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# The Williams Collection of Shells

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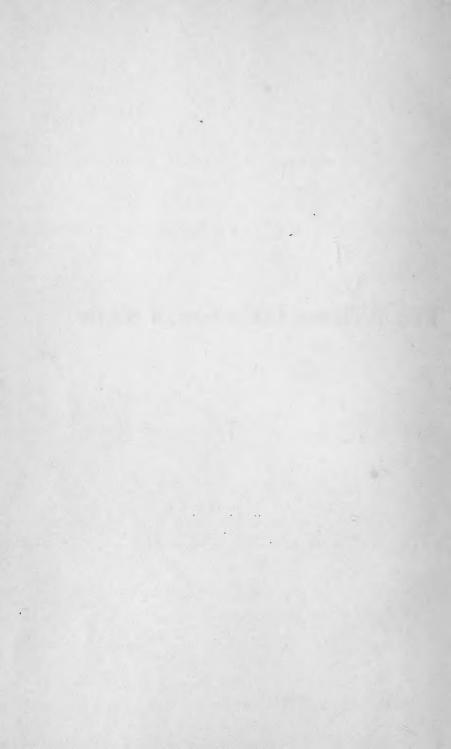
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# The Williams Collection of Shells

The Library Museum of Comparative Zoology Harvard University



April 24, 1908.

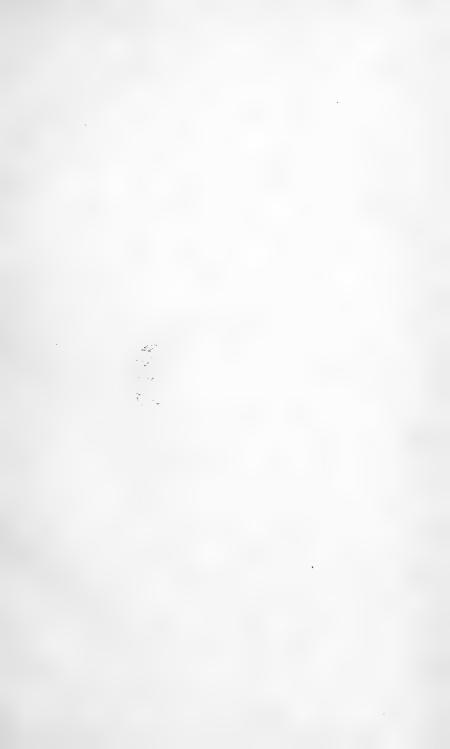
In my article in the magazine I did not have space to describe the many different points in which your Conchological Collection is unique, and stands out so prominently and you might almost say alone, among the great world collections. It is unique in the lavish abundance of the most beautiful and costly specimens of each leading family. For instance, take the Aurantias, the Scottii, and Decipiens, and very many other rare species of the Cypraeidae, all represented by numerous specimens. The same may be said of the palma roseas, the rotas and tenuispinas of the Muricidae, and the imperialis, and junonias of the Volutidae. Most collectors would be satisfied with one specimen of these rare shells, but your collection by having numerous specimens, shows all the variations of form and coloring found in each species, and each one is the finest that can be procured. It is also unique in having so many of the less showy families as fully represented in species as the more beautiful favorites. For instance, the Clansilias, the Neritas, Marginellas, Columbellas and many more too numerous to mention, although small and varying little in form, are as fully represented in species as the larger and more popular families. This makes the collection peculiarly valuable from a scientific point of view. Then it is unique as to the varieties and extremely choice things it contains. For instance, the Conus gloria maris, which is if I remember rightly, a finer specimen than the one in the British Museum for which, Edgar Smith the Curator told me, they paid five hundred dollars, and which has been specially noted in conchological literature for over a hundred years. The Conus cervus, cedo-nulli, rhododendron and almost numberless others in that family are fine examples of rarity and beauty. The gem of the collection may be an especially fine Pleurotomaria beyrichii. Of this entire family only about twenty specimens belonging to

five species have been discovered, and of this species only seven are known in the world. Pleurotomaria Hirasei may be seen in this collection also. It is a very rare shell, of a beautiful ivory white, and golden yellow in color, while a magnificent red is the predominating color of Pleurotomaria beyrichii.

Then among those universal favorites, the Cypraeas; how many collectors can boast of a broderipi, a nivosa, a castanea, coxeni, crossei, similis, etc., etc., etc. Those of the whole world who can do so may be counted on the fingers of one hand. Then take the cabinet of spondylus, unique in its vast number of species, and wondeaful for its oriental richness of coloring, making it suggestive of a tropical flower garden. The collection is unique in having a larger number than any I have seen abroad or in this country, of polished Haliotis, especially of the two species that are the most beautiful of all the shells of California. The same may be said of the polished Unios which are wonderfully choice and fine. It is unique in having the largest number of a single species of rare Cypraea, showing in over a hundred specimens the grádual evolution of that most beautiful of American Cypraeas the Spadicea.

I will close by saying that I am firmly of the opinion, after browsing among collections in Europe and America for twenty years or more, that there cannot be seen a collection as rich in in beauty of specimens, in variety of species, and as tasteful in arrangement as that in your large cabinet, in the world today.

T. H. McCov, Chicago.





SPONDYLUS REGIUS

In the Williams Collection of Shells

# THE WILLIAMS

# Collection of Shells

A BRIEF ACCOUNT OF

THE CONCHOLOGICAL CABINET OF MRS. ALICE L. WILLIAMS

By

GEORGE HALCOTT CHADWICK, M.S.

Sometime Conchologist at Ward's Natural Science Establishment, Rochester, and later Zoologist to the New York State Museum.

M-C 432

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BY
ALICE L. WILLIAMS



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Mr. Chadwick, writer of this account of the Williams Collection of Shells, was for many years a practical worker in conchology in the largest establishment of its kind in this country. His scientific knowledge was supplemented by an exceptional opportunity for studying this special collection, every case being freely opened to him during the many days he gave to its examination. This careful study makes his report unusually thorough and illuminating.



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# The Williams Collection of Shells

#### I. INTRODUCTORY

In Mrs. Williams' early girlhood, a loved teacher observing the child's natural appreciation of the beautiful, gave her some common shells, with the expressed wish that she might gather about this modest nucleus a "truly remarkable" collection. The suggestion bore fruit, and the harvest is seen in this unique cabinet.

From the outset circumstances combined to make the cherished dream a reality. First was the exquisite attuning of mind and senses, evident even in childhood, that has steadily controlled her judgment in the selection and upbuilding of the collection. Then came the friendship and co-operation of the traveler, explorer, genius, and naturalist, the late Professor Henry A. Ward, who was never too busy to remember her collection. Again there was opportunity in more of leisure and means than is granted to many who dream, coupled with the indomitable persistence and determination of one who works as well as wishes. These characteristics brought to Mrs. Williams friendships among the noted conchologists and shell dealers of the world,—Sowerby, Campbell, Fulton, Roberts, Melvill, and others,—who

have taken a keen interest in offering her their choicest and most beautiful materials; so that the collection is a growing monument of patient industry, discriminating taste, rare judgment, and favorable opportunity. At the present moment (November, 1907) this collection contains twenty-six thousand shells, a number unexceeded I believe by any private shell cabinet in America since the days of John Jay. Among these specimens there are none which could be spared to advantage; each is individual and each is superlatively good.

It is said that every enthusiastic collector has a favorite group or genus,—a "hobby." One looks in vain for the outward sign of Mrs. Williams' hobby. Every family, every genus, seems to merit that distinction as its wealth of representation is realized. The rarest obtainable in every family are here. Yet there is a first love, that queen of molluscan families, the Cypraeidae, although no unwise partiality is displayed.

The rarest shells in the collection, the delectae delectarum, what are they? Shall we name Spondylus regius, Conus gloria-maris, or Pleurotomaria beyrichii? What of Strombus thersites, Cancellaria cooperi, Argonauta grüneri, Rostellaria powisi and Cypraea broderipi? The choicest treasures of many another collection, the Cypraea aurantia's, the rarest Volutas, and their like, take second place and are often represented by several specimens, all different. Many specimens

in the collection, among the Cones for example, range in cost from twenty to seventy-five dollars apiece. But where there are so many that are rare and costly, the selection of a few prominent names is difficult. It is invidious to the many to name a few. Looking from the opposite view-point, we find that no common species has been omitted or excluded. On the contrary, the common and well-known are represented by the finest specimens and fullest suites of variations. The best of the molluscan democracy are beside the aristocracy. There is thus a remarkably complete and select general collection. Indeed, it might be said of the marine shells that it were much easier to list the few missing forms than to catalogue those present. Many genera are complete, while other large ones lack but one or two species.

The full significance of Mrs. Williams' life-work appears when we add to this commanding array of typical and well-known forms (with rare and unmatchable things in all groups), many special series such as fine mutational suites and geographical assemblages, a large number of Tertiary fossils, particularly Cypraeidae, many newly-described land and fresh-water shells of Japan, a good showing of deep-sea species, the remarkable halolimnic forms from Lake Tanganyika and many other factors that usually mark a great museum collection built upon unlimited resources. No feature of pure conchological science that can find expression in a collection has been overlooked, indeed,

at every turn one is surprised by some new phase of the subject, perhaps before unthought of, and regrets the necessity which takes him at last from their contemplation. I speak as one who lived for years among shells and shell literature in the largest commercial scientific establishment in the country.

Turning at length regretfully away, there remains an impression of wonderful order and beauty of arrangement. There is many a clever device such as the use of small glass-topped boxes for the little specimens, and altogether there is exhibited an extraordinary synthesis of scientific appreciation and artistic taste.

The purpose of these pages is not mere gratulation, though the collection deserves that and more. Indeed, it merits as world-wide celebrity as the great collections of Jay, of Gould, of Newcomb, and of other renowned cabinet builders. It deserves a place in some great hall of science, and it is Mrs. Williams' hope that it may some day be thus installed through public or private munificence. My desire in this writing is to make this remarkable collection better known. It has been a labor of love, and I can wish for those who read no greater pleasure than to come under the fascinating spell of this great collection.

#### II. THE CONTENTS OF THE COLLECTION

Long lists of names are wearisome, yet being concrete and tangible, they offer the only convincing proof of the value of a scientific collection. To avoid the prolixity of a complete catalogue while exhibiting the scope of this collection, an alphabetical list of the genera represented is taken from Mrs. Williams' manuscript catalogue. This list is inadequate because many forms contained in the collection are catalogued under the broader generic terms of a few years ago, and also because a host of new shells,—whole collections in themselves,—have been added since the catalogue was written. Even without these additions, the list is a commanding one, and includes over seven hundred and fifty names.

#### THE GENERA REPRESENTED

Acanthinula Adacna Acanthochites Adamsia. Acavus Adamsiella Achatina Adelomorpha Achatinella Aetheria Acmaea. Akera Acme Alaha Acmella Albersia. Acroptychia Alcadia.

Alcira Argobuccinum
Alexia Argonauta
Alvania Ariolimax
Alycaeus Arionta
Amiantis Ariophanta
Amnicola Asaphis
Ampelita Ashmunella

Amphibola Aspa

AmphibulinaAspergillumAmphidromusAssimineaAmphidoxaAstarteAmphipepleaAstraliumAmphissaAtlantaAmpullariaAtys

Amussium Aulopoma
Anaitis Auricula
Anapa Avicula
Ancilla Axinus

Ancylotus

Ancylus Balea
Angitrema Barbatia
Angulus Barleeia
Anodonta Bathybembix

Anodontoides Bela
Anoglypta Bifidaria
Anomalocardia Bithinella
Anomia Bithinia
Anostoma Bittium
Aplustrum Blanfordia
Aporrhais Bothriembryon

Arca Brechites

Broderipia Caryodes Buccinum Cassidaria Buliminopsis Cassidula **Buliminus** Cassis Bulimulus Castalia Bulimus Cataulus Bulinus Cepolis Bulla Ceres Bullia Ceratodes Burtonia Cerion **Bythoceros** Cerithiopsis Cerithium

Caecilianella Cernina
Caecum Cerostoma
Caldwellia Chama
Calliostoma Charopa
Callista Chelidonopsis

Calyptraea Chione
Camaena Chiton
Camitia Chloraea
Campeloma Chloritis
Cancellaria Chlorostoma
Cantharidus Choanopoma
Cantharus Chondropoma

Capulus Chorus

Cardita Chrysodomus
Cardium Chrysostoma
Carelia Cionella
Carinaria Circe
Caryatis Circinaria
Carychium Cistula

Clanculus Corilla

Clathurella Craspedopoma

Clausilia Crenella
Clavator Crepidula
Clavatula Crista
Clavella Cristaria
Claviger Crossopoma
Clea Crucibulum

Clementia Cryptochiton
Cleopatra Cryptogamma

Clypidella Cryptoplax
Clypidina Crystallopsis
Cochlicopa Cucullaea
Cochlostyla Cuma

Cochlostyla Cuma
Coelaxis Cyamium
Coelopoma Cyathopoma
Colobostylus Cyclas

Columbarium Cyclina

Columbella Cyclomorpha
Columna Cyclophorus
Cominella Cyclops.

Concholepas Cyclostoma
Conus Cyclostrema

Coptocheilus Cyclosurus
Coralliophaga Cyclotus
Coralliophila Cylichna
Corasia Cylindra

Corbicula Cylindrella
Corbis Cylindromitra

Corbula Cyllene
Corbulomya Cymbium

Drymaeus Cypraea

Cypricardia

Cyprina Eburna Elizia Cyrena Endodonta

Cythara Engina Cytherea Ennea

Daphnella Ensis Defrancia **Epidromus** 

Delphinula **Epiphragmophora** 

Dentalium Erato Desmoulea Ethalia Eucalodium Diala Dibaphus Euchelus Dione Eudesia Diplodonta Eulima Diplommatina Eulota Diplomphalus Euplecta Dipsaccus Eupleura Dipsas Euthria

Discina. Eutrochatella

Distorsio

Ditropis Fasciolaria Dolabella Faunus Dolium Ferussacia Donax Fissurella Fistulana Dorcasia. Dosinia Flammulina Fluminicola Draparnaudia Dreissensia. **Fulgur Drillia** Fusus

Ganesella Helicophanta
Gari Helicostyla
Gastrodonta Helix

Gastrodonta Gena Hemicardium Genotia Hemifusus Geomitra Hemiglypta Georissa Hemimactra Gibbula Hemiplecta Gibbus Hemisinus Glessula Hemitrichia Glycimeris Hemitrochus Glyphis Heteropoma Glyphostoma Heuropis Glyptostoma Hiatula Goniobasis Hinnites Gouldia. Hipponyx Gundlachia Hippopus

Hirasea Halia Hirasiella Haliotis Holospira Haminea Horea Harpa Hyalina Helcion Hybocystis Helcioniscus Hydatina Helicarion Hydrobia Helicella Hydrocena Helicigona Hygromia Helicina Hypselostoma

Hyriopsis

Helicodiscus Helicodonta

Helicomorpha Ianthina

Imbricaria Lepeta
Io Leptaxis
Iopas Leptinaria
Iphigenia Leptoconchus
Iridina Leptolimnaea
Isanda Leptopoma
Isabasahitan Leptopoma

Ischnochiton Leptopomatoides

Isocardia Leptothyra Leptoxis

Janulus Leucochroa Jouannetia Leucozonia

Lia

Kaliella Libitina
Katharina Liguus
Kellia Lima
Kraussina Limax
Kuphus Limicolaria

Limnaea
Labyrinthus
Limnophysa
Lagocheilus
Limnotrochus

Laimodonta Lingula
Lamellaria Liocardium
Lanistes Lioconcha
Laoma Liotia

Laqueus Lithodomus
Latiaxis Lithotis
Latirus Littorina
Lazaria Littorinella
Leda Livona
Leiopyrga Loripes
Leiostraca Lottia

Lucapina
Lucidella
Lucina
Lyonsia
Lyria
Lysinoe

Macandrewia Macha Macoma Macroceramus Macrochlamys Macron Mactra Mactrella Magilus Malea Malleus Mandarina. Mangilia Margarita Margaritana Marginella Marinula Marisa.

Megalommastoma Megaspira Megatebennus Melampus

Melania

Martesia

Melanopsis Melantho Melapium Meleagrina Melo

Melongena Mercenaria Meretrix Meroe Mesalia Microcystin

Microcystina Microphysa Milneria. Miratesta Mitra Modiola. Modiolaria Modulus Monoceros Monodonta Monothyra Montacuta Mopalia Mulleria Murex Mutela Mya

Myodora Mytilimeria Mytilus

Nacella **Ophicardelus** Nanina Opisthostoma Orthalicus Nassa Nassopsis Oscilla Natalina Ostodes Natica Ostrea Nantilus Otesia Navicella Otopoma Neomphalus Otostomus Neothauma Ovula Neptunea Oxychona Nerita Oxynoe Oxystyla Neritina Oxytes Nesopupa

Netastomella

Neverita Pachycheilus
Norrisia Pachystyla
Northia Pagodus
Nucula Paludina
Paludomus

Obba Panda
Odostomia Pandora
Oleacina Panopaea
Oliva Papuina

Olivancillaria Parallelipipedum
Olivella Paramelania
Omphalina Parapholas
Omphalotropis Pararhytida
Oniscia Parastarte
Onithochiton Parmophorus

Opeas Partula

Paryphanta Pisania
Patella Pisidium
Pecten Placenta
Pectunculus Placostylus
Pedicularia Placuna

Pedinogyra Placunanomia

**Planaxis** Pedipes Pedum Planispira Planorbis Penitella Perideriopsis Plecotrema Plectopylis **Perideris** Peristernia Plesiotrochus Pleurocera Perna. Persona Pleurodonte Petricola. Pleurotoma Pharella Pleurotomaria Pharus Plicatula

Phasianella Poecilozonites
Phasianotrochus Polinices

Phasianotrochus
Phasianotrochus
Phasianotrochus
Phasianotrochus
Phasianotrochus
Polygyra
Pholygyratia
Pholadidea
Polygyrella
Pholadomya
Polymita
Pholas
Phos
Pompholyx
Physica

Physa Porphyrobaphe
Physella Potamides
Physopsis Potamopyrgus
Pineria Praticolella
Pinna Priotrochus
Pirenella Pristiloma

Realia Proserpina Proserpinula Retusa Psammobia Reymondia Psephis Rhachis Pseudachatina Rhodea Rhysota Pseudohvalina Pseudomurex Rhytida Ricinula Pseudopartula Pseudopythina Rictaxis Rissoia Pterocera. Pterocyclus Rissoina Rostellaria Punctum Pupa Rotella Pupilla Rotula Pupina Ruma Rumina Pupinella

Pupisoma

Quadrula

Purpura Sagda

Pusionella Sanguinolaria

Pyramidella Saulea
Pyramidula Saxicava
Pyrochilus Scalaria
Pyrula Scaphander
Pythia Scapharea
Scarabus

Schiaschila

Scintilla

Ranella Scrobicularia

Rapa Scurria
Rapana Scutus
Raphaulus Segmentina

Selenites
Semele
Separatista
Senilia
Sigaretus
Siliqua
Siliquaria
Simnia
Sipho
Siphonalia
Siphonaria
Siphonodentalium

Sistrum
Sitala
Solarium
Solaropsis
Solemya
Solen
Somatogyrus

Spatha
Sphaerium
Spiraculum
Spiraxis
Spiropoma
Spirula
Spisula
Spondylus
Standella

Stenogyra Stenopus Stoastoma Stomatella
Streptaulus
Streptaxis
Streptostyla
Sfrigilla
Strobilops
Strombus
Strophocheilus
Struthiolaria
Stylifer
Stylodonta
Subemarginula

Subulina
Succinea
Sunetta
Surcula
Syndesmya
Syrnola
Syrnolopsis

Talona
Tanganyikia
Tapes
Tatea
Tectarius
Tegula
Tellina
Tenagodus
Terebellum
Terebra

Tagelus

Terebralia Trochomorpha

Terebratalia Trochus Terebratella Trophon Terebratulina Truncaria Tetraplodon Truncatella Thecalia Tudicla Thecidium Tudora Thersites Tugonia Thysanophora Turbinella Tivela Turbo Tomichia Turbonilla Tomocyclus Turcicula Tonicia Turricula Torinia. Turritella Tornatellina Tylodina **Tornatina Typhis** 

Trachycystis Tralia

Umbonium Tresus Trichodiscus Umbraculum Trichotropis Umbrella Tricula Unio

Typhobia

Tridacna Urosalpinx

Triforis

Trigonia Vallonia Trishoplita Valvata Triton Vanganella Tritonidea Vanikoro Trivia Vasum Trochatella Velutina Trochiscus Venerupis

Venus Xenophora Vermetus Xenothauma

Vertigo Xesta

Vitrea

Vitrina Yoldia

Vitrinozonites

Vivipara Zemira
Vola Zenatia
Voluta Zingis
Volutharpa Zirphaea
Volutopsis Zizyphinus
Volvatella Zonites
Vulsella Zonitoides

### Waldheimia

The greatest possible diversity in numbers exists among these genera. Some, like Megalatractus, are monotypic, while in others the specific representation runs into the hundreds. Thus, under the old designation "Helix" are included over five hundred and fifty specific names in this catalogue, while such genera as Cypraea, Conus, and Mitra, are represented by three or four hundred species each. The total specific representation is very nearly ten thousand.

## III. NOTES ON THE COLLECTION

No words can do justice to the Williams Collection of Shells; it must be seen to be appreciated, yet deep impression is made by certain individual objects, groups, and families that are here presented in the order of the Ward Catalogue classification.

1. CEPHALOPODA. Not many Cephalopods are shell bearing, which increases our interest in those that are. Especially is this true of the graceful and delicate "egg-nests" of the Argonauts. Here is a ten and three-quarters inch Argonauta argo, perhaps the largest specimen ever taken among the large paper-Nautili. Each member of this family is a gem, but the trained eye singles out the Argonauta grüneri,—the rarest of them all,—a fine specimen from the Marquesas Islands.

Here also is a *Nautilus pompilius* believed to be the largest specimen known. Many other lovely specimens, with their dainty nacre, represent this and the allied species, besides a goodly number of the fossil Ammonitidae, curious of shape and resplendent in pearl.

2. GASTROPODA. Here we come first to the MURICIDAE, a rich and varied family, known well to

few collectors, because the acquisition of fine specimens and of the rarer species is very difficult. A list of the species of *Murex* represented is given because it goes far to show the fullness of this collection in forms unknown by sight to the average conchologist. Material recently added is not included in the list.

### MUREX

acanthopterus, Lam. Australia aciculatus, Lam. Channel Is. aculeatus, Lam. Moluccas (very rare) aduncospinosus, Beck. Hong Kong aduncus, Sowb. Japan adustus, Lam. Singapore, Australia alveatus, Kiener. Florida angasi, Crosse. Port Jackson, Australia angularis, Lam. West Africa anguliferus, Lam. Red Sea anguliferus, Lam. var. Indian Ocean antillarum, Sowb. West Indies approximatus, Sowb. Philippines aquatilis, Reeve. West Indies axicornis, Lam. Indian Ocean

babingtoni, Sowb. South Africa
balteatus, Beck. Philippines
banskii, Sowb. Moluccas, Indian Ocean
bednalli, Angas. South Australia (Extremely rare, only two specimens known.)
bellus, Reeve, chrysostoma, Gray. Gulf of Mexico

benedictus, Melv. Lifu

bicolor, Val. Lower California bifasciatus, A. Ad. Cape de Verde Is. birileffi, Lischke. Japan blainvillei, Payr. Malta bombayensis, Melv. Bombay bourgeoisi, Tourn. West Africa brandaris, Linn. Naples, Italy brassica, Lam. Gulf of California breviculus, Sowb. New Caledonia brevifrons, Lam. Indian Ocean brevispina, Lam. Hong Kong buxeus, Brod. Peru

cabritti (typical), Bern. cailleti, Petit. West Indies calcitrapa, Lam. West Coast America, Indian Ocean caledonicus, Jouss. New Caledonia californicus, Hinds. California capensis, Sowb. Algoa Bay capucinus, Lam. Torres Straits capucinus, var. Lam. Luzon, Philippines carbonieri, Jouss. Aden cervicornis, Lam. Australia chrysostoma, Gray. West Indies cinereus, Say. Florida, Massachusetts circumtextus, Stearns. Monterey, Cal. clavus, Kiener. Philippines cochlidium. Florida concinnus, Reeve. East Indies contractus, Reeve. Kurachi corallinus, Lk. Mediterranean

corallinus, var. minuta, Desh. Palermo cornutus, Linn. West Africa crassilabrum, Gray. Peru craticulatus, Brocchi. Naples crawfordii, Sowb. South Africa crenifer, Montr. New Caledonia cristatus, Brocchi. Naples, Italy crocatus, Reeve. West Indies cumingii, A. Ad. Mauritius cyclostoma, Low. Punta-Balabac, I. Balabac

despectus, A. Ad. New Caledonia diadema, Benoit. Naples dilectus, A. Ad. Florida dubius, Sowb. Panama

edwardsi, Payr. Mediterranean
elegans, Beck. West Indies
elongatus, Lam. Hong Kong
emarginatus, Sowb. Japan
endivia, Lam. Philippines
erinaceus, Linn. Mediterranean
erinaceus, Linn. juv. Mediterranean
erinaceus, Linn. var. tarentina, Lam. Mediterranean
eudaemonis, Smith. Japan
eurypteron, Reeve. Japan

falcatus, Sowb. Japan fasciatus, Sowb. West Africa fenestratus, Chem. Mauritius festivus, Hinds. California fimbriatus, Hinds. Philippines fimbriatus, Hinds var. luculentus, Reeve foliatus, Mart. China, etc.; San Pedro, California, 15 to 25 fathoms formosus, Sowb.

gallinago, Sowb. (A new species from Japan, recently described in the Annals and Magazine of Natural History, 1904.)

gemma, Reeve. California gracillimus, Stearns. California gracillimus, Stearns small var. Santa Catalina Is. gubbi, Kiener. West Africa

hanleyi, Angas. Australia haustellum, Linn. Torres Straits, Australia hemphilli, Dall. Florida hexagonus, Lam. Panama hybridus, Araclus. West Coast of Africa

imbricatus, Smith. New Caledonia imperialis, Sowb. West Indies incisus, Brod. California interfossus, Cpr. California interfossus, Cpr. var. California

kieneri, Reeve. South Africa

laciniatus, Mart. Straits of Magellan lamberti, Poirier. New Caledonia linguaverrucina, Chem. West Africa luridus, Midd. California luridus, Midd. slender var. Monterey, California luridus, var. munda, Cpr. Vancouver luridus, var. aspera, Baird. Vancouver lyratus, A. Ad. Cape de Verde Is. lyratus, A. Ad. var. Cape de Verde Is.

macgillivrayi, Dohrn. N. E. Australia malabaricus, Smith. Andaman Is. (very rare) martinianus, Reeve. Hong Kong maurus, Brod. Philippines megaceros, Brod. West Africa melanomathus messorius, Sowb. Japan, West Indies, West Africa messorius, var. rubidum, Dall. St. Domingo mexicanus, Reeve. Florida microphyllus, Lam. Philippines miliaris, Gmel. West Africa mitraeformis, Sowb. Algoa Bay monachus, Crosse. Japan monodon, Sowb. Torres Straits, Japan, Australia A white and a brown specimen. The largest known.
"A matchless pair," says
Mr. G. B. Sowerby. Australia monodon, Sowb. var. monodon, Sowb.

multicrispatus, Dunker. Peru multangulus, Philippi. Florida

nigrescens, Chem. Panama nigrispinosus, Reeve. Japan, Indian Ocean nigritus, Phil. Panama, Mazatlan, nitidus, Brod. Mazatlan, nuceus, Mörch. Florida

# From Mr. Henry Hemphill, California

### Cerostoma-

nuttalli, Conr. San Pedro Bay, California

nuttalli, Conr. var. broad banded. California

nuttalli, Conr. var. narrow white. California

nuttalli, Conr. var. narrow banded. California

nuttalli, Conr. var. narrow dark. California

nuttalli, Conr. var. small, slender. Todos Santos Bay, Cal.

nuttalli, Conr. var. monoceros. Lower California

occa, Sowb. China octagonus, Quoy. New Zealand oculatus, Reeve. Bahamas

palma-rosae, Lam. Indian Ocean

palma-rosae, Lam. juv. Indian Ocean

palmiferus, Sowb. New South Wales

pavia, Crosse. South Australia

pellucidus, Reeve. Hong Kong (J. F. Quadras)

penchinati, Crosse. New Caledonia

pinnatus, Wood. Hong Kong

plicatus, Sowb. Gulf of California

pliciferus, Sowb. Japan

plorator, Adams and Reeve. Japan (very rare)

pomum, Gmel. Florida

ponderosus, Chem. Ceylon

poulsoni, Nutt. California

princeps, Brod. Panama

pudoricolor, A. Ad. St. Domingo

pumilis, A. Ad. Mauritius

purpuroides, Dunker

quadrifrons, Frauenfeld. Gibraltar quadrifrons, Frauenfeld var. South Seas

radix, Gmel. Panama radix, Gmel. var. Mazatlan ramosus, Linn. Zanzibar, Fiji Is. ramosus, var. Red Sea rarispina, Lam. Indian Ocean rectirostris, Wood. Hong Kong recurvirostris, Brod. Panama regius, Wood. Panama rorifluus, Ad. and Reeve. Japan rosarium, Chem. West Africa rota, Sowb. ("The largest and finest pair known," G. B. Sowerby. From an old collection.) rota, Sowb. Indian Ocean rubiginosus, Reeve rufus, Lam. Bahamas, Florida rufus, Lam. var. intermedia. Bahamas rufus, Lam. var. florifer, Reeve. Bahamas rufus, Lam. var. Gulf of California

salebrosus, King. Peru salleanus, A. Ad. St. Domingo, W. I. saulae, Sowb. Philippines saxatilis, Lam. Indian Ocean scalarinus, Biv. Mediterranean scolopax, Dillw. Persian Gulf scorpio, Linn. Moluccas scrobiculatus, Dunker secundus, Lam. Ceylon

senegalensis, Gmel. Japan similis, Sowb. Marie-Galante sinensis, Reeve. Japan speciosus, A. Ad. Japan spinicostatus, Val. West Indies spinosus, A. Ad. stainforthi, Reeve. Australia steeriae, Reeve. Marquesas Is.

talienwanensis, Crosse. China tenuispina, Lam. Japan, Moluccas ternispina, Lam. Japan tetragonus, Brod. Mediterranean tornatus, Brod. West Columbia torrefactus, Sowb. China torsus, Lam. Mediterranean trialatus, Sowb. Lower California tribulus, Linn. Red Sea trifariospinosus, Chem. Gibraltar triformis, Reeve. Australia trigonulus, Lam. Persian Gulf tripterus, Born. Moluccas triqueter, Born. Pacific Ocean troscheli, Lischke. Japan trunculus, Linn. Mediterranean turbinatus, Lam. Senegambia

uncinarius, Lam. Cape of Good Hope umbilicatus, T. Woods. Tasmania

varicosus, Sowb. Red Sea

varius, Sowb. West Africa

zealandicus, Quoy and Gaim. New Zealand (very rare)

To this long list must be added fossil forms, as *Murex tripteroides*, Lamarck, from the Calcaire grossier of Chaussy, France, and *M. brandaris* from the Pliocene of Niciola, Italy; but even so, there is given only a small portion of the family of the Muricidae as here exhibited, with its forty or more genera and subgenera.

Here is the list of Trophon:

### TROPHON

ambiguus, Phil. New Zealand

belcheri, Hinds. San Diego, California brazieri, T. Woods. Tasmania brevispira, Marts. South Georgia

corrugatus, Reeve clathratus, Müll. Finmark clathratus, Müll. var. gunneri, Lov. craticulatus, Fabr. Greenland cretaceus, Reeve. New Zealand

fabricii, Beck. Newfoundland fimbriatus, Hds. Sts. Maccason flindersi, Ad. and Ang. Tasmania

geversianus, Pallas. Patagonia, Terra del Fuego geversianus, Pallas, var. lirata, Kobelt. Magellan Straits multicostatus, Esch. Finmark. muricatus, Mtg. Britain

nodifera, Powis. Gulf of California

orpheus, Gould. Vancouver Is.

pachyraphe, Smith. Japan petterdi, Crosse. Tasmania philippianus, Dunker. Falkland Is.

scalariformis, Gould. Spitzbergen spiratus, A. Ad. New Zealand strangeri, Gray. New Zealand

triangulatus, Cpr. California (very rare) truncatus, Ström. Britain

vaginatus, Jouss. Sicily

xanthostomus, Brod.

Besides which one notes the interesting genera Pseudomurex (P. lamellosus, Phil. and meyendorffi, Calc.) and Typhis (T. tetrapterus, Bronn and yatesi, Crosse, the latter quite rare); here also are Urosalpinx, Eupleura, seventy-five species of Purpura, over twenty of Ricinula, together with Iopas, Monoceros, Chorus, Concholepas, Cuma, Rapana, Coralliophila, Melapium, Rapa, Magilus, etc.

The fossil *Ecphora quadricostata* from the Virginia Miocene is noteworthy; and beside it the strangely similar and remarkable recent shell *Latiaxis mawae* from

Hong Kong, a great rarity, as are also Latiaxis japonica, Dunker, and Separatista grayi from South Africa

The series of *Purpura crispata* and its thirty-seven variations,—two specimens of each,—from the West Coast, well deserves mention. Mr. Henry Hemphill, their collector, wrote: "I have arranged these shells to show the relations of the sculpturing to the color, beginning with the foliated forms and ending with the small globose varieties, making them unique in that respect. This, I think, the finest series of *Purpura crispata* and its varieties, east of the Rocky mountains with possibly two exceptions."

The TRITONIDAE show some eighty species, including Triton waterhousei, Priene oregonensis (a specimen covered with shells of the brachiopod Terebratalia transversa), Epidromus obscurus and convolutus, Ranella candissata, and Aspa laevigata. Of the Fusidae there are also about eighty kinds, among them two of the rarest of British species, and the scarce Latirus bairstowi from Algoa Bay. The genera represented include, beside Fusus and Latirus, Clavella, Megalatractus, Fasciolaria, Peristernia and Leucozonia. The BUCCINIDAE are represented by the wide range of nineteen genera and nearly a hundred species. There is a very large and fine Buccinum leucostoma, besides B. hirasei, Euthria ponsonbyi, Cyllene orientalis and Chrysodomus poecilochroa and tabulata, with the fossil Ch. contrarius.

In attempting to convey an impression of this collection, it is impossible not to dwell upon numbers,—in fact, one is constantly surprised that so many species of shells exist. Yet, Mrs. Williams says she has "cared less to increase the number of species in the collection, than to get numerous specimens showing all the variations of form and coloring found in each species, and to be sure that each new specimen was the best obtainable." It is testimony then to her patient industry that even the number of species so constantly challenges our admiration. There are one hundred and eightyfour kinds of the elusive little Nassidae! Contempt for their diminutiveness vanishes when we look closer at Nassa (and its subgenera), with such noteworthy things as N. hypolia from Japan, and the two deepwater species N. analogica and N. desmoulinoides from South Africa. There are Northia, Truncaria, Bullia, Desmoulea and Cyclops (Neritula).

Turbinella and Vasum, constituting the Turbinella and Vasum, constituting the Turbinella, small genera but of large stature, are quite completely represented. The Volutidae again rejoice in numbers and in beauty. They are so charming that no praise can do them justice, and it would be difficult to duplicate them in a lifetime. These are aristocratic shells,—scarcely one of them to be called common, and almost any Voluta might well be the boast of a collector. But here they all are, a gathering of notables to furnish a week's revel for the ardent shell-lover.

Of the seventy-six species of *Voluta* in the collection, only these will be here specified:

Voluta	africana	Voluta	mamilla
66	aulica	66	megaspira
66	brasiliana	"	ponsonbyi
66	bullata	66	pulchra
66	concinna	"	roadnightae
66	cymbiola	"	rossiniana
66	flavicans	66	thatcheri
66	grayae	66	thyrella
66	jamrachi	66	virescens
66	laevioata		

The exquisite and rare varieties of V. musica (carneolata, guiniaca, sulcata, etc., etc.) should be noted; and a V. vespertilio believed to be the largest and finest known of its species. Melo, Cybium and Lyria are fully represented by some thirty other species, the seven species of Lyria being all of the greatest rarity. A magnificent pair of Melo aethiopica, from the collection of Lord Ashbrook, an Irish peer who died only a few years ago, commands especial admiration.

Pausing again at the MITRIDAE, one single tiny specimen of which cost much more than its weight in gold, there are found three hundred, and seventy species and varieties of *Mitra* and *Turricula*, and nearly all are extremely beautiful. These dainty small forms

are gathered so slowly after the first fifty species, that this great representation is marvelous. Here is the extremely rare Mitra zonata, the most precious shell ever found in the Mediterranean. Mrs. Williams' specimen is a fine one, two and five-eighths inches in length. And here are M. angustata, belcheri, chrysalloidea, lamarcki, coccinea, fischeri, fulgurata, lineata, lubens, pullata, rupelli, schombergi, verrucosa, with scores of others of great beauty, and of very much more than passing interest to the connoisseur.

Exceedingly attractive also are the little Marginella, and of these (Marginella and Erato) there are two hundred kinds in the collection, including Marginella deoduchus, pyrum, umbiculata, bairstowi, and others that are extremely rare.

A hundred species of "Olive shells" (OLIVIDAE) await admiration. There is a fine large Ancilla cingulata, the largest of its race and probably the largest specimen, besides A. contusa, optima, tankervillei, lienardi, and a score of other Ancillae.

The species of Oliva and Olivella shine conspicuously in fine assemblage, and near them are their cousins the "Harps," a complete family almost overshadowing their relatives. Among these is a unique variety of Harpa rosea and a young specimen of Harpa nobilis in color like the former species. Here as always it is the fullness of individual variation and the beauty and

perfection of individual specimens that awaken special admiration. One longs for an artist to reproduce in color those seventy-five beautiful specimens of the nineteen known forms of this genus.

The Columbellidae,—one hundred and ninety species, down to Sowerby's new little Columbella filmerae from Pondoland. Perhaps some of the described forms are missing, but who will affirm it? In this hasty survey, they must be slighted,—but here they have not been slighted, and one sees with delight their delicate beauty and special attractiveness.

The "Cones" (Conidae) command attention, with Conus gloria-maris enthroned in their midst. Let us not say what it cost,—one need know but little of shells in order to guess,—but there are many others in the collection whose prices ranged from twenty to forty-five dollars apiece. Here also is the very rare Conus cervus, a fine specimen three and three-quarter inches long,—a species of which the British Museum specimen, the pride of that collection, cost \$500. A beautiful pair of C. rhododendron are among other gems in the cabinet. The entire list of this family, three hundred and twenty-five species in the collection, is here given. There are probably half as many more specimens, showing variation in size and color.

## CONUS

abbas, Hwass. Indian Ocean abbreviatus, Nutt. Sandwich Is. achatinus, Chem. Cevlon aculeiformis, A. Ad. and Reeve. China acuminatus, Hwass. Aden acutimarginatus, Sowb. (verrucosus, Hwass, var.) Florida acutangulus, Hwass. Philippines andamanensis, Smith. Andaman Is. adansoni, Lam. Aden adansoni, Lam. var. jamaicensis, Hwass adansoni, Lam. var. bruguieri, Kiener. West Africa adustus, Sowb. Aden aegrotus, Reeve. Philippines africanus, Kiener. Africa africanus, Kiener, var. duponti, Kiener. W. Africa albomaculatus, Sowb. algoensis, Sowb. South Africa alveolus, Sowb. Moluccas amadis, Martini. East Indies, Ceylon ambiguus, Reeve. West Africa ammiralis, Linn. Moluccas (very rare) ammiralis L. granulated var. Indian Ocean anceps, A. Ad. Moluccas anemone, Lam. South Australia anemone, Lam. var. maculatus, Sowb. Lord Howe Id. anemone, Lam. var. novae-hollandiae, A. Ad. Australia anemone, Lam. var. alba. Victoria, Australia aplustre, Reeve. Australia

araneosus, Hwass. Philippines

arachnoideus, Gmel. Andaman Is. archiepiscopus, Hwass. Solomon Is. archithalassus, Dillw. Moluccas (very rare) arctispira, Pils. Japan arenatus, Hwass. Aden, Ceylon aristophanes, Duclos. Galapagos Is. articulatus, Sowb. Mauritius augur, Hwass. East Africa aulicus, Linn. Ceylon aurantius, Hwass. Moluccas (very rare) auratus, Lam. Ceylon aureus, Hwass. Amboina aurisiacus, Linn. Moluccas (very rare) australis, Chem. Hong Kong

bairstowi, Sowb. South Africa (very rare)
balteatus, Sowb. W. Africa
bandanus, Hwass. Algoa Bay
bandanus, Hwass, var. Polynesia, E. Indies
betulinus, Linn. Singapore
betulinus, Linn. var. suratensis, Hwass. Singapore
blainvillei, Kiener. Polynesia
boeticus, Reeve. Philippines
boeticus, Reeve, var. rivularis, Reeve. Philippines
broderipi, Kiener. South Africa
brunneus, Gray. Panama

cabriti, Bernard. New Caledonia (rare) californicus, Hinds. San Diego, California californicus, Hinds, juv. San Diego, California cancellatus, Hwass. Hong Kong canonicus, Hwass. Philippines

capitaneus, Linn. South Sea

capitaneus, Linn. var. mustellinus, Reeve. East Indies

cardinalis, Hwass. West Indies

catus, Hwass. Aden, Tahiti

cedo-nulli (Hwass) Kiener. West Indies (very rare)

centurio, Born. (very rare)

cernicus, A. Ad. Mauritius

cervus, Lam. Red Sea

ceylonensis, Hwass. Australia

ceylonensis, Hwass var. propinquus, Smith

ceylonicus, Chem. Ceylon

characteristicus, Chem. Loo Choo, Indian Ocean

chenui, Crosse. New Caledonia (rare)

cinctus, Swain. Mauritius

cinereus, Hwass. Moluccas

circae, Sowb. (magnus, Linn., var.) Philippines,

circumcisus, Born. Moluccas (very rare)

classiarius, Hwass. Red Sea

clavus, Linn. Philippines

cleryi, Reeve. West Indies

coccinea, Gmel.

coffea, Gmel. Central America

collisus, Reeve. Moluccas

colubrinus, Lam. Mauritius (very rare)

columba, Hwass. West Indies

concolor, Reeve

conspersus, Reeve. Moluccas

consors, Sowb. Moluccas, Amboina

corbula, Sowb. Ceylon

cordigera, Sowb. Philippines

coromandelianus, Smith. Bay of Bengal (rare) crassus, Sowb. Kurachi crocatus, Lam. Moluccas (very rare) crosseanus, Fischer. New Caledonia (very rare) cuneiformis, Smith cuvieri, Crosse. Red Sea, Aden cylindraceus, Brod. Pacific Ocean

dalli, Stearns. Gulf of California
daucus, Hwass. West Indies
deburghiae, Sowb. Moluccas
deshayesi, Reeve. Red Sea
deshayesi, Reeve rare color var.
desidiosus, A. Ad. (mercator, Linn., var.) West Africa
dillwyni, Reeve. Red Sea
distans, Hwass. Philippines
d'orbignyi, Aud. Hong Kong (rare)

eburneus, Hwass. Cevlon eburneus, Hwass odd var. Amboina elegans, Swain. elongatus, Chem. South Africa elisae, Kiener. Madagascar (very rare) emaciatus, Reeve. Philippines encaustus, Kiener. Marquesas Isles episcopus, Hwass. Indian Ocean epistomium, Reeve. Indian Ocean ermineus, Born. India ervthraeensis, Beck. Red Sea erythraeensis, Beck var. dilwyni, Reeve. Somali Coast eximius, Reeve. Moluccas

fasciatus, Mar. Moluccas
figulinus, Linn. Ceylon
figulinus, Linn. var. Ceylon
flammeus, Linn. Africa
flavescens, Gray. Bahamas
flavidus, Lam. Aden, Mauritius
flavidus, Lam. var. maltzanianus, Weink. Philippines
floccatus, Sowb. Kingsmill Is. (very rare)
floridanus, Gabb. Florida
fulgetrum, Sowb. Loo Choo Is.

fumigatus, Hwass. (coffea, Chem., var.) Red Sea fuscatus, Lam.

fulmen, Reeve. Japan

fuscolineatus, Sowb. (Only 5 specimens are said to be known.) Sierra Leone

gabrieli, Kiener. Philippines
gabrieli, Kiener var. Moluccas
generalis, Linn. Singapore
genuanus, Linn. Marquesas Is. (rare)
geographus, Linn. Indo-Pacific
geographus, Linn. var. mappa, Crosse. Philippines
gladiator, Brod. Central America
gloria-maris, Chem. Moluccas (extremely rare)
glans, Hwass. Indian Ocean, Moluccas
glans, Hwass var. tenuistriatus, Sowb. Philippines
glaucus, Hwass. Moluccas
graffei, Crosse. Upolu
granifer, Reeve. China
granulatus, Linn. Ceylon, W. Indies
gubbae, Kiener. Moluccas

gubbae, Kiener var. Moluccas gubernator, Hwass. Solomon Is. guinaicus, Hwass. West Africa guttatus, Kiener. Arabian Gulf

hebraeus, Linn. Africa
hebraeus, Linn. var. vermiculatus, Lam.
hieroglyphicus, Ducl. Curacao
hepaticus, Kiener
hwassi, A. Ad. Mauritius
hyaena, Lam. (mutabilis, Chem., var.) Indian Ocean
hybridus, Kiener var. West Africa

imperialis, Linn. Mauritius imperialis, Linn. var. Indian Ocean imperialis, Linn. var. viridulus, Lam. Mauritius infrenatus, Reeve. West Africa inscriptus, Reeve. Aden intermedius, Reeve. Sandwich Is.

janus, Hwass. Cochin China jukesi, Reeve. North Australia

keati, Sowb. Red Sea, Seychelles (very rare)

laciniatus, Kiener lacteus, Kiener. Moluccas lamarckii, Kiener. South Africa largilliertii, Kiener. W. Indies lautus, Reeve. Natal legatus, Lam. Indian Ocean lentiginosus, Reeve. Bombay legravei, Gatliff. Victoria leoninus, Chem. Gulf of Mexico lienardi, Bernardi. New Caledonia lignarius, Reeve. Cevlon lignarius, Reeve var. furvus, Reeve. Philippines linceus, Sowb. New Caledonia (very rare) lineatus, Chem. Indo-Pacific literatus, Linn, East Indies literatus, Linn. var. Ceylon lithoglyphus, Meuschen. East Indies lividus, Hwass. Sandwich Is. lividus, Hwass var. citrinus, Hwass. Indian Ocean lorenzianus, Chem. West Indies loiroisii, Kiener. Amboina loveni, Krauss. (tinianus, Hwass, var.) South Africa lucidus, Mawe. Panama

maculatus, Sowb. Australia
magnificus, Reeve. Philippines
magus, Linn. Amboina, Philippines, Ceylon
magus, Linn. var. Ceylon
magus, Linn. var. rollandi, Ben. Australia
magus, Linn. var. borneensis, Sowb. Borneo
magus, Linn. var. ustulatus, Reeve. Philippines
magus, Linn. var. epistomium, Reeve
magus, Linn. var. metcalfei, Reeve. Philippines
mahogani, Reeve. Panama
malaccanus, Hwass. Ceylon
maldivus, Hwass. Maldive Is.
maltzanianus, Weink. Indian Ocean

luctificus, Reeve. Aden (rare)

marmoreus, Linn. Polynesia, East Indies marmoreus, Linn. var. East Indies marmoreus, Linn. var. South Africa mediterraneus, Hwass. Mediterranean Sea mediterraneus, Hwass var. flammulatus, Hwass. Naples mediterraneus, Hwass var. oblongus, Hwass. Mediterranean mercator, Linn. West Indies mercator, Linn. var. miles, Linn. Algoa Bay miles, Linn, var. Mauritius miliaris, Hwass. Mauritius millepunctatus, Lam. Ceylon mindanus, Hwass. Philippines minimus, Linn. South Pacific miser, Boivin. Africa mitratus, Hwass. Island of Ticao (very rare) monachus, Linn. monile, Hwass. Singapore mucronatus, Reeve. New Britain mus, Hwass. West Indies musicus, Hwass. Philippines mustelinus, Reeve. East Indies mutabilis, Chem. Bombay

nanus, Brod. Red Sea
natalensis, Sowb. Natal (very rare)
nebulosus, Sol. West Indies
nebulosus, Sol. var. Indian Ocean
nemocanus, Hwass. Aden, Borneo
nemocanus, Hwass var. Moluccas
nemocanus, Hwass var. laevigatus, Sowb. Philippines

nicobaricus, Hwass. Ceylon, Philippines
nigropunctatus, Sowb. Red Sea
nimbosus, Swain. Red Sea
nivosus, Lam. Cape de Verde Is.
nobilis, Linn. Andaman Is. (very rare)
nocturnus, Hwass. Ceylon
nocturnus, Hwass var. deburghiae, Sowb. Moluccas
nodulosus, Sowb. Australia
novae-hollandiae, A. Ad. Australia
nussatella, Linn. Singapore
nux, Brod. Tahiti

obesus, Hwass. Ceylon, Indian Ocean, Philippines obesus, Hwass var. Indian Ocean oblivus, Reeve. Philippines obscurus, Reeve. Isle of Masbate olivaceus, Kiener. (testudinarius, Mart., var.) West Africa omaicus, Hwass. Moluccas (extremely rare) omaria, Hwass. Indian Ocean

panniculus, Lam. Indian Ocean, Moluccas
papilionaceus, Hwass. Senegal, W. Africa
papilionaceus, Hwass var. canariensis, Hwass. Teneriffe
parius, Reeve. Moluccas
parvus, Pease var. atramentosus, Reeve. New Caledonia
paulucciae, Sowb. Madagascar (extremely rare)
pauperculus, Sowb.
pealei, Green. Sarasota Bay, Florida
pennaceus, Lam. Mauritius
pertusus, Hwass. Madagascar
pica, Ad. and Reeve. Moluccas

pica, Ad. and Reeve var. Moluccas pictus, Reeve. Natal planorbis, Born. Society Is. pigmentatus, Ad. and Reeve. Japan pontificalis, Lam. Australia pontificalis, Lam. var. Australia portoricanus, Hwass. Porto Rico, Mexico praetextus, Reeve. Marquesas Is. princeps, Linn. Panama princeps, Linn. var. regius, Chem. proelatus, Hwass. Moluccas prometheus, Hwass. West Africa prometheus, Hwass large var. West Africa propinquus, Smith. Mauritius proteus, Hwass. West Indies pseudomarmoreus, Ducl. New Caledonia pulchellus, Swain. Mauritius pulicarius, Hwass. Viti Is., New Guinea punctatus, Sowb. Bombay puncticulatus, Hwass. Chili, West Indies puncticulatus, var. papillosus, Reeve. W. Columbia puncticulatus, var. pygmaeus, Reeve. West Indies purpurascens, Brod. Panama purpurascens, Brod. var. puzonicus, Sowb. Panama pusillus, Chem. pusio, Sowb. West Indies pyriformis, Reeve. Panama pygmaeus, Reeve var. West Indies

quercinus, Hwass. India, Hawaii quercinus, Hwass var. ponderosus, Beck radiatus, Gmel.

ranunculus (achatinus, Chem., var.) Ceylon

raphanus, Hwass. Ceylon

rattus, Hwass. Indo-Pacific

rattus, var. viridus, Sowb. Mauritius

regalitatus, Sowb. Panama

regius, Chem. Panama

regularis, Sowb. Mazatlan

regularis, Sowb. var. incurvus, Kiener. Panama

regularis, Sowb. var. angulatus, A. Ad. Costa Rica

retifer, Menke. Sandwich Is.

rhododendron, Jay. Australia. (Called the most beautiful species of the genus.)

rosaceus, Chem. Algoa Bay

roseus, Lam. West Indies

rubiginosus, Hwass. Mauritius

rubiginosus, Hwass var. Mauritius

rutilus, Lam. Australia

rutilus, Lam. var. smithi, Ang. S. Australia

scabriusculus, Chem. Tahiti

scalaris, Val. Panama

scriptus, Sowb. Mauritius

senator, Linn. Indo-Pacific

seychellensis, Nevill. Seychelle Is.

siamensis, Hwass

sieboldii, Reeve. Awaji, Japan

sigillatus, Reeve. Mauritius

simplex, Sowb. Cape of Good Hope

spectrum, Linn. Mauritius, Moluccas

spectrum, Linn. var. Moluccas

spectrum, Linn. var. daphne, Brod. Philippines sphacelatus, Sowb. (hebraeus, Linn., var.) West Indies splendidulus, Sowb. (classiarius, Hwass, var.) Rosemary Id. sponsalis, Chem. Durban, Natal, Isle of Lord Hood (rare) splendidulus, Sowb. Berbera, Somali Coast, E. Africa spurius, Gmel. West Indies stearnsii, Conr. stellatus, Reeve. N. W. Australia stercusmuscarum, Linn. Pelew Is. stigmaticus, Reeve. Amboina stramineus, Lamk. Moluccas striatus, Linn. Ceylon striatus, Linn. var. sulcatus, Hwass. Polynesia sulphuratus, Kiener. Mauritius sumatrensis, Hwass, Red Sea sumatrensis, Hwass var. nemocanus, Hwass suturatus, Reeve. Moluccas

taeniatus, Hwass. Aden, Cape of Good Hope taheitensis, Hwass. Indo-Pacific telatus, Reeve. Asiatic Sea tendineus, Hwass. Mauritius (rare) tenellus, Ch. New Caledonia (rare) tenuistriatus, Sowb. Philippines terebellum, Mart. terebra, Born. China, Viti Is. terminus, Hwass. South Africa tessellatus, Born. Ceylon, East Indies testudinarius, Mart. West Indies, Africa textile, Linn. Indian Ocean

textile, Linn. var. tigrinus, Sowb.
textile, Linn. var. verriculum, Reeve
textile, Linn. var. archiepiscopus, Hwass. Ceylon
textile, Linn. var. pyramidalis, Lam. Mauritius
textile, Linn. var. euetrios, Sowb. Mauritius
thalassiarchus, Gray. Philippines (very rare)
thomasi, Jouss. Aden
timorensis, Hwass. Timor, Mauritius
tinianus, Hwass. South Africa
tinianus, Hwass var. aurora, Lam. South Africa
tornatus, Brod. West Columbia
traversianus, Smith. Aden
trigonus, Reeve. Australia (scarce)
trochulus, Reeve. Cape de Verde Is.
tulipa, Linn. Polynesia

undatus, Kiener. China

vaissetianus, Crosse. (very rare)
varius, Linn. Amboina
vautieri, Kiener. Marquesas Is.
venulatus, Hwass. Philippines
venulatus, Hwass var. nivosus, Lam.
vermiculatus, Lam. Amboina
verrucosus, Hwass. Mozambique
verrucosus, var. echinulatus, Kiener. W. Indies
vexillum, Gmel. Amboina
vicarius, Lam. Mauritius
victoriae, Reeve. Australia
victoriae, Reeve var. Australia
vidua, Reeve. Indian Ocean

virgatus, Reeve. West Colombia virgo, Linn. Mauritius viridulus, Lam. Mauritius vittatus, Lam. Panama vitulinus, Hwass. Ceylon voluminalis, Hinds var. auris, Pils. Japan vulpinus, Hwass. Indian Ocean

ximines, Gray (interruptus, Brod., var.) Lower California zebra, Hwass. Andaman Is.

zonatus, Hwass. Moluccas

The Pleurotomidae include a multifarious host, among them a fine specimen of the remarkable *Halia priamus* and several unusually large and handsome examples of *Surcula carpenteriana*. There are sixty species of Terebridae, all of fine quality, and twenty-seven of Cancellaridae, one of which, *Cancellaria cooperi*, sold for \$75. *C. semidisjuncta* is also worthy of mention.

The Strombiae display almost every known species, even Strombiae thersites and Rostellaria powisii,—aristocrats of ancient lineage. One of their ancestry is shown by Rostellaria columbaria from the Calcaire grossier (Eocene Tertiary) of France. This is a wonderfully attractive series of shells, especially the Strombs and the species of Pterocera.

In this collection no family has been discriminated against, because of insignificance or of costliness, nor

could the specialist in each or any group have made better selections. No wonder then that the favorite of favorites is superb. Cypraea! Many men have devoted their lives to Cypraea alone without excelling these groups. Indeed several life achievements have actually gathered here by that law of accretion which draws like things unto themselves, for the choicest specimens of several well known collections of Cypraea find here their resting place. Lest these words seem extravagant, let the list of species be their justification. It is practically a catalogue of every described variety of Cypraea, and represents a money outlay that would startle the uninitiated.

## **CYPRAEA**

adamsoni, Gray. Isle of Bourbon
adelinae, Roberts
adusta, Chem. (onyx, Linn., var.) Ceylon
albonitens, Melv. (pantherina, Sol., var.)
albuginosa, Mawe. Gulf of California
algoensis, Gray. Algoa Bay
ambigua, Gmel. (tigris, Linn., juv.)
amphithales, Melvill. South Africa (very rare)
angustata, Gmel. South Australia
annae, Roberts (semiplota, Mighels, var.) Oahu
annulata, Gray. Mauritius
annulus, Linn. Indian Ocean
arabica, Linn. Australia, Indian Ocean, Samoa (Eight
stages and two pigmy specimens.)
arabica, Linn. brilliant yellow var.

arabica, Linn. green var.

arabica, Linn. brilliant purple var.

arabica, Linn. reddish yellow var.

arabica, Linn. entirely gray var.

arabica, Linn. typical in color, very curious markings

arabica, Linn. curious oblong marks

arabica, Linn. curious color var. Diego Garcia

arabica, Linn. var. atra, Dautz. New Caledonia

arabicula, Lam. Acapulco

arabicula, Lam. dwarf var.

arenosa, Gray. Central Pacific

argella, Melv. (helvola, Linn., var.)

argus, Linn. New Hebrides, Indian Ocean

argus, Linn. very curious var. New Caledonia

argus, Linn. singular color var. Diego Garcia

artuffeli, Jouss. Australia

asellus, Linn. Samoa, Australia

atava, Rochebrune (moneta, Linn., var.)

atomaria, Gmel. (punctata, Linn., var.)

aurantia, Martyn. Loyalty Is., Fiji and Solomon Is. (Eleven fine specimens, one of extraordinary size.)

badionitens, Melv. (pantherina, Sol., var.)
barthelemyi, Bernardi. New Caledonia
becki, Gaskoin. Red Sea, Polynesia, Society Is.
bicallosa, Gray. I. St. Vincent, W. Indies
bicolor, Gask. (piperata, Sol., var.)
bicornis, Sowb. (mus. Linn., var.) Mediterranean
boivini, Kiener. China
bregeriana, Crosse. New Caledonia
brevidentata, Sowb. Port Jackson

broderipi, Gray. Madagascar ("Of very great rarity" S. R. Roberts.)

caledonica, Crosse. New Caledonia

camelopardalis, Perry. Red Sea

camelopardalis, Perry, albino. Red Sea (very large)

candida, Pease (clandestina, Linn., var.) Ceylon, Japan, Australia

capensis, Gray. Cape of Good Hope

capensis elizabethensis, Rous. Cape Colony (type specimen)

caput-anguis, Philippi

caput-serpentis, Linn. Indian Ocean

caput-serpentis, Linn. curious var.

caput-draconis, Melv.

carneola, Linn. Indian and Pacific Oceans

carneola, Linn. var. Pacific Ocean

carneola, Linn. green var. Mauritius

carneola, Linn. exceptionally large. Paumotu Is.

castanea, Higgins. Cape of Good Hope

caurica, Linn. Pacific Ocean

caurica, Linn. var. Pacific Ocean

caurica, Linn. black var., very large. North Gambia

caurica, Linn. distorted

cernica, Sowb. Mauritius

cervinetta, Kiener. Panama

cervus, Linn. Panama

cervus, Linn. var.

cervus, Linn. white var.

childreni, Gray. Borneo, New Caledonia

chinensis, Gmel. (lynx, Linn., var.)

cholmondeleyi, Sowb. (macula, A. Ad., var.)

chrysalis, Kiener. Indian Ocean

chrysophera, Melv. (errones, Linn., var.) Andaman Is.

cicercula, Linn. Mauritius

cicercula, Linn. var. lienardi, Jouss. Mauritius

cicercula, Linn. var. tricornis, Jouss. Mauritius

cinerea, Gmel. West Indies

cinerea, Gmel. pale var.

cinerea, Gmel. albino, Matanzas

cinerea, Gmel. Key West, Fla. (collected by Mr. Henry Hemphill)

citrina, Gray. Ceylon, N. W. Australia (very rare)

citrina, Gray. narrow form. South Africa

citrina, Gray. very beautiful. South Madagascar

clandestina, Linn. Ceylon, Japan, Australia

clara, Gask.

coffea, Sowb.

coloba, Melv.

compta, Pease (cumingi, Gray, var.) Society Is.

comptoni, Gray

concava, N. Owen color var. (a distorted form of caurica, Linn.)

controversa, Gray. Gulf of California

coxeni, Cox. Solomon Is. (very rare)

cribellum, Gask. Mauritius

cribraria, Linn. Ceylon, New Caledonia

cribraria, Linn. dwarf var. Mozambique Channel

cribraria, Linn. var. exmouthensis, Melv. New Caledonia

cribraria, Linn. var. rostrata, Dautz. New Caledonia

crossei, Marie (stolida, Linn., var.) New Caledonia (very rare)

crossei, Marie, magnificent, unique in form and color (New Caledonia)

cruenta, Gmel. New Guinea, Indian Ocean cumingi, Gray. Society Islands (very rare) cylindrica, Born. Ceylon, Australia, New Caledonia cylindrica, Born var. (very large and curious)

decipiens, E. A. Smith. North Australia declivis, Sowb. Portland, Victoria dianges, Melv. (stolida, Linn., var.) diluculum, Reeve (undata, Lam., var.)

eburnea, Barnes. Philippines edentula, Sowb. South Africa, Cape of Good Hope, and Port Elizabeth erosa, Linn. Indian and Pacific Oceans erosa, Linn. var. Pacific Ocean erosa, Linn. dwarfs erosa, Linn. beautiful burnt orange var. Indian Ocean errones, Linn. China, Australia, Indian Ocean errones. Linn. curious color var. errones, Linn. var. compressa, Dautz. New Caledonia eglantina, Duclos. Samoa eglantina, Duclos odd var. Amboina erythraeensis, Beck. Red Sea erythraeensis, Beck var. very broad form. Berbera esontropia, Duclos. Sandwich Is. ethnographica, Rochebr. (moneta, Linn., var.) exanthema, Linn. West Indies, Panama

fabula, Kiener (felina, Gmel., var.) Pacific Ocean felina, Gmel. Indian Ocean fimbriata, Gmel. Australia, Indian Ocean

exusta, Sowb. Red Sea

fimbriata, Gmel. green var.
flaveola, Lam. (spurca, Linn., var.)
flaveola, Linn. Australia
fusco-dentata, Gray. Cape of Good Hope (rare)
fusco-maculata, Pease. I. Apaian

gangraenosa, Sol. (typical) China, Ceylon gangraenosa, Sol. var. Dill. Aden. gaskoini, Reeve. (rare) gelassima, Melv. (stolida, Linn., var.) gemmula, Weinkauff. Red Sea (rare) globulus, Linn. Mauritius, Borneo goodali, Gray. Lord Howe's Is., Paumotus granulata, Pease. Sandwich Is. greegori, Ford (coloba, Melv.) Ceylon

hamyi, Rochebr. (annulus, Linn., var.) Zanzibar
harmandiana, Rochebr. Zanzibar
helvola, Linn. Indian Ocean, Mauritius, Sandwich Is.
helvola, Linn. var. mascarana, Melv.
helvola, Linn. var. hawaiiensis, Melv. Japan, Sandwich Is.
hirundo, Linn. New Caledonia, Indian Ocean, Australia
histrio, Meuschen. Indian Ocean
histrio, Meuschen. var. Indian Ocean
histrio, Meuschen. var. with richly colored base
histrio, Meuschen. var. with back like C. broderipi

icterina, Lam. (moneta, Linn., var.) Tahiti, Australia intermedia, Gray. Pacific Ocean interrupta, Gray. Ceylon interstincta, Wood (staphylaea, Linn., var.) Indian Ocean

irina, Kiener

irrorata, Sol. Paumotus

isabella, Linn. Pacific Ocean

isabella, Linn. stout var.

isabella, Linn. var. limpida, Melv. Sandwich Is. (rare)

isabella, Linn. var. Andaman Is.

isabella, Linn. var. mexicana, Stearns. Clipperton Is. (very rare)

labiolineata, Sowb.

labrolineata, Gask. Japan, Australia

lamarcki, Gray. Indian and Pacific Oceans

lentiginosa, Gray. Ceylon

leucostoma, Gask. Arabia (rare)

lienardi, Jouss. Mauritius (see cicercula, Linn.)

limacina, Lam. Pacific Ocean

listeri, Gray. Philippines

loebbeckiana, Weinkauff. Pacific Ocean, Indian Ocean

lurida, Linn. Mediterranean

lurida, Linn. oblong form. Cape Verde Is.

lutea, Gronovius. New Caledonia, Australia

lynx, Linn. Red Sea, Australia, New Caledonia, Indian Ocean

lynx, Linn. var. approaching var. caledonica

lynx, Linn. elongate form, very large. Philippines

lynx, Linn. a striking and rare variety with heavy blotches on back

lynx, Linn. dwarfs

lynx, Linn. of extraordinary size

macula, A. Ad. Japan, Australia

madagascariensis, Gmel. Madagascar

mappa, Linn. Java, Indian Ocean

mappa, Linn. var. panerythra, Sowb. "The most beautiful specimen we ever saw of this var." G. B. Sowerby

mappa, Linn. var. subsignata, Sowb. Indian Ocean

mappa, Linn. var subsignata, Sowb. exceptionally beautiful color var. (ex. col. Sir David Barclay) Diego Garcia

margarita, Sol. Annae Is.

mauritiana, Linn. Samoa, Ceylon

mauritiana, Linn. var. Indian Ocean

mauritiana, Linn. grayish white. Indian Ocean

mauritiana, Linn. very rare, curious and beautiful var. nov.
Borneo

mayi, Beddome (angustata, Gmel., var.)

melanostoma, Leather (camelopardalis, Perry) Red Sea melanostoma, Leather, with double end. Red Sea (G. B. Sowerby)

mercatorium, Rochebrune. Japan

microdon, Gray. Loyalty Is., Mauritius

miliaris, Gmel. Japan, New South Wales

miliaris, Gmel. var. diversa, Kenyon. (new var.)

moneta, Linn. Maldive Is., Japan, Australia

moneta, Linn. with annulus markings

moniliaris, Lam. Australia

moniliaris, Lam. f. major

moniontha, Melv. (stolida, Linn., var.) Mauritius

mus, Linn. Atlantic Ocean

mus, Linn. var. (not bicornis) Atlantic Ocean, Mediterranean

montrouzieri, Dautz. (var. of mappa) "Magnificent and almost unique," says G. B. Sowerby

nebrites, Melv. Bombay

nebulosa, Kiener

neglecta, Sowb. Australia, Mauritius

neglecta, var. marteli, Dautz. New Caledonia

niger, Roberts, New Caledonia

nigropunctata, Gray. Galapagos Is. ...

nivosa, Brod. Indian Ocean (very rare), from Lord Ashbrook's collection

noumeensis, Marie (annulus, Linn., var.) New Caledonia (magnificent, unique in form)

nucleus, Linn. Pacific Ocean

nymphae, Duclos (onyx, Linn., var.)

oblongata, Melv.

obscura, Rossiter. New Caledonia

obvelata, Linn. Samoa, Australia, New Caledonia

ocellata, Linn. Ceylon

ocellata, Linn. var. with rounded form

olivacea, Lam.

onyx, Linn. Ceylon, Japan

oranica, Deb. (physis, Brocchi, var.) Oran, Algeria

pallida, Gray. Japan

pallida, Gray var.

pantherina, Sol. Red Sea

pantherina, Sol. var. theriaca, Melv. (intensely black)

pantherina, Sol. grayish white var.

pantherina, Sol. var. with spots merging into longitudinal streaks

peasei, Sowb. Sandwich Is.

perrieri, Rochebr. (form connecting annulus and obvelata)

perva, Melv. (annulus, Linn., var.) Australia petitiana, Crosse and Fischer. Senegal phragedana, Melv. (errosa, Linn., var.) physis, Brocchi. Sicily physis, Brocchi var. grayi, Keiner. Senegal picta, Gray. Gambia, Cape Verde Is. piperata, Sol. Australia piperata, Sol. var. with longitidudinal markings (very rare) pleuronectes, Rochebr. polita, Roberts. Sandwich Is. poraria, Linn. Fiji Is., New Caledonia, Australia poraria, Linn. var. vibex, Kenyon (new var.) poraria, Linn. var. insignis, Dautz. New Caledonia propingua, Sowb. (carneola, Linn., var.) pulchella, Swainson. China pulchella, Swainson rare color var. pulchella, var. pericalles, Melv. Meekian Coast pulchra, Gray. Red Sea pulicaria, Reeve. West Australia punctata, Linn. Isle of Bourbon punctulata, Gray. Panama pustulata, Lam. Panama pygmaea, Melv. (mappa, Linn., dwarf) (very rare) pyriformis, Gray. Borneo, Ceylon, Australia pyriformis, Sowb. (turdus, Lam., var.) Persian Gulf pyrum, Gmel. Mediterrananean, Atlantic Ocean pyrum, Gmel. var. Persian Gulf

quadrimaculata, Gray. Borneo, Indian Ocean

rashleighana, Melv. Mauritius rashleighana, Melv. oblong var.

rattus, Lam. West Africa
reevei, Gray. Australia
reticulata, Martyn. Indian Ocean
reticulata, Martyn var. Pacific Ocean
rhinoceros, Sowb. New Caledonia
rhinoceros, Sowb. var. New Caledonia
rossiteri, Brazier (comptoni, Gray, var.) teste Beddome

sanguinolenta, Gmel. Gambia
sanguinolenta, Gmel. perfect, but very peculiar in form
sarcodes, Melv. (vitellus, Linn. var.)
scotti, Brod. West Australia (seven specimens, all different)
scurra, Chem. Annae Is.
scurra, Chem. very slender var. Australia
scurra, Chem. curious color var. Diego Garcia
semiplota, Mighels. Hawaiian Is.
similis, Gray. South Africa (very rare)
sophiae, Brazier (typical) Torres Straits
sowerbyi, Kiener. Gulf of California
spadicea, Swainson. Santa Barbara, San Diego, California
spadicea, Swainson. A beautiful suite of over one hundred
specimens from the youngest to the fossil shell.

spadix, Mighels. Oahu spurca, Linn. Mediterranean, Atlantic Ocean spurca, Linn. albino var. Atlantic Ocean spurca, Linn. extremely large and fine. Persian Gulf staphylaea, Linn. Indian and Pacific oceans staphylaea, Linn. var. consobrina, Garrett. Loo Choo Is. staphylaea, Linn. var. depravata, Dautz. New Caledonia stercoraria, Linn. West Africa stercus-muscarum, Linn. Is. Bourbon, Borneo

stolida, Linn. Ceylon, Borneo, New Caledonia

stolida, Linn. peculiarly translucent var. not brevidentata nor dianges, but near the latter, teste S. Raymond Roberts.

stolida, Linn. "Unique for size and beauty." G. B. S.

stolida, Linn. var. (very pale fawn, destitute\_of dorsal blotches)

staminea, Melv. (erosa, Linn., var.)

subcarnea, Ancey. Tasmania

subcylindrica, Sowb. Australia, New Caledonia

subviridis, Reeve. West Australia, New Caledonia

subviridis, Reeve var. Marquesas Is.

subviridis, Reeve var. remarkable specimen. Port Stevens, Australia

subviridis, Reeve var. anceyi, Vayssier

succincta, Linn.

sulcidentata, Gray. Australia, South Seas

sulcidentata, Gray, a magnificent specimen, "the largest known." G. B. Sowerby

syringa, Melv. (pantherina, Sol., var.)

tabescens, Sol. Mauritius

tabescens, Sol. brown-banded var.

talpa, Linn. Pacific and Indian Oceans

talpa, Linn. curious var.

teres, Gmel. Ceylon

testudinaria, Linn. Ceylon, New Caledonia

testudinaria, Linn. var. Ceylon

tessellata, Swain. New Zealand, Hawaii

tessellata, Swain. white var.

thersites, Gaskoin. South Australia

thomasi, Crosse

tigris, Linn. Indian and Pacific Oceans

tigris, Linn. var. flavonitens, Melv. Fiji Is., New Caledonia

tigris, Linn. var. lyncichroa, Melv. New Caledonia (very rare)

tigris, Linn. var. zymecrasta, Melv. Mauritius

tigris, Linn. var. hinnulea, Melv. Fiji Is.

tigris, Linn. var. russonitens, Melv. Fiji Is.

tigris, Linn. var. chionia, Melv. Fiji Is.

tigris, Linn. var. ionthodes, Melv. Fiji Is.

translucida, Sowb. (cribraria, Linn., var.)

turdus, Lam. very large and broad

turdus, Lam. slender vars. Persian Gulf

turdus, Lam. dwarf vars.

umbilicata, Sowb. New South Wales undata, Lam. Mauritius ursellus, Gmel. Indian and Pacific Oceans

ventriculus, Lam. Pacific Ocean

vesicularis, Gask. Cape of Good Hope

viridis, Kenyon 1902. (mappa, Linn., var.) New Caledonia

vitellus, Linn. Indian Ocean, Australia

vitellus, Linn. 3 vars. New Caledonia

vitellus, Linn. pure white. Two specimens from Fiji Is.

walkeri, Gray. (six fine specimens)

walkeri, Gray var. rossiteri, Dautz.

williamsi, Melv. (lynx, Linn., var.) (var. nov.)

xanthocrysa, Melv. (sulcidentata, Gray, var.)

xanthodon, Gray. Australia

ziczac, Linn. (typical)

ziczac, Linn. var. Mozambique

ziczac, Linn. var. Ceylon zonata, Chem. Mouth of Gambia River

### SUBGENUS TRIVIA

australis, Lam. New South Wales

brevissima, Sowb.

californica, Gray. California candidula, Gask. Canary Is., Azores cimex, H. Owen coccinella, Lam. (europaea, Mont., var.) Morocco costata, Gmel. West Indies costispunctata, Gask. Florida

depauperata, Sowb.

europaea, Mont. Mediterranean exigua, Gray. Paumotus

formosa, Gask. Cape of Good Hope fusca, Gray. Lower California

gemmula, Gould. Sandwich Is. globosa, Gask. grando, Gask.

insecta, Mighels

jousseaumei, (europaea, Mont., var.) Barcelona, Spain labiosa, Gask.

maugeri, Gray. Galapagos Is. mollerati, Locard.

multilirata, Sowb.

napolina, Duclos. Australia nivea, Gray. West Indies

oniscus, Lam. Cape of Good Hope oryza, Lam. South Pacific Is. ovulata, Lam. Cape of Good Hope

pacifica, Gray. Galapagos Is.
pediculus, Linn. West Indies
pellucidula, Gask. Pacific Ocean
producta, Gask. Borneo, N. W. Australia
pulex, Sol. Mediterranean Sea
pulla, Gask. Gulf of California
pullata, H. Owen

quadripunctata, Gray

radians, Lam. Gulfs of Mexico and California rota, Weink. Lower California rotunda, Kiener. West Indies rubescens, Gray. Galapagos Is. rubinicolor, Gask. Borneo

sanguinea, Gray. California, Ecuador, Mazatlan scabriuscula, Gray. Ceylon solandri, Gray subrostrata, Gray. West Indies suffusa, Gray. West Indies sulcata, Gask. Manila

tremeza, Duclos turneri, Jouss.

vitrea, Gask. Philippines

Many of the extremely rare specimens of Cypraeas, and other fine species represented here, came from the old collections in foreign lands, of Sir David Barclay, General Tripe, Dr. James C. Cox, Lord Ashbrook, Admiral Keppel, Mr. S. I. Da Costa, and many others, besides from those of Prof. Henry A. Ward, Mr. John H. Campbell, Mr. J. H. Delaney, Mr. Sloman Rous, Mr. Henry Hemphill, and others in this country, all of whom were collectors of large experience and fine taste.

Some interesting fossil forms of Cypraea, not included in the above enumeration, are chiefly from the Campbell collection.

It is worth while to rehearse some of the great rarities among the Cypraeas here. Cypraea broderipi, the only one in America, Cypraea sulcidentata, the largest specimen known of this very rare species, C. capensis elizabethensis, a type specimen, C. castanea, C. nivosa, C. citrina, C. chrysalis, C. bicallosa, C. montrouzieri, C. walkeri, C. bregeriana, C. oranica, C. coxeni, C. gelassima, C. boivini, C. gemmula, C. nebulosa, C. similis, C. pyriformis, C. rashleighana, C. goodalli, C. noumeensis, C. crossei, C. cumingi. Then come the remarkable, unmatched color-varieties of C. tessellata, camelopardalis, vitellus and mappa, of C. argus and mauritiana, the curious mutations in form and size of many species, the wonderful color suites

of C. spadicea, C. tigris, C. mappa, etc. Here is an opportunity for the student of individual variation and environmental modification! There are eleven C. aurantia, ten C. decipiens, seven C. scotti, fourteen C. testudinaria, four C. leucostoma, six C. walkeri, four C. umbilicata, ten C. thersites, and so on through the really rare species, no one of them a duplicate.

A mere list fails utterly to show the wealth of representation without repetition, whereby this collection offers some three thousand specimens to illustrate the ramifications of not over three hundred and fifty recognized species and varieties. No list, no description, can convey the mental impression made by this assemblage of three thousand spotlessly perfect specimens.

The Pedicularidae, Ovulidae, Doliidae, and Cassididae are fully represented; also the Naticidae, with eighty or ninety species, illustrating all of its curious genera. The same may be said of the multi-

form Calyptraeidae. Fossil forms of all these fami-

lies are in the collection.

Still more strange and bizarre are the members of the next two families. The Xenophoridae constitute a small group of great interest and rarity, and there are many fine specimens, those of Xenophora pallidula being especially remarkable in the array of objects with which it has decorated its whorls,—itself a conchologist of no mean repute. The aberrant Vermetidae are similarly distinguished by a Siliquaria (Tenagodus)

muricata from the Moluccas, of which Mr. Sowerby avers that the British Museum has none as fine and perfect as this.

There are recent acquisitions of fossil Turritel-Lidae and a goodly number of Caecidae, Eulimidae, Pyramidellidae, Turbonillidae, Solaridae, and Ianthinidae. They are not passed by because they merit less praise than others, for they also have received patient attention as shown in forty-six species here of the tiny Eulimas, alone! It is the Scalidae that caught the popular fancy and once commanded such fabulous prices, while even yet some bring their weight in gold. These expensive little specimens are here, Scala pallasi, S. lineata, several of the far-famed Scala pretiosa, and others, beside their lesser kin.

There is a long procession of Cerithiidae, a revelation of the number of species and the variety of form and coloring to be found in this family. They accommodate themselves to strange modes of living, but it is not easy to believe that this odd and striking shell, labelled "Bythoceras iridescens, Moore, dredged in 700 feet in Lake Tanganyika," is (as its anatomy proves) a scion of the Cerithium stock. It is exceedingly rare, and another rare form here is Potamides (Terebralia) gourmyi.

Many families, important in themselves, but monotonous in lists, are passed by, although they include such groups as the Melanidae, Littorinidae, Ampullari-

IDAE and NERITIDAE and their allies. Nor does it seem best to enumerate the operculate land shells (Truncatellidae, Cyclostomidae, Helicinidae, Proserpinidae, etc.) with fifty-eight genera, and over six hundred species, carefully studied, fascinating, and worthy of full description. The fresh-water shells not listed are also numerous, choice and beautiful.

The Turbinidae and Trochidae are of especial interest to collectors and their representatives are worthy of extended mention, but we must be content to notice the nine or more species of Delphinula including D. aculeata, imperialis (a strikingly handsome shell, a very rare species), tyria, incisa, laciniata, atrata, and distorta, and the deep sea forms Bathybembix argenteonitens and Turcicula bairdi, and pass to a family of far more than ordinary importance. Pleurotomaria beyrichii,—last of a noble race, coveted representative of an almost extinct but princely family, the PLEUROTOMARIIDAE. Even the pearly Nautilus has no higher pride of ancestry, no greater magnificence of apparel. This priceless treasure is from the depths of the Japanese ocean. Only five recent species of this family and only seven of the beyrichii are known. The group culminated in numbers in the Coal Age, and a fossil specimen from that period is in the collection.

An exceptionally fine series, even for this cabinet, is that of the Haliotidae, with over seventy species,

and two hundred and eighty-five fine specimens. With these must be ranked in quality the "limpets," PATELLIDAE, ACMAEIDAE, FISSURELLIDAE, etc. Specialists in these groups may envy these specimens. The representation of the "tectibranch" molluscs (Bullidae, etc.) is also excellent, with many rare and noteworthy forms.

## **PULMONATA**

Collectors who have surrendered to the charm of the land shells will find this collection deficient neither in quality nor quantity of the pulmonates. Prof. Henry A. Ward said of it, shortly before his death, that he had never seen such a collection of land shells as Mrs. Williams', and that he should never tire of looking at it. In the catalogue appear about one hundred and seventy-five genera of Pulmonata represented, but if the latest writings of Pilsbry are followed there must be at least two hundred generic groups. Of the Helicidae alone there are hundreds upon hundreds of species present and long lists of rare kinds. The series of Helicostyla and its subgenera is especially attractive and choice, including the very rare H. harfordi, Sowerby, from Negros.

The land shells thus constitute a very important part of the collection. Of special interest are *Helix salleana*, from Guatemala, said to be the rarest American shell; "Bulimus" dombeyanus, Ferussac, of which are known

only four specimens obtained many years ago by Sir Rawson W. Rawson, while governor among the West India Islands, the locality unknown, but believed to be Mexico; Bulimus (Panda) larreyi from Australia; B. (Placostylus) senilis (semi-fossil), from New Caledonia; Otostomus navicula, from South America; Pleurodonte gealii, Smith, from Ecuador, a scarce and curious species resembling the Papuinae of New Guinea in its pinched lip and peculiar iridescence; Thersites broadbenti, bellendenkerensis, convicta, deberghi, dupuyana, brookensis, halbornensis, macleayi, etc., of Australia, and especially Th. septentrionalis, one of the first seen alive of this very rare shell which was described from dead and bored specimens worn by the native bushmen; Papuina brazierae, linterae; macgillivrayi and maclayana from New Guinea and Queensland. A set of Ariophanta laevipes from Bombay, showing the variation in color from black through the typical banded forms to pure white; Planispira scheepmakeri, Pleiffer, from Batchian Island; Helicostyla heimburgi; six new Japanese species of Chloritis and seven of the new genus Mandarina; Rhodea gigantea, Stenopus guildingi; Oxytes oxytes, Benson, from India; Clavator grandidieri, Crosse and Fisher (or placostyloides, Kobelt, or vayssieri, Ancey) from South Madagascar, hitherto (1901) known only as a fossil; Pieria schrammi; Helicigona meliniana, Müller, from the mountains of Corsica; Acavus fastosa and skinneri, from the high mountains (7000 feet) in Ceylon; Achatina linterae, from Africa; Carelia cumingiana from Hawaii, etc., etc.

Particular mention should be made of the series of West Coast shells from Mr. Henry Hemphill, illustrating 229 variations in the insular pulmonate fauna of that region, and a similar series of 157 mutations of Patula alternata. A set of thirty-three color varieties of the brilliant little "banana snail," Polymita picta, from Cuba, is very attractive also. There is an almost unexampled suite of the interesting genus Amphidromus, 65 species in all, and equally fine showings of Achatinella, Clausilia, and Eulota.

Although this is primarily a shell collection, there is a good series of the shell-less "slugs" of Limacidae, Onchidiidae, etc.

3. AMPHINEURA. Scarce of individuals and almost unknown to the rank and file, difficult of study, the Chitons, or "Coat-of-Mail shells," have always found a few admirers among advanced conchologists. The suite of these forms selected to illustrate the various modifications of these multivalve creatures is well chosen, and covers the four great families: Ischnochitonidae, Mopalidae, Acanthochitolae, and Chitonidae. Among specimens of special note are Onithochiton hirasei, Acanthochites subachates, Cryptoplax japonicus and C. rhodoplax, all newly described by Pilsbry, from Japan, together with two new and rare forms from St. Vincent's Gulf, Australia, viz.: Chiton

callizona, Pils. and C. exoptandus, Bednall. There are also specimens of Katharina, Tonicia, Mopalia, Ischnochiton, Cryptochiton, etc.

- 4. SCAPHOPODA. This circumscribed little group is represented by ten species of Dentalium, and the exceedingly rare Siphonodentalium quinquangulare, Forbes, from a depth of 1793 feet in the Mediterranean Sea, illustrating the two known families of "tooth shells" (Dentalidae and Siphonodentalidae).
- 5. PELECYPODA. A good collection of bivalves is rare, and the comparative absence of descriptive works on pelecypods has discouraged many whom the beauty or oddity of these shells would attract. This very absence of literature makes a large, authentically named collection of bivalves of the greater value to the student.

It is as much a treat to examine here the specimens of Veneridae as of Cypraeidae, Spondylidae as Volutidae, Pectinidae as Muricidae, and the bivalves become very much worth while, as indeed they should be. It is through no lack of merit that these forms receive less attention than the univalves. They have their proper place in this collection with full rank and dignity.

First come the remarkably modified burrowing types of the families Pholadidae and Gastrochaenidae, specimens of *Penitella concamerata*, ensconced in solid rock, prisoners in domiciles of their own construction, with allied forms of the genera Pholas, Monothyra, Talona, Zirphaea, Jouannetia, Pholadidea, Netastomella, and Martesia, and beside them the marvelous tube-building species of Aspergillum and Fistulana. Many of the Pholads possess supplementary "valves" to the shell, notable among these being a fine Pholadidea papyracea preserving the siphonoplax.

The "razor-shells" (Solenidae) are displayed in a variety of genera, including Solen, Ensis, Pharus, Pharella, Siliqua, Macha, and Tagelus. Solen roseoma-

culatus, Pilsbry, is a new species from Japan.

The Saxicavidae, Corbulidae, Myacidae, Anatinidae and Mactridae are present and also the very rare *Pholadomya vitrea* from the Caspian Sea, sole survivor of its race.

In the smaller-sized though better-favored Telliniae are many forms of great delicacy and beauty. Some are so fragile and so pink that they serve the clever Japanese for rose petals on screens and jewel-boxes, while others are familiar everywhere in their auroral rays, as "sunrise shells." The collection contains forty-four species of Tellina, fourteen of Donax, besides various specimens of Asaphis, Gari, Sanguinolaria, Hiatula, Elizia, Angulus, Strigilla, Macoma, Iphigenia, etc. Tellina subpallida, Smith, is a new species from Aden. The Semelidae are represented by Scrobicularia and Semele.

The "Venus shells" (VENERIDAE) are as lovely

among the bivalves as the Cypraeidae among the univalves. Beauty of color and of sculpture distinguish most of the forms. This series of selected specimens is impressive. There are Chione lamellata with wonderful frills (a remarkably fine specimen, by the way), and Dione lupanaria with long terete spines, the polished Callistas and the criss-crossed Circes, with the brilliant purples and scarlets and oranges of some species and the soft pink-browns and wood-tints of others,—another opportunity for the student of adaptive variation! The genera represented (formerly all included under "Venus," "Cytherea," "Tapes," and "Artemis") are chiefly Mercenaria, Anaitis, Cryptogramma and Chione, Tivela, Meretrix, Callista, Caryatis, Dione, Amiantis, Lioconcha, Crista and Circe, Sunetta, Dosinia and Cyclina, Tapes and Venerupis. A very rare form, from the "Challenger" expeditions, is Venus torresiana, Smith, from Torres Straits. Tapes phenax, Pilsbry, is a new species from the Loo Choo Islands.

Passing some small families, several of them represented by all the known species, and a few of larger size, including the fresh-water Cyrenidae, Sphaeridae, and Pisididae and the marine Cardidae, an interesting family represented by many fine specimens, we come to the rare Isocardidae (six species shown) and the divergent Chamidae. Eighteen species of Chama are here, including unusually fine examples of the highly prized Chama lamellosa, and the chrysanthemum-like Chama macrophylla, Ch. lazarus, and

Ch. damaecornis. There are also specimens of fossil Chamae.

Again we pass a number of families few in species, including the Tridacnidae (nearly all the species of Tridacna and Hippopus are here, huge, overgrown, but far from Jungraceful), Lucinidae (quite a number of species, of which Corbis sowerbyi, Reeve, from China, deserves special mention on account of great rarity) and others typified by the genera Kellia, Scintilla, Solemya, Crassatella, Gouldia, and Astarte, besides the Carditidae and Cypricardiidae.

The beautiful pearl shells from our own lakes and streams, to which belongs the suggestive name Union-IDAE, have peculiar interest. No other family is as distinctively and characteristically American. Let others seek these shells in a war of extermination, to mutilate and change them into objects of personal adornment, but let us study them and enjoy the rich iridescence of their nacre. For there are here, not merely a fine cabinet series of hundreds of natural shells, but a half a hundred or more of hand-polished specimens, the very best obtainable. Some of the finest of these fresh-water clams came from the boiling rapids of the Baraboo River in Wisconsin, obtained by divers at the risk of their lives. The collection includes Lewis's type of *Unio brevis* and a cotype of *U. bursapastoris*, B. H. Wright. Burtonia tanganyikensis, Smith, illustrates a strange form of this group from Central Africa.

The allied MUTELIDAE and AETHERIIDAE are well represented, among the latter Mulleria dalyi, Smith, from India, noteworthy as being a newly found congener of a remarkable form heretofore known only from the rivers of South America, thus raising most interesting and perplexing questions as to the mode of distribution of this otherwise highly puzzling genus. (See Proc. Mal. Soc. of London, Vol. III. n. s., pp. 14-16.)

Again is the present linked with the past in the four living species of *Trigonia*, a family (Trigoniidae) that reached a high development in the Mesozoic seas; and once again in the Nuculidae (*Nucula*, *Leda* and *Yoldia*) whose ancestors of identical lineament are entombed in the Devonian rocks of our own land.

Here too are the "Noah's Ark" shells (Arcidae) that truly survived the deluge, many fine examples of the genera Arca, Barbatia, Anomalocardia, Senilia, Scapharca, Parallelipipedum, Argina, Cucullaea, Pectunculus, etc.

The shell-lover knows that many interesting objects, and many beautiful forms, are to be found in the Mytilidae, the Pinnidae, the Aviculidae and Pernidae, even though to others the names are meaningless. *Modiola polita*, Verrill and Smith, came from off Catalina Island in 30 fathoms. Two species of Ostraeidae, *Ostrea circumpicta*, Pilsbry, a new species from Japan, and a very large and beautiful *Ostrea folium*, Linnaeus,

from Central America, clearly demonstrate that oysters are not to be despised, either for stature or looks. The fossil genera *Exogyra* and *Gryphaea* are represented, as well as fossil species of *Ostrea* proper.

Last but not least are the Pectinidae and Spon-DYLIDAE. There are over a hundred species of the Pecten clan, representing the forms usually called Pecten, Vola, Amussium and Hinnites, but which must now be distributed under a number of new generic designations. For richness of coloring and elaborate simplicity of dress, no group of mollusc shells can surpass the members of this family, unless it be the one that immediately follows, before turning to which let us note eight interesting accessions: Pecten dringi, Reeve, from off Western Australia; an especially beautiful P. plica, Linnaeus, from the Indian Ocean; a P. reevei, Adams and Reeve; P. swifti, Bernard, from Japan; P. diegensis, Dall, dredged in deep water in San Pedro Bay; P. leopardus, Reeve, N. W. Australia; the new P. keppelianus, Sowerby, from Cape Verde Islands, and P. luculentus, Reeve, from Tahiti,—all rare. Surely I have never seen and never expect to see a more exquisite display of these particularly charming forms.

There are also many fossil Pectens sent by Mr. Hemphill from the California Tertiary beds, of which he says that it is seldom possible to get such perfect specimens.

Like the glory of the setting sun at the close of day, is the beauty of the cabinet which marks the completion of our many days' visit to Mrs. Williams' collection. Well may we linger before this very remarkable assembly in the centre of which stands the shell which perhaps more than all others has figured in the traditions and held the veneration of conchologists,—Spondylus regius, Linnaeus, the shell for which three hundred pounds sterling was once deemed a low figure in London. It is a magnificent specimen gleaming with rich metallic pink reflections from its scores of bristling spines. About it stand its three-score courtiers representing species and varieties of the Spondylidae, from S. varians, Sowerby, the largest, to S. gussoni, Da Costa, the smallest, and a very rare one. The specimen of S. regius is from the Moluccas and S. gussoni from the Mediterranean Sea. Other exceedingly rare members of this family of very handsome shells, are S. lingua-felis, Sowerby, from the Philippines, S. nux, Reeve, from Ascension Island, the first mature specimen ever obtained (1904) of this curious and lovely shell which Reeve described from a young example, and S. castris, Reeve, from the Philippines, having an extraordinary pinkish callosity within. Other notable specimens are S. multimuricatus, Reeve, S. imperialis, Chemnitz, and a fine series of color variations of the flower-like S. pictorum, Chemnitz, from Lower California.

The allied families of Limidae, Placunidae and Anomidae are well represented, and the collection is

supplemented by a small series of recent Brachiopods representing about a dozen genera and twenty species.

Magnificent and almost numberless as are the Ocean treasures in this collection there are in almost every family of the thousands of Land shells exhibited many of the rarest specimens known, as well as many of those which are most beautiful. The same may be said of the Bivalves and Fresh-water shells.

# IV. RETROSPECT

Before leaving this wonderful collection, let us take a comprehensive view of its treasures. We must go from room to room, for shells fill the house and threaten to force the owners out of doors. This collection has been the engrossing life-work of an indomitable woman and the Mecca of shell-lovers. Now, it awaits a place in the halls of some great museum, there to take its part in the world's work and the world's play,—an enduring monument to industry, perseverance and love of beauty. Look again at these twenty-six thousand specimens—at the Spondylus regius and Conus gloria-maris, the Pleurotomaria, the Cypraeas and Pectens and Volutas, the polished Unios, the Harpas, the land shells, the tiny Marginellas and the Mitras, the Murices and Strombs, the Veneridae and Limpets, the thousand and one other treasures from ocean, lake and river! The beauty and rarity of the specimens appeal to us anew and we marvel again at this splendid result of individual effort.

Then, in fancy, the narrow parlors open out into long galleries of shining cases, over which bend young and old, rich and poor, an ever-changing throng. It is a vision that should become a reality and make this work of one the heritage of many. Here is a worthy gift for a great institution, commemorative alike of maker and donor. May Heaven speed the generous thought that shall embrace the opportunity thus worthily to place The Williams Collection of Shells.





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