The Ianthinas, or violet snails, live gregarious in the open seas of the tropics, and float by means of a raft composed of vesicles filled with air, which cannot be withdrawn into the shell. Sometimes they are carried by winds and currents into the seas of temperate regions, and their shells have been found along the shores of our own country as far north as New England. I had collected for many years and in many countries, but had never found, perhaps, more than a dozen dead, broken shells. In January, 1883, I was on a large schooner bound for Spanish Honduras, and we stopped at Key West, where I spent one of the most delightful weeks of my life gathering Cylindrellas, Chondropomas, Cerions, *Helicina orbiculata*, and the beautiful Orthalicus, Liguus, and *Bulimulus multilineatus* in the thick, thorny, tropical scrub, or Strombs and bright Tellinas and blending Neritas and a hundred other interesting forms along the south shore. We were to sail about noon on Sunday, but I could not resist the temptation to take one last look at the places where I had spent so many happy hours, so after breakfast I wandered through the city and out to the beach.

Before I reached it I noticed that as far as the eye could see, it was a mass of the most intense, glowing violet color, and on coming up to it was astonished to find that this color came from untold millions of Ianthina, which had been washed up in the night, for when I had left the beach the evening before at dusk, not one was to be seen. To say that they lined the shore gives no idea of the real truth. Everywhere, from below low water to highest tide mark they were piled up, in most places, over shoe-top deep, and in the hollows of rocks one could have waded in among them up to his knees—shell, animal and float all of a vivid purple, the richness of

which soon fades, to a great extent, in dead shells or preserved specimens. They were all dead—a kind of slimy mass—and they somehow looked pitiful.

There had been no storm, nothing but an ordinary breeze blowing up from the south, and it is probable that an immense school had been drifted along, and where they struck the island, some five miles in length, every one within that distance was stranded.

I had brought no basket or sack or anything to collect in, but I could not bear to go away and leave that vast bed of treasures without taking at least a few with me. I searched in vain for a box or tin can or a piece of canvas, but could find absolutely nothing, not even a scrap of paper. I took out my handkerchief, knotted the corners, and tried to pull out the animals from the shells, but the whole mass was so slippery and the shells were so frail that the latter invariably broke, so I filled it with shells, animals and all, as many as it would hold. Then I took off my straw hat and filled it, and that would not satisfy me, for as I wandered along I found so many fine specimens that I began to put them into my pockets, and I did not leave the shore until every pocket was bursting full. I had on a linen coat and white duck pants; the day was hot and it seemed to me that those Ianthinas melted. In a little while streaks of glowing violet began to show down my clothes; I felt a clammy, wet, uncomfortable, feeling clear through to my skin, and my shoes were filled with purple liquid. By the time I reached the city I looked like an Indian in war paint, and I have no doubt that the people of Key West, who were just going to church, thought I was a lunatic, and perhaps they were not far from right. At last I reached the schooner, took off and threw away my suit, which was utterly ruined, and got my precious mollusks into sea water to soak, although at least half of them were broken, yet, when I cleaned them out, I had the satisfaction of counting up over 2,000 good shells.

VERTIGO COLORADENSIS AND ITS ALLIES.

BY T. D. A. COCKERELL.

Dr. Dall, in his interesting paper in Proc. U. S. Nat. Mus., XIX, has, on p. 367, *Vertigo decora* Gould, Colorado to Alaska (+ *P. ingersolli* Ancey + *P. coloradensis* Ckll.); *Vertigo decora* var. *concinnula* Ckll., Colorado.

It is a long time since I paid particular attention to these small snails, but I do not think the above can be correct.

The genuine *V. coloradensis* is a very small form, with only a single lamella on the parietal wall; its length is 1½ mm. The form which I named *concinnula* I found at higher elevations; it is larger, 2 mm. long, cylindrical, dull brown with whitish striæ, whorls 4½, striate, suture not very deep, mouth pyriform, usually elbowed externally above, lamellæ 4 or 5; one, double, on parietal wall; one on columella, about its middle, and two on outer wall; peristome distinct. This differs from *decora* in color and the shape of the aperture.

I did not publish a description of my *concinnula*, because I believed (and still believe) it to be identical with Ancey's *ingersolli*, which, also unpublished, had priority in MS. But, in view of Mr. Dall's publication, it becomes necessary to refer to it and explain what it really is.

Now as to *ingersolli*, it was based on Ingersoll's supposed *californica*. Mr. J. H. Thomson sent me some of the "*californica*" collected by Ingersoll, and I transcribe my notes upon them:—

No. 6. "Animas Valley, Colo." and "Timber Line, N. E. Antelope Pk., *V. californica* Rowell." (Perhaps only the latter label really belongs to the shells.) Certainly not *californica*, but apparently *concinnula*.

No. 7. "*Vertigo californica* Rowell, Rio La Plata, Colo." Rather highly colored, but evidently *concinnula*.

No. 8. "*V. californica*, Cunningham Gulch." Shinier than usual, perhaps, or thinner, but *concinnula*.

There was also a single specimen of the same species from North Park, collected by E. A. Barber, Aug. 12, 1874.

Typical *V. decora* is 2½ mm. long, therefore much larger than *coloradensis*. It is to me evident that there are three quite distinct forms: (1) True *decora* of the north; (2) *ingersolli* or *concinnula* of high elevations in Colorado; (3) *coloradensis* of the Colorado mid-alpine. Whether these are called species or subspecies is, perhaps, of small importance, and Dr. Sterki may be allowed to decide.

I may later refer to some other matters in Dr. Dall's excellent paper. He keeps "*Limax montanus*" as a species, which it certainly is not. The *Patula strigosa* v. *concentrata* Dall, seems to be a form similar to my var. *minor* (J. of Conch., 1890, p. 175), which forms a distinct race near Egeria, Colorado.

CONTRIBUTION TO A KNOWLEDGE OF UNITED STATES UNIONIDÆ.

BY S. HART WRIGHT.

Unio Pinkstonii sp. nov.

Shell flask-shaped or triangular, elavate, inflated below the beaks, rounded anteriorly and very bluntly pointed behind. Epidermis olive with transmitted light, with numerous close lines of growth; rayless. Beaks elevated, blunt and nearly on a line with the anterior margin in old specimens, but the shell very inequilateral in the young. Sides very convex and descending in front very abruptly. Basal margin very convex. Umbonal ridge very blunt, and only slightly raised. Posterior slope narrower, its margin not keeled. Cavity of shell deep, cavity under the beaks slight, bluntly rounded. Cardinal teeth erect, striate; the anterior cardinal truncate. Cardinal in right valve single. Cavity between cardinals with a deep conical pit. Lateral teeth straight and short. Dorsal cicatrices over the beak-cavity. Nacre white, without iridescence, except at the posterior end, where the nacre is thin, it being thick elsewhere. Cicatrices all distinct and well-impressed. Width $1\frac{7}{8}$ inches, length $1\frac{1}{8}$, diameter 1.

Habitat: Tuscaloosa River, Macon Co., Ala.

Remarks: Affinity, *U. castaneus* Lea, from which it differs in having a tray-shaped cavity, instead of bowl-shaped, as in the former. Its rings of growth are low and fine, not ridgy and coarse as in old *U. castaneus*. The *U. nux* group probably includes this and *U. castaneus*, *U. concolor*, *U. brumbyanus* and *U. perovatus*, species more or less related to our shell, in which the nacre is laid unevenly in plates and ridges, which form two or more pits where they meet. The species is dedicated to Miss M. S. Pinkston, who assiduously collects Unionidæ, and found this among her collections.

Unio Kirklandianus sp. nov.

Shell ovate, brilliantly polished, rather thin and somewhat inflated. Sides dilated in the middle and attenuated at each end. Base very convex; anterior end rounded and the other bluntly pointed. Epidermis yellowish horn-color, with broad green rays on all the surface, which are interrupted near the base with narrow yellow bands. Lines of growth only two or three and ferruginous. Beaks blunt and broad, slightly raised; umbonal ridge raised and abruptly rounded. Posterior area abrupt, narrow and slightly

keeled, and cordate at the beaks. Cavity of the shell rather deep and uniform; cavity of the beaks well under the dorsum, blunt within. Cardinal teeth, low, compressed and double in both valves and nearly tubercular. Nacre white within the pallial line, and darker and iridescent exterior to it. Lateral teeth small, short, remote from the cardinals, and straight in the groove, but making a slight angle from the dorsal plate at the anterior end of the ligament, which is $\frac{3}{8}$ of an inch long. Width $1\frac{1}{8}$ inches, length $1\frac{1}{8}$, diameter $\frac{3}{4}$ of an inch.

Habitat: Ocklocknee River, Leon Co., Fla.

Remarks: Affinity, *U. subangulatus* Lea. Our shell differs from this in being more polished, thinner, rays broader, those of the anterior end sweeping around in curves. The shell cavity is much deeper and broader. The beak cavities are much larger, and the shell substance white instead of incarnate. We take pleasure in naming this species, which is probably not exceeded in pictorial beauty by any known Unio in North America, in honor of Dr. Reynold J. Kirkland, of Grand Rapids, Michigan, who is a vigorous investigator in conchology.

Unio Burtchianus sp. nov.

Shell uniformly solid, though not thick, oblong-elliptical, flattish, inequilateral, smooth and polished, with a slight constriction near the middle. Sides rounded, anterior end rounded, pointed behind with a very short truncation. Dorsal and basal margins uniformly curved. Epidermis reddish, nearly occulted with dark green rays running over all the surface, which are grouped in irregular fascicles, darker and densely striate on the posterior slope. Growth lines almost invisible. Beaks small and low, slightly rounded. Umbonal slope subangular, with a fainter ridge back of it, making a biangulation behind. Beak cavities very slight, confluent with a cavity under the lateral teeth. Shell cavity moderate and oblong. Cardinal teeth erect, light, crenulate, with an oblong groove in the cardinal of the right valve. The inner lateral tooth thickened and upturned at the end. Posterior cicatrices confluent, anterior distinct, all well impressed. Pallial impression distinct and crenulate. Nacre salmon within the pallial line and purplish exterior to it. Width $2\frac{1}{4}$ inches, length $1\frac{1}{8}$, diameter $\frac{5}{8}$.

Habitat: St. Mary's River, Nassau Co., Florida.

Remarks: Affinity, *U. lehmanii*, herein described, in which the distinction is made between these species. It is named in honor of

Mr. Verdi Burtch, of Penn Yan, N. Y., who is a working student in Unionidæ and ornithology.

Unio Lehmanii sp. nov.

Shell ovate, uniformly thick, evenly rounded before and broadly pointed behind, and slightly biangulate. Dorsal and basal curves equally convex. Epidermis reddish-brown, smoothish, numerously and faintly rayed. Lines of growth obscure and slightly raised. Umbonal slope broadly rounded, making in old shells a slight uncination at the posterior end. Beaks broad and short, not raised. Posterior margin not keeled. Cardinal teeth broad, rather compressed and much laciniated, the anterior cardinal elevated, crested, ending in a long, thin, sharp edge, nearly truncated, which points forward and downward. Lateral teeth heavy and nearly straight, with a curve in the dorsal plate. Cicatrices distinct. Cavity of shell very broad and quite uniformly excavated. Beak cavities not deep, but broad and obtuse. Nacre purplish, lighter and sometimes salmon, within the pallial line. Width 3 inches, length 1⅞, diameter 1¼ inches.

Habitat: St. Mary's River, Florida.

Remarks: Affinity, *U. burtchianus*, which, with our shell, seems to form a distinct group confined to St. Mary's River, stationed between the *Buckleyi* and *Forbesianus* groups. It differs from *U. burtchianus* in having greater inflation, less pointed behind, rays less distinct, greater dorsal curvature, higher sides and rougher. It is named for Mr. W. V. Lehman, a specialist in fossil insects, and an energetic student of Unionidæ.

Unio Brimleyi sp. nov.

Shell quadrate, bluntly pointed behind, slightly inequilateral. Sides gracefully rounded, subemarginate below and slightly arched above. Epidermis olive, with transmitted light, rayless and with very numerous finely striated raised crinkled lines. Shell thick on the anterior half and much thinner behind. Lines of growth three or four and faint. Ligament dark red and prominent. Greatest diameter in the shell center. Posterior slope with two impressed divergent broad and shallow grooves, from beaks to posterior margin. Beaks broad and rounded, slightly raised. Umbonal slope broad and keeled. Beak cavity moderately deep. Cardinal teeth double in both valves, erect and serrated. Laterals thin and straight, and in the left valve continuous with the cardinals. Cicatrices distinct. Dorsal cicatrices concealed from view. Pallial

impression seen only in anterior half, and there it is very faint. Nacre dead-white in front half and iridescent and darker in the other half, the two shades meeting in nearly a straight line. Width 2 inches, length 1½, diameter ¾.

Habitat: Neuse River, Raleigh, N. C.

Remarks: Affinity, *U. negatus* Lea, from which our shell differs in having rounded sides, olive epidermis, thinner and more direct teeth. The peculiar structure of the epidermis reminds one of *U. estabrookianus* Lea. Named for Mr. C. S. Brimley, of Raleigh, N. C., who is collecting histological material.

(*To be Continued.*)

PLANORBIS NAUTILEUS L. IN AMERICA.

BY GEO. W. TAYLOR.

In a note with the above heading in the February number of THE NAUTILUS, Mr. Bryant Walker makes the following statement:

"The occurrence of this well-known European species in the United States has hitherto rested upon its discovery at Ann Arbor, Michigan, by DeTarr and Beecher, who described it as new under the name of *P. costatus*."

This is true, no doubt, as far as the United States is concerned, but it is not correct as to *America*, for *P. nautileus* has been already recorded from three *Canadian* localities, and has, apparently, a wide distribution in the northern part of the Continent.

About eight years ago I received two specimens of *P. nautileus* from Mr. A. W. Hanham, who had taken them near Hamilton, Ontario. Five years later, in the autumn of 1893, I found the shell myself in some abundance in the ponds near to the St. Louis Dam, Ottawa. This find I recorded in a note in the *Ottawa Naturalist* for December, 1893, mentioning, I think, in the same note, Mr. Hanham's previous discovery. Again, in 1894, I received numerous specimens of the same shell from Mr. A. O. Wheelen, who collected them in southern Alberta. These were also recorded by me in the *Ottawa Naturalist* in a paper entitled "The Land and Freshwater Shells of Alberta."

I was inclined, in the first instance, to think that this little shell might have been introduced by the agency of man, but its occur-

rence in Alberta, at a considerable distance from the line of railway, leads me to suppose that it is truly indigenous, and in this opinion I am confirmed by Mr. Walker's observations.

While on the subject of *Planorbis* I should like to call attention to the occurrence of another shell in southern Alberta (recorded in the paper referred to above), namely, *Planorbis umbilicatellus*. This record seems to have been overlooked by Mr. Vanatta when writing on the distribution of *P. umbilicatellus* in the last volume of THE NAUTILUS.

By the way: The *Ottawa Naturalist* is one of our best Canadian natural history magazines, and a good many papers on Canadian Conchology have been published therein during the last few years.

Nanaimo, B. C.

ISAAC LEA DEPARTMENT.

[Conducted in the interest of the Isaac Lea Conchological Chapter of the Agassiz Association by its General Secretary, Mrs. M. Burton Williamson.]

At this writing the volume of Transactions is still in California. Promptness in forwarding the book will be appreciated by the General Secretary, as well as by our members whose homes are in the eastern States.

The name of Mrs. V. R. Hayward, Spokane, Wash., is added to our Chapter Roll.

Mr. J. J. White's gift of shells to our members, mentioned in THE NAUTILUS, is greatly appreciated.

FOSSILS OF DEAD MAN'S ISLAND.

[From the report of Hon. Delos Arnold. From the Transactions of the Isaac Lea Conchological Chapter for 1896.]

In submitting my annual report as Secretary of the Fossil Section of the Chapter, I have to regret that so little progress has been made during the past year along the lines of this Section of the Chapter.

While the work during the past year, so far as the main conchological work is concerned, is very gratifying, showing, as they do, an increasing interest in the study of the science and a commendable activity in the collecting of specimens, the Fossil Section has

not been actuated by the same spirit of inquiry. With the exception of some twenty species of fossils from the Tertiary beds of New Mexico, sent here for identification, and a few inquiries relative to exchanges, there is nothing outside of my own personal observations to report. It may be proper to state that the New Mexico specimens were collected and sent by a gentlemen not a member of our Association.

The Chapter was instituted primarily to encourage the study of conchology, and commemorates the achievements of the honored individual whose name it bears.

My visits to the beach during the past year have been few, and the visits I made were for the purpose of delving into the raised beaches at San Pedro, or of excavating the rocks at Dead Man's Island in search of buried treasures. Since my visits to these localities, a few months ago, and especially since the heavy rains of the past few weeks, I found that the alluvial of the bluffs that overlie the reefs of shells has been loosened and have fallen in large masses, almost, and, in some localities quite, obscuring the collecting grounds, so that collecting is very much obstructed or entirely destroyed. I succeeded, however, in unearthing a few very fine specimens, mostly of recent species; one specimen of *Lunatia lewisii* Conrad being five inches in diameter and as symmetrical and perfect as a living form.

But it was at Dead Man's Island, an older and more interesting formation, that I devoted most of my time and efforts. To one who has spent as many pleasant and profitable hours in this lonely spot, it cannot but cause an abiding sorrow to witness the devastation that is constantly and rapidly going on by the relentless waves. Within the recollection of the persons now living, the island has diminished one-half or more, and there are now living those who will see the tides sweeping over the spot where the receeding island now stands, unless some steps are taken to protect it.

I have found nothing new or especially rare at this island during the past year, but the specimens are so perfect and life-like that it is always a pleasure to see them, and a desire to possess them is usually so strong that they are secured and added to one's collection. The specimens which, to me, are the most interesting, are those found imbedded in the sand rocks that have fallen from a ledge near the top of the island. They are referred to the Pliocene period, and so perfectly are they preserved that when eroded from their matrix and mingled with the dead shells of the same species that are scat-

tered on the beach, only a close scrutiny can distinguish a difference. Among the species that were revealed in this almost perfect state were: *Fusus kobelti* Dall, *Fusus barbarensis* Trask, *Lucina acutilineata* Conrad, *L. californica* Conrad, *L. nuttalli* Conrad, *Lunatia lewisii* Gld., *Olivella biplicata* Sby., *Cardium centifilosum* Cpr., and a very unique and interesting specimen of *Serpulorbis squamigerus* Cpr., together with a large number of common species of shells.

NOTES ON VITREA CELLARIA MÜLL.

[Extract from the report of Mr. Leon Walker. From the Transactions of the Isaac Lea Conchological Chapter for 1896.]

There is, perhaps, no more interesting land shells in New England than *Vitrea cellaria* Müll., on account of its peculiar habits. It was first noticed in cities along the Atlantic Coast about fifty years ago, and was undoubtedly introduced through commerce on wine casks or hothouse plants. For some physical cause this shell has not yet been found at any distance from the ocean, and is still confined to a few cities on the coast. Living chiefly in cellars, as its specific name implies, and not exposed to the weather, it does not hibernate, but is active the year around. It is sometimes a great pest to the housewife, annoying her greatly by crawling into milk-pans or eating vegetables that are placed on the cellar bottoms. The depredations of the animal are confined to the night; in the daytime it lies hidden under some board or in some crack or crevice in the wall. The animal has a very acute sense of smell, and can be readily collected by placing fruit or vegetables within its reach. *Vitrea cellaria* is not the only cellar mollusk, as there are a few slugs that lurk in similar situations, but it alone has an external shell.

NOTES AND NEWS.

THE COLONY OF HELIX NEMORALIS AT LEXINGTON, VA.—The colony of *Helix nemoralis* is thriving; one yard is full of them, but I do not see that they do any injury to vegetation. They appear to grow larger here than the specimens I have seen of the same species from Europe. Another feature I have also observed: When they were first introduced we could find solid brown ones

rarely; now they are never to be seen. They look like tortoise-shell or have very wide bands, but no more *solid brown* appear, although I keep a sharp lookout.—Mrs. John M. Brooke.

A New Form of Pupa.—I find, occasionally, in the rejectamenta of the Rio Grande at Mesilla, N. M., a *Pupa* which has been considered to be *P. gabbii* Dall (i. e., *arizonensis* W. G. Binn., not Gabb.). On examining it more carefully than heretofore, it seems to me at least a distinct variety, and it may be called *P. gabbii* var. *mexicanorum*. It is 3½ mm. long, diam. 1½ mm., white, delicately but distinctly ribbed, the ribs filiform, four of them entering the parietal wall of the aperture. The aperture is rather narrow, with the outer margin somewhat flattened, and inclined to be elbowed above. The peristome is quite thick. Besides having the well-marked ribs, this is smaller and narrower than the typical *gabbii*. I found, however, an equally small form of *gabbii* in Colorado, on Round Mountain near Silver Cliff.

To Dr. Dall's recent list of Central Region Pupidæ may be added *Vertigo gouldi* Binney, which I found in a post-Tertiary deposit at West Cliff, Colorado, along with a variety of *V. ovata*. It has not yet been found alive in that neighborhood.—T. D. A. Cockerell.

Vallonia pulchella in Pittsburgh.—A couple of months ago a friend sent me a lot of *Vallonia pulchella* that he had collected on his front walk in the East End, Pittsburgh. He says that he first noticed them late last spring or early summer, but is not sure of the date now. He says that they suddenly appeared after a rain literally in *millions*, and about three weeks later they again appeared, but in smaller numbers. The first time they appeared he says he gathered up a half tumbler of the shells for me but lost them. On their second appearance he got about a thousand which he turned over to me, and I send you a few under separate cover to let you see that they show the effect of Pittsburgh smoke.

My friend is going to watch for them this spring and summer, and if they appear will make a note of the date and how long they stay. There is a stone wall around the place and he thinks they come from this wall.—Geo. H. Clapp.

PUBLICATIONS RECEIVED.

List of the Clausiliæ of South America, with the Description of a New Species, by E. R. Sykes (Jour. Malac., V,

pages 57–59, pl. IV).' In this list 37 species are recorded. From United States of Columbia 11; Venezuela 1; Ecuador 6; Peru 16; Bolivia 2; and Porto Rico 1. *C. perplexa* Sykes is made a synonym of *C. dohrni* Pfr.—C. W. J.

REPORT ON THE MOLLUSKS COLLECTED BY THE INTERNATIONAL BOUNDARY COMMISSION OF THE UNITED STATES AND MEXICO 1892–94, by Wm. H. Dall (Proc. U. S. Nat. Mus., XIX, pages 333–379, pls. XXXI–XXXIII). In this report the fauna of the region adjacent to the international boundary line that extends from the Rio Grande River near El Paso, Texas, to the Colorado River near Yuma, Arizona, is fully treated. Two new species of Polygyra (*P. ashmuni* and *P. pseudodonta*) are described from New Mexico. Two new *Coelocentrum*, a new *Anisospira* and a new *Streptostyla* are described from Mexico.—C. W. J.

REVISION OF THE GENERA OF LEDIDÆ AND NUCULIDÆ OF THE ATLANTIC COAST OF THE UNITED STATES, by A. E. Verrill and Katharine J. Bush (Amer. Jour. Sci., III, 1897, pages 51–63). This interesting paper, the authors state, is but a preliminary account of the classification adopted in a somewhat extended study of the series of deep sea forms belonging to these families. "These families are often united by modern malacologists under a single family (Nuculidæ), while others regard them as distinct. The family Nuculidæ differs from Ledidæ mainly in having no siphon tubes, the mantle edges being completely disunited." A new subfamily (Glominæ) of Nuculidæ, and a new subfamily (Tindarinæ) of Ledidæ are used, while in the Ledidæ four new genera and one subgenus is adopted. The article is illustrated by 22 cuts, and closes with an analytical table of the recent subfamilies, genera and subgenera.—C. W. J.

THE EOCENE DEPOSITS OF THE MIDDLE ATLANTIC SLOPE IN DELAWARE, MARYLAND AND VIRGINIA, by Wm. B. Clark (Bull. U. S. Geol. Sur., No. 141). The introduction contains a complete bibliography and an exhaustive account of its stratigraphical and paleontological characteristics, followed by descriptions of species. About 60 species of Mollusca are described and illustrated. The entire work contains 93 pages and 40 plates.

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H. A. PILSBRY, Conservator Conchological Section, Academy of Natural Sciences, Philadelphia

ASSOCIATE EDITOR:

C. W. JOHNSON, Curator of the Wagner Free Institute of Science.

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OF CONCHOLOGISTS.

EDITOR:
H. A. PILSBRY, Conservator Conchological Section, Academy of Natural Sciences, Philadelphia.

ASSOCIATE EDITOR:
C. W. JOHNSON, Curator of the Wagner Free Institute of Science.

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