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1817

RICHARD I. JOHNSON

THE FIRST AMERICAN EDITION OF THE

British Encyclopedia

a Dictionary of

ARTS and SCIENCES

Comprising an accurate & popular view of the present improved state of

Human Knowledge

BY

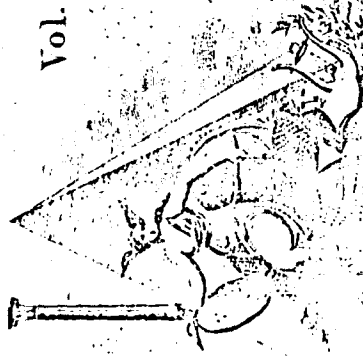
WILLIAM NICHOLSON;

Author and Proprietor of the Philosophical Journal and various other Chemical, Philosophical and Mathematical works.

ILLUSTRATED WITH CUTS OF 100 ELEGANT ENGRAVINGS.

1st

Vol.



PHILADELPHIA

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AMERICAN EDITION

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C. G. Cravenesque Esq. New York
 1st ed. of Nicholom
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 June 1881
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CON

tural history, though not greatly in human economy, yet perhaps, by beauties of the subjects it treats adapted to recreate the senses, and sensibly lead to the contemplation of glory of the Divinity in their creation.

Shells appear to form a part of the nation not immediately subservient to purposes of human life. This being admitted, still they are a link in the chain of nature; they constitute a department of rational inquiry worthy the searches of the man of science; and we consider the amazing diversity of regular and beautiful objects they embrace such, we are persuaded, as can fail to arrest, in a particular degree, regard of every common observer.

The term conchology comprehends study of all animals which have a testaceous covering, whether inhabitants of marine element, fresh water, or the land. Testacology is a term synonymous with conchology, but is of later origin and application.

A precise distinction should be drawn between testaceous and crustaceous animals; they are essentially different though both are protected by a hard exterior shell or crust, in which they are partially or entirely enveloped; and have been indiscriminately confounded together, for that reason, under the vague denomination of shell fish. Some of the old writers distinguish the testacea as kind of stone-like calcareous covering habitations, in which the animal, otherwise naked, resides, and from which can protrude its molluscous arms, other naked parts of its body, at pleasure. The crustaceous animals of the authors, on the contrary, are not made but have every particular limb or part separately covered with the crust, which is thus divided into many joints, in such a manner that the whole animal assumes the nature of the second conchoid; and which is of the nature of the crustaceous coat of mail. Among the crustaceous animals, the *camari*, or crabs and lobsters were included. A better definition may be obtained by attending to the essential properties of the two substances testaceous and crustaceous. Poli, in his work on the shells of the two Sicilies, demonstrates that testaceous bodies consist of calcareous earth united to a small portion of animal matter or gluten; and Hatchett, whose experiments on the chemical characters of those bodies are inserted in the Transactions of the Royal Society, draws a striking distinction in analysis between the testaceous and crustaceous animals, is a branch of natural history, though not greatly in human economy, yet perhaps, by beauties of the subjects it treats adapted to recreate the senses, and sensibly lead to the contemplation of glory of the Divinity in their creation.

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"The nuptials he disclaims, I urge no more;
 Let him pursue the promis'd Latian shore.
 A short delay is all I ask him now;
 A pause from grief, an interval from woe."

CONCHIUM, in botany, a genus of the Tetrandria Monogynia class and order. Calyx none; petals four, supporting the stamina; stigma turbinate, mucronate; capsule one-celled, two-seeded; seeds winged.

CONCLUSIONS, in music, a term generally confined to performance in concert. It applies to that nice discriminating execution, in which the hand not only gives with mechanical exactness every passage of the composition, but enters into the design or sentiment of the composer, and, preserving a perfect concord and union of effect, moves as if one soul inspired the whole orchestra.

CONCHOID, in geometry, the name of a curve, given it by its inventor, Nicolaus, and is thus generated. Draw the right line QQ (see Plate III. Miscel. fig. 14.) and AC perpendicular to it in the point E; and from the point C draw many right lines CM; cutting the right line QQ in Q; and make QM=QN, AE=EF, &c. equal to an invariable line; then the curve, wherein are the points M, is called the first conchoid; and the other, wherein are the points N, the second; the right line QQ being the directrix, and the point C the pole; and from hence it will be very easy to make an instrument to describe the conchoid.

The line QQ is an asymptote to both the curves, which have points of contrary flexion. See ASYMPTOTE. If QM=AE=a, EC=b, MR=EP=x, ER=y; then will $a^2 - b^2 - 2ax + a^2x^2 = b^2x^2 + y^2 - b^2x^2 - 2ax + a^2x^2$; and express the nature of the second conchoid; and $x^2 + 2bx + y^2 + b^2x^2 = a^2 + 2ax + a^2x^2$; the nature of the first; and so both these curves are of the third kind.

This curve was used by Archimedes and other ancients in the construction of solid problems; and Sir Isaac Newton says that he himself prefers it before other curves, or even the conic sections, in the construction of cubic and biquadratic equations, on account of its simplicity and easy description, shewing therein the manner of their construction by help of it.

CONCHOLOGY. The study of shells, or testaceous animals, is a branch of natural history, though not greatly in human economy, yet perhaps, by beauties of the subjects it treats adapted to recreate the senses, and sensibly lead to the contemplation of glory of the Divinity in their creation.

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tempt must ever prove unsuccessful. Our arrangements would be partial, and three-fourths of the shells known must be either excluded from the system, or be placed at hazard; and of course without order or connection with those whose animals we are acquainted with. The latter are chiefly such as are confined to the coasts of the European seas, and some of the terrestrial and fresh water kinds, which, from their abundance and locality, have obtruded themselves upon the investigations of the naturalist. Even our knowledge of those is exceedingly imperfect.

The best characters, upon which to found all systems of natural history, must be those most obvious and accessible. All ranks of animals, as nearly as can be with convenience, should be arranged by apparent and external characters. While we study shells, without regarding the animal, we are aware they are but considered partially. The animals that inhabit them should guide us in our searches; they alone are the fabricators of the shell, and the shell is only the form, the bulk, hardness, colours, and all the peculiarities of elegance we admire. If we were to examine these new and almost unknown beings, we should discover a number of parts as remarkable for their structure as their functions, and an infinite variety of curious and interesting particulars relative to their general habits and manners of life. It is a subject worthy of the serious contemplation and attention of the naturalist, and should never be neglected when an opportunity offers. But a system of conchology, founded entirely on the structure of the animals, must, probably, ever remain one of the desiderata of natural science.

In the superficial arrangement taken from shells alone we are not exempt from difficulty. Shells vary exceedingly in form and colour in the different stages of their growth, and in this case we should sometimes derive material assistance from our knowledge of the animal. Young shells have been described as specifically distinct from the parent or older shells by many writers. It indeed requires a greater degree of caution in determining the species, nay, even genera, of shells, in the different periods of growth, than may be imagined; of this we could adduce many very remarkable instances; a few it may be necessary to mention, to guard the common observer

Ray's Roman Say.]

from forming hasty and erroneous conclusions.

Many of the cypræz, or cowries, when young, have the appearance of a volute, the thick denticulated fold of the exterior lip being wholly wanting, and the column being only partially plaited as in the true voluta. The young of the alated shells, in general, are destitute of that broad expansive or furcated lip, called the wing. The spires in many of the turretted kinds of shells, when young, are blunt; obtuse, or terminated in a large globular head, exceeding the size of the whorl beneath, but as the shell advances in growth, it develops itself, extending in a spiral direction, and thus in the old shells the number of spires is greater than in the young ones. The variations in the growth of the patella tribe are often so considerable, as to almost defy the critical observer to determine them. Still, however, the conchologist, by the dint of application and nice discrimination, will be at last enabled to fix on certain characters peculiar to every species, and be, by that means, enabled to decide on the species of a shell under every stage of growth.

The primary character must be taken from the shell, because this we are acquainted with, while the animal is oftentimes unknown to us. But the structure of the animal should be regarded in the construction of genera, when it can be ascertained, as a secondary consideration to guide us in the formation of new genera, or in correcting the old, as opportunities of investigating them occur.

Having defined the meaning of a testaceous animal, and endeavoured to prove that the structure of the shell is the most material object to be regarded in a primary view, we shall proceed next to an elementary elucidation of the several parts of which it is composed. In conchology, as in any other science, the student must necessarily acquire, in the first instance, a distinct knowledge of the terms employed. These, except such as relate to subordinate characters, or specific distinctions, and which require no explanation in this place, may be simplified and reduced to a small number. In the selection of these terms we can abide by no one particular authority; we must be general, deriving our terms from various sources, or inventing new ones. Hitherto, in treating on the different articles of conchology, it has been our assistance in the primary definitions; but

aim to adhere as nearly to the authority of Linnaeus as possible.

All shells or testaceous bodies, hitherto discovered, may be divided into three principal tribes, and which after the Linnaean manner, may be denominated Multivalve, Bivalve, and Univalve.

Any external part of a shell being of a testaceous substance, and either itself forming a shield or covering for the animal, as in univalves, or in union with another, or others connected by a ligament, cartilage, hinge, teeth, or other fastening, is denominated a valve. The shells, therefore, consisting of a single piece, are called univalves, those of two parts bivalves, and those of many parts multivalves. Between bivalve and multivalve no distinction is drawn, shells consisting of more than two such parts being called multivalve, without any regard to the number. An amendment is proposed by some of the French writers, in a new order under the name of trivalve.

Shells of the simplest form are arranged by some naturalists in the first class, from which they proceed progressively to those possessing the greatest number of valves, and being of the most intricate structure. This is an ancient and very simple mode of arrangement, and has its advocates in the present day. Linnaeus reverses this order by beginning with the chiton, lepas, and pholas, which are shells of the multivalve and most complex structure, and ending with those of the simplest form. The former seems most preferable.

Univalve. In the examination of a shell of this order, the contour, or outline, is the first particular to be regarded. By this the conchologist is guided in his definition of simple, spiral, or turbinated shells. (or as the Linnaean school divides shells, univalves with a regular spire, and univalves without a regular spire;) discoid, flattened, or turretted shells; those with smooth or uneven anfractus; the ventricose, alated, labiated, rostrated, and many other distinctions, all which strike the eye at the first view. It is indeed, by attending to the contour, that the principal distinctions in shells of this kind are at once perceived, taking into consideration the back and front profile at the same time. Some few shells, of the same family, have the spire revolving interally, in which the outline offers less assistance in the primary definitions; but

the number of such shells is very small. Next to the profile of the shell, the structure of the mouth, the pillar, and expansion of the inner lip, the gutter or canalulation, and the umbilical opening, and operculum, if any, are to be considered, and, lastly, the work on the outer surface, as well as the colours with which it is embellished.

The base or bottom of the shell we consider that part upon which it rests when supported in an erect position, with the summit or tip of the spire standing vertically. In such shells the tip is called the apex. The course of the spires or whorls is from the left to right in most spiral shells, some few only being of the reversed or heterostrophous kind, the whorls of which are in a contrary direction. When speaking of the right and left sides of a shell, it should be understood, as having the aperture downwards and the apex towards the observer, it will be then seen, that in most shells the aperture or opening is on the left side, i. e. facing the right hand of the spectator. These are termed dextral, as opposed to sinistral, when the aperture is on the opposite side.

Base, the tip of the salient end of the shell, at the extremity opposite the anax of the spire; in the rostrated kind of univalves it implies the tip of the beak. Some say the shell rests on its base when laid upon a flat surface with the mouth downwards: this is not correct, except in the patella tribe, and some other univalves which have no regular spire, as the dentalium, &c. Apex, the summit of the shell. Front, the face of the shell with the aperture placed directly in front of the observer. Back, that part of the shell which is immediately opposed to the preceding. Sides, those parts seen longitudinally in profile, to the right and left when the shell is viewed either in a front or back position. Body, of the shell. (Corpus) the first whorl of the spire at the base. Belly, is to be distinguished from the body, as it implies only the convex or swollen part of the first whorl, formed by the convexity of the aperture near the lip. Whorl, denotes one of the wreaths, turns, or evolutions of the shell.

Spire, comprehends, in a general sense, all the whorls of the shell, the first or body wreath excepted. The form of the spire is of great consideration in the definition of shells, as it affords a prominent and distinguished character; it is in general flatish, somewhat depressed or

elevated; sometimes convex and slightly pointed; or with the point obtuse; or much elevated and ending in a point; plano-concave, pyramidal, subulate, or truncated. Mr. Adanson observes, that the disposition of the spires varies according to the plane they turn on, which is either horizontal, cylindrical, conic, or ovoid. These he conceives to be the four principal dispositions of the spires, but admits there are many intermediate formations. The number and form of the spires vary in the same species, in their different growths. Young shells have commonly a less number than the old ones, neither have shells of the same age always the like number of spires, a circumstance attributable to the effects of sickness, or the difference of sex. Thus in some turbinated shells we perceive that the males have the spires less numerous, smaller, and in a more lengthened form than in the females.

Suture of the spire or whorls, is the spiral line which separates the whorls, and which is sometimes sulcated, crenulated, or somewhat projecting.

Pillar or columella, is the inner part of the left lip or column, which runs through the shell, from the lower extremity to the tip of the spire, and from which all the spires take their origin; the columella being situated as nearly as possible in the axis of the shell, and serving as its basis and support throughout. It is generally either flat, grooved, folded, or truncated in that part which is visible at the opening.

Aperture, called in familiar language, the mouth of the shell, is the entrance to the chamber in which the animal resides, and is applicable to the openings of univalve and multivalve shells. The aperture is either entirely open, or closed by the operculum attached to the body of the animal, when the animal retires into its dwelling. This aperture varies in form in different shells, being angular, round, etc, semicircular, linear, or otherwise, and sometimes appears double, the inner margin being surrounded by an exterior one.

Lip. The expansion of the exterior part of the aperture constitutes the lip in the labiated shells, and the wing in the alated kinds.

Beak, or rostrum, is that part at the base which extends in a straight or slightly oblique direction from the bottom of the aperture, and is larger or smaller in different families. In the murex hairs: etc. lum this projection is very conspicuous.

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Canal, or gutter, an elongation of the aperture of the shell descending in a groove or gutter-like process. Some kinds of rostrated shells have the canal remarkably conspicuous, forming a sinus from the aperture throughout the whole length of the beak.

Umbilicus, is the opening or perforation in the lower part of the body, or first whorl of many spiral univalves, and is very conspicuous in a number of the trochus and nerita genus in particular. This umbilical perforation runs in a straight line from the base to the summit of the shell, forming throughout a spiral groove or gutter, which is wide at the entrance, and tapers gradually towards the apex. In the *Linnæan nerita canrena*, the structure of the umbilicus is well displayed, but is still more obvious in the stercorac shell, trochus perspicuus. This opening occurs in many shells at the base of the pillar.

Operculum, is a testaceous or cartilaginous appendage peculiar in a considerable degree to the univalve tribe of shells, and those only of the spiral or turbinated kinds. This appendage is not connected with the shell, but the animal, and serves like a lid or little door, to protect or close up the aperture of the chamber, when the creature retires within its habitation. Shells of this kind are distinguished by the name of *cochlear opercularæ*, by some of the elder conchologists. The opercula are often small in comparison to the size of the shell to which they belong; their form varies in different species; and their substance in some of a horny texture, and in others, testaceous or approaching the nature of stone. Their figure in common is either perfectly round, elliptical, oval, or elongated, and sometimes brought with spiral work, or concentric lines.

Epidermis, is a kind of skin or coating with which the exterior surfaces of many shells, both of the univalve and bivalve tribe, are covered. It is considered as a sort of periosteum or membrane, designed by nature to defend the shell from accidents and aid their growth, and to prevent other testaceous or marine animals from fixing their habitations on these shells, as they do upon most bodies in the sea, where there is no power of resistance. The epidermis is a genuine covering formed by the animal itself, peculiar to some kinds, and as constantly never observed on others. There is no doubt but the animal to which this sort of covering is peculiar, possesses a proper apparatus for its construction. The

structure of this epidermis, it should be added, is very distinct in different shells, consisting in some of a very thin pellucid film, and in others laminated, pilous, velvety, fibrous, or rugged. Few shells, having a rugose surface, are destitute of this external covering or epidermis.

Bivalves, or shells of two valves united by means of a cartilage, hinge, connection of the teeth, or other process. In order to constitute a bivalve shell, it is only requisite that it be furnished with two connected valves, without regard to their resemblance in form or dimensions. Some of the bivalves have both valves formed alike; in others they differ only in a slight degree, and again in others they are altogether dissimilar. The first of these is well exemplified by the solen genus: in that of the *Linnæan tellina*, we find examples both of the equi-valve shells, and those with the valves slightly different: of the last-mentioned kinds we have many: as the *ostrea*, *spondylus*, and *anomia*. Bivalve shells are often much compressed, some are gibbous, and when viewed at the side, or facing the ligament, have a cordated appearance, as in the *venus*, and the *Linnæan chamaecor*. Shells, having both valves alike, as before observed, are called equi-valve. Equilateral valves imply those which have both sides of the same valve alike: as for instance, when a longitudinal line is drawn from the beak to the opposite margin, the space on each side of the line is distinguished by the appellation of the right and left side: and when the form of both those spaces correspond, the shell is equilateral, as in the scallops (*ostrea*, *Linn.*): the inequilateral valves are the reverse of this, a line drawn as above described, from the beak to the opposite margin, presenting two sides of a very different shape, as we see in most of the *macra*, the *donax*, and *tellina* genera, and in the *mya truncata* especially. Sub-equilateral shells, or those having the valves nearly equal at both sides, are sufficiently elucidated by shells of the *cardium*, or *cockle* genus, which are strictly "bivalves subequilatera."

All bivalve shells do not completely close their shells, though most of those before mentioned do so, such as the scallop, the *donax*, *tellina*, and *cardium*: in several other tribes of bivalves, when the shells are shut as closely as their form will allow, they still exhibit a kind of hiatus or gaping, either at the anterior or posterior end, or at both: and in some, when the valves are shut, both the anterior and posterior parts are closed, but an opening

appears on one side of the beak: this last-mentioned character is very obvious in *chama gigas*.

One of the first circumstances to be considered is, which part of a bivalve shell ought to be deemed the base, because when this is determined, every other part will fall progressively in their relative order under our observation. We name that part of the margin or limb which is situated in a direct line opposite the beak, the base of the shell. *Linnæus*, in order to establish the characters, and afford some apparent reason at least for the application of the terms he bestows on the different parts of bivalves, reverses this position of the shell, and describes the beaks as the base of the shell. But the fact is, the natural position of the shell is in immediate contradiction to his axiom, for the beaks are always uppermost, being either immediately vertical, or with a slight inclination obliquely, when the animal moves along with its testaceous covering on the back. A solitary example will perhaps occur occasionally, in which the beaks may be considerably inclined when the animal crawls, but none, we believe, are known which open the valves upwards, and proceed with the beaks under the body. The beaks, if only for this reason, are to be considered as the summit, and the margin opposite as the base. Many of the bivalves are destitute of the locomotive power, or at least do not possess it in any material degree.

Summit, a word applied in a general manner to the top or most elevated part of the two protuberances observable in the greater number of bivalves. *Da Costa* calls that part of the shell, in which the teeth or hinge is placed, the summit or apex: we regard it as the most elevated part of the beak, the pointed termination, apex, or tip of the protuberances last-mentioned, and which, in many shells, turn spirally downwards, or obliquely, so that the beak itself is seldom the most elevated part of the shell: though it is so sometimes, as for instance in the *mytilus edulis*, or common mussel. Sides, the lateral parts of the valves distinguished by the epithet of right and left side: in common language, the two valves of a shell are called the sides, but it is not understood as a term in conchology in this view. Margin, or limb, the whole circumference or outline of the shell, when laid flat down on one valve. Disk, the convex centre of each valve, or exterior surface. Anterior slope, that part of the shell in which the ligament is situated:

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in the front view of the anterior slope, the beaks fall back, or behind. Posterior slope, that immediately opposed to the former, and in which the beaks of the shell turn forward. Lunule, the lunulated depression below the beaks, either on the anterior or posterior slope, and sometimes on both: they may be distinguished under the appellation of anterior or posterior lunules, according to the slope in which they are situated. Cartilage of the hinge, called also the ligament, fibrous, the substance of a flexible, fibrous, and somewhat horny nature, by means of which the two valves are united near the beak, and by which also the shell is opened at the will of the inhabitant. Ears, the lateral processes near the beaks, as in the scallop tribe: those occur either on one side, or on both. Ligament perforation, the opening, or aperture, through which the ligature of the animal passes, as in the *anomia* genus, by the assistance of which it fastens itself to the rocks, or other bodies: in some it is situated in the flat valve, in others at the beak of the gibbous valve. Length and breadth of the shell. The length is measured from the cartilage or beak to the margin below, the breadth is of course taken in the opposite direction. The breadth of many bivalve shells exceeds their length: some remarkable instances of which occur in the solen tribe. Hinge, the point of union between the two valves, formed by the connection or articulation of the teeth in both valves, or by the teeth in one valve, fitting into hollow sockets in the valve opposite. The amazing variety of structure observable in the hinge of different tribes of shells renders this one of the most essential characters in the generic definition of shells. The teeth in some are small and numerous, in others thick, solid, and few in number, or some times single, long, spatuliform, laminitorm, acicular, &c. the principal of which may be divided into inarticulate hinges, when only furnished with callosities, or having no visible teeth: articulate, when it has teeth, but only a small number; and multarticulate, when the teeth are numerous. Cicatrix, the impression on the inside of the valves indicating the point of connection between the muscles of the animal, and its shell. The muscles acting on the cicatrix close the shell. In some kinds, as the common oyster for example, there is only one such muscular impression in each valve, in others there are two, and some have more. The cicatrix is not of the same

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figure in all shells, being either round, semi-ovate, lunate, or elongated, in different kinds. Byssus, the appendage called the beard; by means of which some bivalves fasten themselves to the rocks.

Mollusca. The shells of this order are few, compared with either of the preceding; and the terms proposed for those are applicable for the most part to the multivalves. The following require more explicit mention. Base, that part of the shell upon which it rests; in the lepas tribe, it implies the part immediately seated upon the stem or pedicle: in the balani, the base is generally larger than the summit, and is the bottom, by means of which the shell is fixed upon the rocks or other extraneous bodies. Ligament, the substance, whether membranaceous or tendinous, which serves to connect the valves together. The connexion of the valves in some multivalves is formed by the parts of one valve locking into another. Operculum. The balani have the aperture at the summit closed by means of our small pieces or valves, which are commonly called the operculum; these opercula of the balani are, however, very different from those of univalve shells.

We here introduce descriptions, illustrated by figures, of a few of the land and fresh water shells of the United States, which these productions of our country are regarded in the Systema Naturæ. In the extensive work of Lister, entitled "Historiæ sive Synopsis methodicæ Conchyliorum," &c. several of our shells are figured, and, to a few of them, short descriptions are annexed, not however designated by specific names: of this work we have availed ourselves, for quotations and references. As we have added figures of all the shells here noticed, it was not thought necessary to enter very much at length into the description of them.

It will be readily perceived by the Conchologist, that in the arrangement we have deviated from the course pursued in this work relative to the inviolability of the Linnean system, so as to introduce some of the more recent improvements in the construction of genera, and that some considerable modifications are ventured to be made in this article.

UNIVALVES.

GENUS HELIX.

Shell subglobose, suborbicular, broad-er than long, spire convex: aperture

wider than long, diminished above by the convexity of the penultimate whorl.

Observation. The far greater number of the shells belonging to this genus are terrestrial, often inhabiting moist places; they are thin, brittle, and translucent; the young shells umbilicate almost invariably.

1. *H. Abolobris.* Shell thin, fragile; convex, imperforated; with six volutions, whorls obtusely wrinkled across, and spirally striated with very fine impressed lines, a little waved by passing over the wrinkles, both becoming extinct towards the apex, which is perfectly smooth; aperture lunated, not angulated at the base of the column but obtusely curved, lip contracting the mouth abruptly, widely reflected, flat and white.

Length of the column, three-fifths of an inch: breadth one inch.

Plate 1. fig. 1.

Lister conch. tab. 47.
Rhodia: Gmelin's Edit. Syst. Nat.

The common garden snail, frequenting moist shaded situations, and is generally well known. It is very probable this is the *Rhodia* of Authors, but as in the description of that species nothing is mentioned of the reflected lip, and not having in our possession the vol. of Chemnitz, we referred to for a figure of it, we have made an interrogative reference, and for the present have adopted a new name. An umbilicate shell that very much resembles this species is sometimes found, but in consequence of not having a perfect specimen we have not figured it: it is much less than *Abolobris*, breadth about four-fifths of an inch, the lip is reflected but not flat, and on the pillar lip is a strong tooth placed obliquely as in *H. Tridentata*: we have called it *Helix Thyridis*.

2. *H. boreus.* Shell very thin, fragile, depressed, horn colour, pellucid, very little convex: whorls four, irregularly wrinkled across: aperture subnate, lip thin, brittle, junction with the body whorl acute: umbilicus large and deep.

Length one-tenth of an inch nearly: breadth nearly one-fifth.

Plate 4. fig. 4.

Under the bark of decaying trees very common. Inhabitant pellucid: base white, acute behind, not extended forward be-

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fore the head: head and neck dusky: tentacula four: lower ones very short: eyes placed in the tip of the superior pair.

The application of the Goniometer, upon some commodious construction, might very much facilitate the investigation and determination of species, by ascertaining the precise angle subtended by the two sides of the spire in univalves. This angle combined with the length and breadth of the shell, and proportionate length of the mouth, would, it is conceived, give us a better idea of form, than we can have by the present mode of description; it is a plan we have adopted in describing our marine shells.

3. *H. Tridentata.* Shell depressed, spire very little raised, brownish or horn colour: whorls five, crossed by numerous raised equi-distant acute lines separated by regular grooves: aperture lunated, three toothed: teeth placed triangularly, one on the pillar lip situated diagonally: outer lip, abruptly contracting the aperture, widely reflected and white, furnished with two of the teeth resembling projecting angles. Umbilicus moderate.

Half an inch wide.
Inhabits the middle states.

Plate 2. fig. 1.

Cochlea parva, umbilicata, tenuiter striata, Tridentata, in triangulo positæ, nempe unius ad fundum oris, alter ad columellam, tertius ad labrum.

Lister conch. tab. 92. fig. 92.

The three curves formed by the two teeth in the outer lip of this shell bear considerable resemblance to the ornament often placed upon pannels in gothic architecture. It is found under the loose moist bark of decaying trees, in some plenty.

As many of the compound terms as possible ought to be banished from the language of Natural History, we would therefore propose that the terms *outer lip* and *pillar lip* be substituted by *Lobium* and *Labium*; these would be equally expressive, and occupy less space in a description.

4. *H. alternata.* Shell somewhat convex, fuscous varied or alternating with pale rays: whorls five striated across with raised equi-distant acute lines, forming grooves between them. Aperture

thin and brittle: lip regularly curved, within glossed with perlaceous, and when placed before the light the fuscous lines appear sanguineous. Umbilicus large, exhibiting all the volutions. Three-fourths of an inch wide. Inhabits the middle states.

Plate 1. fig. 2.

H. Radicata Gmelin's Edit. of Syst. Nat. p. 3634.
Cochlea umbilicata fuscæ, sive variegata capillatibus seris leviter exasperata.

Lister. conch. tab. 70. fig. 69.

Lister's figure, which is without doubt a representation of this species, is referred to in Gmelin as *H. radicata*, but we believe our shell to be a distinct species from that which is found in France: we therefore apply a new name. Found under bark of dead trees, and is not uncommon. In the young shell the whorls are less rounded, and are flat-ened above, so as to form almost an angle with the exterior margin: the colours are altogether paler, and may be described as pale yellow, spotted or above radiate with reddish-brown, and a row of spots interrupting from the radii by the immaculate prominent margin.

5. *H. Globifera.* Shell very much depressed, thin, fragile, pellucid, polished: whorls five, regularly rounded, and with obsolete and irregular wrinkles across beneath, and will be properly arranged next that species in the systems.

Plate 1. fig. 3.

Taken by Mr. G. Ord in his garden, Philadelphia.

It considerably resembles *Helix nitens* of Europe, particularly in being whitish beneath, and will be properly arranged next that species in the systems.

GENUS PLANORBIS.

Shell discoid simple spiral: spire depressed, flat or sunk: whorls lateral, mouth oblique.

Observ. The species for which this genus was constructed were included by Linnæus in his Genus Helix. The spire is sometimes profoundly sunk, so much so as to be with difficulty distinguished from the base.

1. *P. Tritonata.* Shell sinistral pale yellow, brownish or chestnut colour, sub-carmate above and beneath, particularly

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in the young shell : whorls three or four, striate across with fine, raised, equidistant, acute lines, forming grooves between them. Spire concave ; aperture large, embracing a considerable portion of the body whorl, within bluish white ; lip a little thickened, internally, and of a red or brownish colour, vaulted above ; umbilicus large, exhibiting the volutions.

Length one-fourth of an inch ; breadth one-half of an inch.

That ingenious naturalist Mr. C. J. Lesueur, found this species of a much larger size in French Creek, near Lake Erie ; breadth three-fourths of an inch nearly ; colour almost black, purplish-red within the mouth.

Plate 1. fig. 5.

Probably the same species with that figured by Lister tab. 139, fig. 45 ; it is very numerous in the river Delaware, in company with the two preceding shells.

GENUS LYMNAEA.

Shells subovate, oblong or somewhat tapering. Aperture entire, longitudinal, ly oblong, the right lip joined to the left at the base, and folding back on the pillar.

Observ. These shells, as well as those of the preceding genus, were placed by Linnaeus with his Helices, but they offer characters sufficiently distinct, particularly their inhabitants.

1. *L. Curucopum*. Shell thin, horn coloured or blackish ; whorls four or five, the first large, and generally the remainder darker and rapidly decreasing to an acute apex, and wrinkled across ; aperture large, oval, not three-fourths the length of the shell.

Length seven-tenths of an inch, breadth nearly one half of an inch.

Inhabitant yellowish, sprinkled with small, often confluent, paler dots ; tentacula two, broad, pyramidal ; eyes black, placed at the base of the tentacula ; tail obtuse rounded or emarginate, not so long as its shell.

Plate 2. fig. 2.

Cochlea, trium orbium. Lister, conch. tab. 140, fig. 46.

Lister figures this shell pretty accurately, and it is referred to in Gmelin's Edit. of Syst. Nat. p. 3615, as *fibella*, but it is certainly not that species.

2. *P. Bicanuus*. Shell sinistral pale yellow or brownish subcarinate above and beneath, translucent. Spire retus-umbilicate, forming a cavity as deep as that of the base. Aperture large, embracing a considerable portion of the body whorl, and much vaulted above. Within red brown, with two white lines corresponding with the carina. Whorls three wrinkled, and with minute revolving lines.

Length one-fourth of an inch ; breadth nearly half an inch.

Inhabitant aquatic, ferruginous, with numerous yellowish dots ; tentacula dotted and hexuous.

Plate 1. fig. 4.

Resembles the preceding species in its outline, but differs from that shell in the remarkable umbilicate appearance of its spire, it is also destitute of those fine parallel raised lines, and is furnished with minute striæ never visible in *P. Trirotus*, the superior part of the lip is more vaulted, and the carina more visible.

3. *P. Parvus*. Shell horn colour or blackish ; whorls four, crossed by minute wrinkles ; concave above and beneath, and equally exhibiting the volutions ; body generally subcarinate on the margin ; lip rounded and not vaulted above nor thickened ; mouth within bluish white.

Breadth one-fifth of an inch.

Animal aquatic brown, tentacula long, filiform, whitish, with a darker central line, tail rounded.

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avity is much greater than that of the water) in this singular position: It occasionally crawls to the margin of the water to obtain a supply of air, with this object the paramen is protruded to the surface, and opened with an audible snapping sound, and similar to that produced by the nib of a pen.

There is a species of this genus that resembles the *Stagnalis* of Europe ; we have named it *Lymanza Jugularis*. Whorls about six, tapering ; mouth within often brownish, lip white, column a little contracted in the middle ; we have not a good specimen to describe or figure.

2. *L. Heterostrophia*. Shell sinistral, subovate ; colour, pale yellow, chestnut or blackish ; whorls four, the first large, the others very small, terminating rather abruptly in an acute apex ; aperture large, somewhat oval, three-fourths of the length of the shell, or rather more ; within of a pearly lustre, often blackish ; lip a little thickened on the inside, and tinged with dull red.

Inhabits with the first species, and almost as numerous.

Animal resembles that of *L. Curucopum*, but is of a darker colour and longer than its shell, the tentacula also are longer and setaceous ; tail acute.

3. *L. Subcarinosa*. Shell with three whorls, which are rounded, and subcarinate, reticulated with striæ and wrinkles, sometimes without the striæ ; suture deeply impressed ; apex truncated and re-entering ; aperture more than half the length of the shell, oval ; elevated lines or subcarina on the body ; two, three, and sometimes none.

Length half of an inch, breadth four-tenths.

Inhabits with the preceding species.

Plate 1. fig. 7.

Animal, viviparous, with a chestnut, coriaceous, operculum, white spotted with orange ; head pale orange, not extending beyond the shell ; tentacula darker, short, subulate ; eyes situated at their base, elevated, black and conspicuous ; base of the animal much advanced, broad truncate purplish before, tail rounded behind.

4. *L. Fragmica*. Shell tapering, olive, horn colour or blackish, under the epidermis tinged with green ; whorls seven, but little rounded, crossed by curved wrinkles on the spire, and reclivate ones VOL. II.

on the body ; a dull red line revolving near the base of the whorls, and on the middle of the body a reddish black broad line from within the upper angle of the aperture runs parallel with the other, and terminates near the base. Aperture subovate, more than one third as long as the shell, lip not thickened, but dilated at base.

Plate 2. fig. 4.

Length one inch, breadth two-fifths of an inch.

Lister's conch. tab. 117, fig. 7. The basal part of the lip in this figure is deficient.

Inhabitant bluish-white beneath, with orange clouds each side of the mouth ; above pale orange, shaded with dusky and banded, with numerous black interrupted lines ; mouth advanced into a rostrum as long as the tentacula, which are darker at the base and setaceous ; base of the animal with an undulated outline.

It often occurs in our rivers, and is readily discoverable in clear water by the channel it forms in the mud.

Specimens of this shell, brought from the Lakes and their vicinity by Mr. Lesueur, had the revolving lines very obscure or obsolete.

In Gmelin's Edition of Syst. Nat. p. 3505, reference is made to Lister's figure as *Buccinum Virginicum*, and as the description agrees tolerably well with our shell, it may be, and probably is, the same ; with this supposition, and a desire to avoid a useless multiplication of names, the present designation is given ; though we do not think it correct, notwithstanding the universal custom, to apply a specific name drawn from the locality of the specimen or from the name of a person, unless such designation shall be expressive of the character of the animal, plant, &c. described, which we presume can rarely be the case. Lister's lower figure of tab. 109 also resembles this shell.

5. *L. Vivipara*. Shell subconic, with six rounded whorls ; suture impressed, colour olivaceous or pale, with three red brown bands of which the middle one is generally smallest ; whorls of the spire with but two ; aperture suborbicular, more than half the length of the shell.

Plate 2. fig. 5.

Donop. Brit. Shells, tab. 37. Helix Vivipara.

Lister's conch. tab. 156, fig. 26 ; Cochlea vivipara fasciata.

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It is doubtful whether or not this is the same as the *Vivipara*, but it certainly approaches very near to it; we however refer it to that species until a specific difference can be indicated, which at present we are unable to do; the spire of this species is rather more obtuse, and the suture not so deeply impressed, as in the figures of the European specimens above mentioned.

6. *L. Decisa*. Shell subconic, obovate, truncated at the apex; whorls four, wrinkled across and banded with minute distant striae; terminal whorl very short; suture impressed and conspicuous; aperture subovate, more than half the length of the shell, entire; within bluish white. Operculum coriaceous, elevated on the disk and concentrically striated.

Length one inch; breadth three-fourths of an inch.

Plate 3, fig. 6.

Cochlea virginiana & *Acta virginescens*, non *fasciata*.

Lister conch. tab. 137, fig. 27.

The young shells resemble *L. Submarginata*, but the whorls are destitute of an elevated line; the suture is not so deeply impressed, and the aperture is narrower above.

GENUS OPISTHOTA.

Shell spiral produced. Aperture contracted, subangular, generally distinct, and sometimes separate from the body whorl, and usually furnished with teeth.

Observ. The shells belonging to this genus have been divided with much propriety from the Linnæan Genus Turbo; they inhabit moist places, under the bark of trees, under stones, moss, &c. many of them are sinistral.

1. *O. Contorta*. Shell dextral, cylindrical, obtuse at the apex; whorls five, not perceptibly wrinkled or striate. Aperture suborbicular, lip reflected; a single tooth on the pillar lip near the outer angle; inner angle with an angular projection resembling a second tooth, sometimes obsolete.

Length about the tenth of an inch.

Plate 4, fig. 5.—A. Natural size; C. An enlarged view.

Very common under the bark of trees

near the earth, and resembles *Turbo Marginatum* of Authors.

BIVALVES.

GENUS UNIO.

Shell transverse; with three deeply impressed cicatrices; hinge with a strong, irregular tooth and anterior laminated one in one valve, inserted between two corresponding teeth and laminae of the other.

Obs. The shells of this genus generally inhabit fresh waters; they were placed by Linnæus with the *unio*, from which they differ in very essential particulars; as is obvious from the number, situation, and figure of the teeth, and the organization and habits of the incised animal.

U. Cassina. Shell varying in form and surface; remarkably thick and ponderous; epidermis horn-colour, different shades of brown or black; beaks various, often much eroded, pure pearlaceous, or silvery white, more prominent as the shell approaches an orbicular form; primary teeth, not very oblique. The dimensions of three specimens were as follows:

Length,	2	4	4
Breadth,	2	4	2

Plate 1, fig. 3.

Musculis brevis, cæmolinæ crassus, externa parte subvirescis, cardine incisivis minutis exasperato.

Lister conch. tab. 150, fig. 5.

By these dimensions it will appear to vary very considerably, being a regular oval; much elongated, ovate, or nearly orbicular; sometimes with two or three longitudinal or oblique waves; rarely tuberculate; within pearlaceous or red purple; teeth very thick, crenated and resembling those of the next species. It is very probable that we have here included several distinct species, but at present we are not sufficiently well acquainted with the inhabitants to separate them. Gmelin refers to Lister's figure for his *Mytilus Cygneus*, but we can discover no resemblance between them.

Found plentifully in the river: Ohio and its tributary streams.

An undulated variety was found by Mr. C. J. Lesueur in Lake Erie; its characters agree for the most part with those given above, but the undulations do not terminate at one end in the beak, but

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Plate 5, fig. 2.

Musculus latior, subfuscus, Cavata interior Radicata.

Lister conch. tab. 152, fig. 7.

Martini's figure of *U. Picorum* resembles this shell in outline. Vol. 6. Very common in the Delaware and Schuylkill rivers.

Gmelin, Ed. Syst. Nat. p. 3220, refers to Lister's figure as a variety of *Mysa Radicata*, a native of Malabar; but we have ventured to consider it a distinct species; the largest we have seen was brought from Wilksbaure by Mr. Lard Vanuxem, in length 2½, breadth, 3¼ inches. The animal is rarely infested by a parasite. See the article *Hedraula*.

5. *U. Ochraceus*. Shell thin, fragile, translucent, subovate. Hinge margin, somewhat rectilinear, colour from a pale reddish orange to a pale olive; generally radiate with dull green and with minute wrinkled radii; anterior margin very finely wrinkled; beaks decorated and approximate, with two or three small concentric undulations; within bluish white or ochraceous, tinged with red near the base; teeth very oblique and much compressed.

Length, one inch and a quarter; breadth, one and three quarters.

Plate 2, fig. 3.

This shell, in many respects, resembles the preceding, with which it is found, but is not so obtuse in front, and is much less rounded at the hinge margin, it is also so much thinner; and the beaks approach each other more closely.

6. *U. Muscivus*. Shell thin, oblong, compressed, rostrated, horn colour or fuscus, with fine crowded wrinkles, obscurely radiate with green; within bluish white; beak cavity hardly any, teeth crenate.

Length, one inch and one eighth; breadth, two and three fifths. Very common in the Delaware and Schuylkill.

Plate 4, fig. 1.

Musculus fuscus, angustior, arafara parte Cimentaria prænatis.

Lister conch. tab. 151, fig. 6.

7. *U. Mutans*. Shell moderately thick, sub-triangular, generally gaping at the posterior part of the base; fuscus, wrinkled

are almost transverse. It is most probably a distinct species, and if so, the designation proposed by its accomplished discoverer, "*Piscaria*," will be an excellent one.

2. *U. Purpureus*. Shell sub-oval, somewhat compressed, with smaller wrinkles placed between larger ones, colour dark brown; beaks placed near one end, very curious, not prominent, generally on the epidermis and pearly strata are removed, exhibiting a wax-yellow ground; within reddish purple, variegated with green; no cavity under the beaks; teeth resemble the preceding.

Length, one inch and five-eighths; breadth, two inches and four fifths.

Plate 3, fig. 1.

This species is more numerous in the rivers Delaware and Schuylkill than any other of the genus; in the rivers of the southern states it arrives at a more considerable magnitude, measuring sometimes four inches, or more, in breadth. These large specimens, and sometimes the smaller ones, are a little shortened on the base opposite to the lamellar teeth.

3. *U. Oratus*. Shell subovate, convex, not remarkably thick, horn colour, not radiated; flattened and fuscus on the anterior margin; beaks decorated, placed nearer central; umbo prominent; within pearlaceous; cavity of the beaks capacious; primary teeth very oblique, almost parallel to the posterior margin and much compressed.

Length, three inches; breadth, four inches.

Inhabits the Ohio river and its tributary streams.

Plate 2, fig. 7.

4. *U. Crispus*. Shell moderately thick, much longer before, and shorter behind the beaks; olive green, sometimes radiate with green, and with fine interrupted wrinkles placed in longitudinal rows, but usually the green radii are wanting, or only visible on the anterior margin, and the wrinkled radii indistinct; in older shells the middle of the base is a little shortened; beaks somewhat prominent, rather distant, carious, exposing a wax-yellow surface; concavity bluish-white; teeth resembling those of the preceding species, but the primary ones are not so much compressed or oblique; they are often sub-conic and crenate.

Length, one inch and a half; breadth, two and a quarter.

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bled; beaks not prominent, placed very far back and decurrent; base almost rectilinear; hinge margin remarkably oblique, rising near the termination of the cartilage into an alated projection, and forming almost a right angle with the anterior slope, which is nearly equal in length; within red-purple, often with numerous tubercles, which upon the gaping limb are confluent; cicatrices very rough; teeth crenate, the external laminae very obsolete, only one in each valve being very perceptible.

Length, including the projection, three inches and four-fifths; breadth, five inches and a half.

Plate 4, fig. 3.

Mr. Lesueur found this species in Lake Erie, very thin and fragile. The specimen from which this description is taken, and also the next species, were purchased by Mr. Joseph H. Brown, at the sale of the late Professor Barton's collection, and by him presented to the *Academy of Natural Sciences of Philadelphia*. There is also a specimen in the Museum of Mr. Peale.

8. *L. Linnæata*. Shell very thick, sub-cylindrical, emarginate before, pale horn-colour varied with greenish; hinge margin undulated obliquely across the wrinkles, rough on each side, rectilinear and parallel to the base; beaks broad and prominent, with a deeply impressed posterior angle; within pearlyaceous, teeth thick and crenate; cavity of the beaks very deep.

Length, one inch and three-tenths; breadth, three inches and one-fifth.

Plate 4, fig. 3.

From the collection of the late Professor Barton; it is said to be found in the river Wabash.

9. *U. Undulata*. Shell thin, convex, sub-oval, greenish or olivaceous, with obtuse concentric wrinkles and radiate with green, a little uneven before; beaks prominent, acute, approximate, decorticated, and with four or five large, obtuse, distant, undulations, disappearing towards the basal margin; within bluish-white, impressed by the external waves; beak cavity deep; teeth one in each valve, thick and strong; that of the left valve crenate; of the right valve somewhat bifid, and elongated before, and gradually losing itself in the hinge margin.

Length, three-fifths of an inch; breadth, nine-tenths of an inch.

Plate 3, fig. 3.

Found in the Delaware river, but is rather rare, and resembles *Anodonta Uriditata*.

This shell certainly does not belong to the genus *Unio*, as we have here restrained it; in our manuscripts we have constructed a genus for it under the name of *Margaritina*, which will be properly placed between *Unio* and *Anodonta*.

GENUS ANODONTA.

Shell transverse, with three obsolete muscular impressions, hinge simple, as substitute of teeth.

Obs. The shells which constitute this genus were arranged by Linnæus and many other writers, under the genus *Mytilus*.

1. *A. Cataracta*. Shell thin, fragile, translucent, oblong oval, convex, covered with a green olive, radiated epidermis, within pearlyaceous; beaks nearer central, frontal margin brown.

Length, two inches and two-fifths; breadth, four inches and an half; convexity of one valve nearly seven-eighths of an inch.

Plate 3, fig. 4.

This large muscle occurs in lakes, mill-dams, &c. and bears some resemblance to the *A. Anodonta* of Europe. Found by Mr. I. Lukens, in the deep part of a mill-dam.

2. *A. Margaritina*. Shell very thin, fragile, somewhat compressed, translucent, subovate; epidermis green olive, paler on the disk and greener before; anterior margin fuscous; beaks nearer the posterior end; within bluish white, edged with whitish.

Length, one inch and a half; breadth, two inches and four-fifths.

Plate 3, fig. 5.

Resembles the preceding, but is more ovate, and the beaks are placed much further back; it is very common in our rivers.

3. *A. Undulata*. Shell thin, fragile, convex, olivaceous, obscurely radiate and obtusely wrinkled; umbo prominent, decorticated, with four or five obtuse undulations disappearing on the disk. In the right valve, immediately under the beak, the margin is curved inwards for the reception of a corresponding marginal projection of the opposite valve.

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Length, nearly half an inch; breadth, nearly seven-tenths of an inch.

Plate 3, fig. 6.

This species is perhaps rare; it does not exactly agree in all its characters with this genus, but approaches nearer it, than to any other with which we are at present acquainted; it resembles *Unio Undulata*, for the young of which it might readily be mistaken.

GENUS UNIO.

Shell almost orbicular, or a little transverse without fold on the anterior margin; two or three primary teeth, and lateral remote, lamelliform ones, on each side.

Obs. The shells of which this genus is composed were formerly placed with the *Carriæ* and *Tellinæ*; to the former they are more closely allied; it was originally established by Scopoli under the name of *Sphaerium*, this was changed by Lamarck to *Cyclas*, which is now adopted by Latreille and other writers, notwithstanding the previous application of the same term to a genus of plants.

1. *U. Similis*. Shell suborbicular convex, base a little flattened; with nearly equidistant, raised, concentric lines, giving a sulcated appearance to the surface, and generally a more conspicuous elevated darker wave, marking the former year's growth of the shell. Epidermis brown or ferruginous; beak nearer central, and obtuse; hinge with minute very oblique teeth, lateral ones very distinct, elongated and considerably resembling those of the next species.

Length seven-twentieths of an inch, breadth two-fifths.

Plate 1, fig. 9.

Very much resembles *Tellina Cornica* of Authors; is found in plenty in the river Delaware; animal viviparous; from one specimen three pale yellow, active young ones were taken; the largest of which measured in breadth three twentieths of an inch. In the month of May.

2. *U. Dulcis*. Shell oblique, subovate, convex, concentrically wrinkled, very pale horn colour or whitish, with sometimes a darker, but not raised band, marking the preceding year's growth of the shell; beaks placed much nearer one end; within whitish, primary teeth very distinct, in one valve two divaricating

ones, in the other but one, exterior lateral laminal tooth very small. Length five-twentieths of an inch, breadth three-tenths.

Plate 1, fig. 10.

Inhabits the river Delaware in company with *U. Similis*, and very much resembles *Tellina Annica* of Authors.

The shells here described are in the collection of the Academy of Natural Sciences of Philadelphia.

It was originally the intention of the writer of this article to insert here, not only descriptions of the fresh water and land Shells, but those of the coast also; finding, however, that the descriptions of the latter were by far too voluminous to be comprised within the space allotted to this article, and that they had more generally found a place in the systems, the design is, with respect to this work, necessarily relinquished. To all the species here described, with the exception of two, we have been constrained to adapt specific names; but should it appear that we have been anticipated by the labours of some recent Conchologist, whose writings we have no opportunity to consult, we shall readily bow to the right of priority, which ought unquestionably to be on all occasions imperative and exclusive.

The primary divisions of the Linnæan system, in the latest edition of the "Systema Naturæ," as before observed, consist of three orders. Multivalve, Bivalve, and Univalve, each of which is subdivided into genera. The Multivalves contain the chiton, lepas and pholas; the Bivalves, mya, solen, tellina, cardium, mactra, donax, venus, spondylus, curma, and the Univalves, argonauta, nautilus, conus, cypræa, bulla, voluta, buccinum, strombus, murex, trochus, turbo, helix, nerita, haliois, patella, deniaium, serpula, teredo, and sabella. Which see. See also SHELLS.

CONCLAVE, the place in which the cardinals of the Romish church meet, and are shut up, in order to the election of a pope. The conclave is a range of small cells, ten feet square, made of wainscot; these are numbered, and drawn for by lot. They stand in a line along the galleries and hall of the Vatican, with a small space between each. Every cell has the arms of the cardinal over it. The conclave is not fixed to any one determinate place, for the consultations of the church allow the cardinals to make

choice of such a place for the conclave as they think most convenient; yet it is generally held in the Vatican. The conclave is very strictly guarded by troops: neither the cardinals, nor any person shut up in the conclave, are spoke to in Italian or Latin: even the provisions for the conclave are examined, that no letters be conveyed by that means from the ministers of foreign powers, or other persons, who may have an interest in the election of the pontiff.

CONCLUSION, in logic, the consequence or judgment drawn from what was asserted in the premises; or the previous judgments in reasoning, gained from combining the extreme ideas between themselves.

CONCORD, in grammar, that part of construction, or syntax, in which the words of a sentence agree; that is, in which nouns are put in the same gender, number, and case; and verbs in the same number and person with nouns and pronouns.

CONCORD, in music, the relation of two sounds that are always agreeable to the ear, whether applied in succession or concordance. See **MUSIC**.

CONCORDANCE, a sort of dictionary of the Bible, explaining the words thereof in alphabetical order, with the several books, chapters, and verses, quoted, in which they are contained.

CONCORDAT, a covenant or agreement with the Pope concerning the acquisition, permutation, and resignation of ecclesiastical benefices. In France, the term concordat denoted formerly an agreement concluded at Bologna, in 1516, between Pope Leo X. and Francis I. of France, for regulating the manner of nominating to benefices; but at present it applies exclusively to a convention exchanged between Pope Pius VII. and the French government on the 10th of September, 1801, in which the Roman Catholic religion is acknowledged to be that of the majority of the French people, and the free exercise of their religion is conceded to Calvinists and Lutherans, under the superintendance of government.

CONCRETE, in logic, is used in contradistinction to abstract; for example, when we consider any quality, as whiteness, inhering in any subject, as suppose in snow: if we may say the snow is white, then we speak of whiteness in the concrete; but if we consider whiteness by itself, as a quality that may be in pa-

per, in ivory, and in other things, as well as in snow, we are then said to consider or to take it in the abstract.

CONCRETIONS, *morbi*, in animal economy, hard substances that occasionally make their appearance in different parts of the body, as well in the solids as in those cavities destined to contain fluids: in the first place they are denominated concretions, or ossifications; in the other calli. The concretions that make their appearance in the solids of the animal body are denominated pincal concretions, from their being found in that part of the brain called the pincal gland; or salivary concretions, as being discovered occasionally in the salivary glands; or pancreatic concretions, which are hard substances found in the pancreas; or pulmonary concretions, which have been sometimes coughed up by consumptive persons; or hepatic concretions, of which the liver is sometimes full; concretions have also been found in the prostate; these have all been examined by chemists, and found to consist of phosphate of lime and other substances. Concretions have been discovered in the intestines and stomach of the human body, but more frequently in those of animals: those found in the intestines of a horse were examined by Fourcroy, and found to consist of magnesia, phosphoric acid, ammonia, water, and animal matter. See **CALCULI** and **CHALK STONES**.

CONDENSER, a pneumatic engine or syringe, whereby an uncommon quantity of air may be crowded into a given space; so that sometimes ten atmospheres, or ten times as much air as there is at the same time in the same space, without the engine, may be thrown in by means of it, and its egress prevented by valves properly disposed. See **PNEUMATICS**.

CONDIMENTS. Although these are not properly alimentary matters, or such as become ingredients in the composition of the animal fluid, yet Dr. Cullen says, they are taken with advantage along with the proper aliments, the digestion and assimilation of which they in some degree modify. They are of two kinds, saline or acid: having this acrimony for the most part residing in their oily parts. Of the first, the chief is sea-salt, and it is especially employed for preserving meat, before it is employed in diet, for a longer time than it could be otherwise preserved from putrefaction. For this purpose salt is applied in large proportions, and so incorporated with the substance of the meat, that it cannot be again washed out before the meat is employed in diet.

Hence it happens, that when salted meats are eaten in that condition, the salt is often taken in, in large quantity, and dissolved in the mass of blood. If the salted meats, however, be taken in moderate quantity only, Dr. Cullen says, the salt has the effect of exciting the powers of digestion; and such meat is often more easily digested than entirely unsalted meats are.

Another important condiment is sugar. It is certainly antiseptic, and therefore properly employed in preventing the putrefaction of meat. It is also frequently applied to vegetables; but from the preparation of boiling, which is commonly necessary in order to their being impregnated with the sugar, the condiment, except a few that contain a large proportion of a more fixed aromatic substance, can be considered only as sugar. This is often applied to the acid and acescent fruits; and when applied in the consistence of a syrup, it preserves them for a long time from any fermentation; but it does not destroy their acrescency; and when such preserves are taken into the stomach, the sugar introduced along with them renders them much disposed to an ascendant fermentation. In the quantity that sugar is commonly employed, either for improving the relish of several kinds of food, or for correcting their acidity, it can only be hurtful by its acrescency in the stomach, and can hardly make any proper part of the mass of blood. If taken in very large quantities, and in greater proportion than it can enter into the composition of the animal fluid, sugar, Dr. Cullen thinks, may increase the saline state of the blood, and induce disorders.

Vinegar, another saline condiment, is a powerful antiseptic, employed in several ways for preserving animal substances from putrefaction. We must consider vinegar as a vegetable acid, that may be taken with more safety than the fossil acids. Acid substances are also employed as condiments. These are especially taken from the class of tetradyminia, and they are chiefly the mustard and horse-radish. Taken in with our food, they stimulate the stomach and assist digestion; and further, as they evidently promote perspiration and urine, they obviate the putrescent tendency of the system. This has been so much remarked, that the vegetables of this class, as fraught with this peculiar acrimony, are justly denominated antiscorbatic.

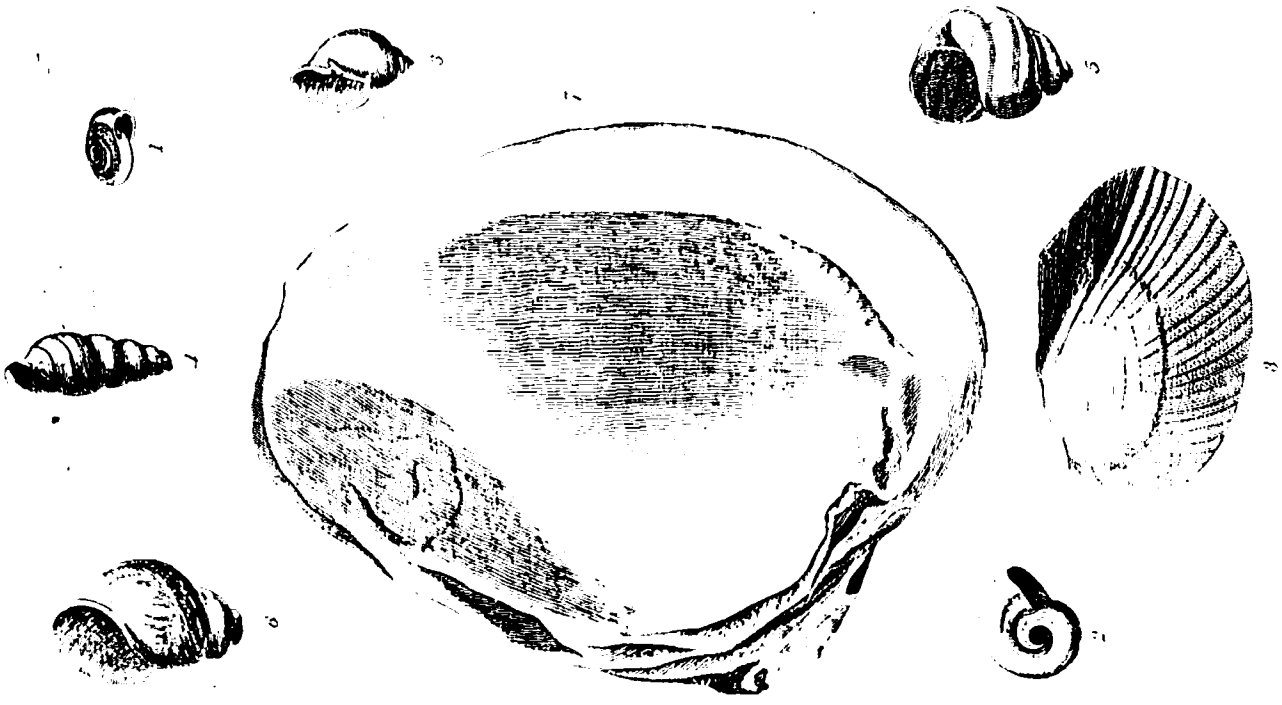
To the list of condiments, Dr. Cullen

adds capsicum, ketchup, and soy; and concludes his strictures on them by observing, that the whole of our seasonings consist of salt, vinegar, and aromatics, combined together; and "if they are taken only in the quantity necessary to render the food more sapid, they may increase the appetite and favour full eating; but they can hardly otherwise do harm, unless when the aromatics are taken in such large quantity as to weaken the tone of the stomach."

CONDITION, in law, a restraint annexed to a thing, one of the terms upon which a grant may be made on a contingency, upon the happening of which, the estate may be defeated; as a mortgage which is to cease upon payment of a certain sum. Conditions are either in deed, or express; in law, or implied; precedent; subsequent; inherent; collateral; affirmative; negative; single; copulative. A condition precedent is one, the happening of which is to precede the vesting of the estate or thing granted. A condition subsequent, by happening after the vesting of the estate, defeats, continues or extends it; and this distinction is of frequent occurrence and great importance. A condition in deed differs from a limitation of an estate, chiefly in that the former defines the estate, which cannot exceed the limits set to it in the original grant; but upon an express condition in deed, the estate continues until the grantor, who may take advantage of it, enters to defeat it. See **LIMITATION**.

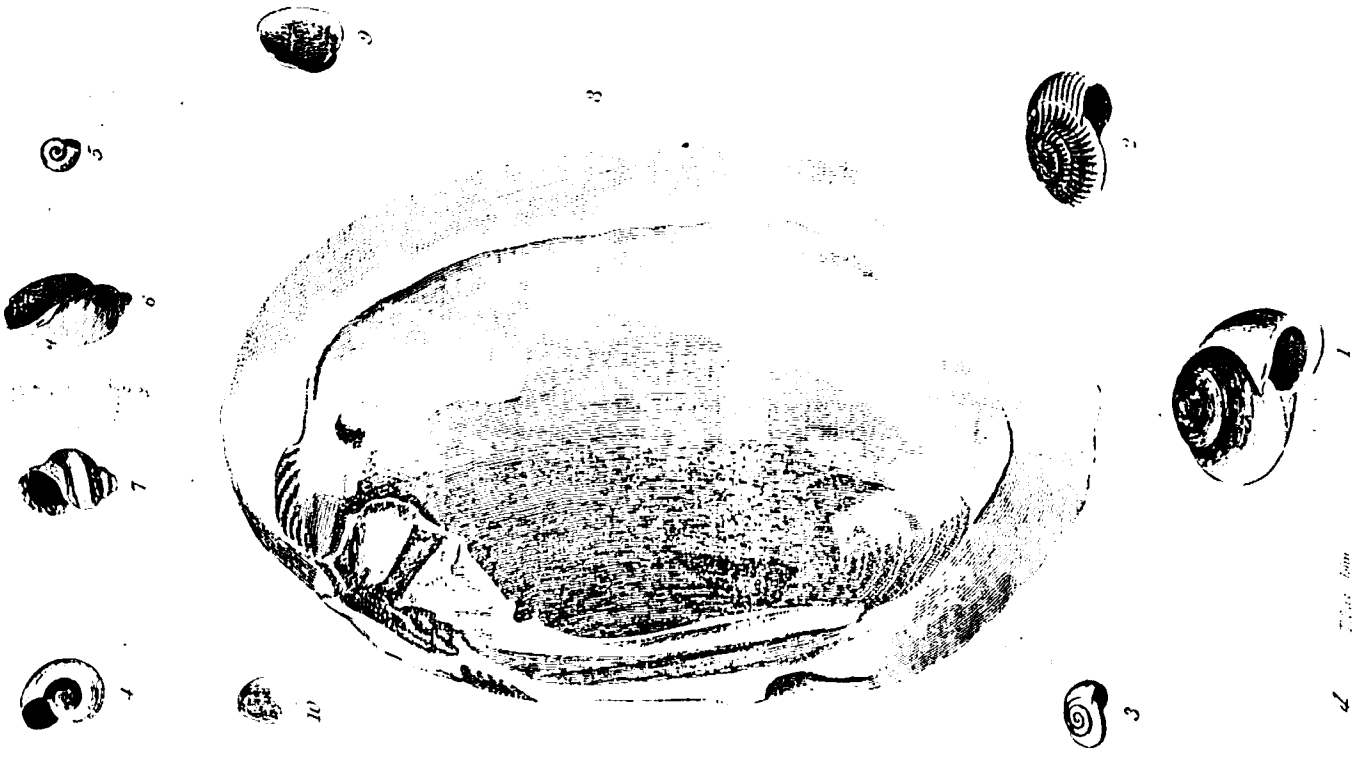
CONDITIONS which are impossible, contrary to law, or repugnant to the nature of the estate, are void, and consequently the estate, if the condition be subsequent, becomes absolute, by being freed from the condition; but if precedent, the estate can never vest. Those which give or enlarge an estate are favourably, those which restrain or defeat it, strictly construed, and conditions in restraint of marriage are not favoured, unless reasonable, but must be performed where the thing is limited over to a third person. The right of taking advantage of a condition can be reserved only to the party, his heir, executor, or privy, in right and representation. A familiar instance of a condition is a bond with a penalty, conditioned to be void on payment of a less sum.

CONTRITION, or *Condition implied*, is when a person grants an office to another, as keeper of a park for life, though there be no condition expressed in the grant, yet the law makes one covertly,



Amos 11.

Amos 12.

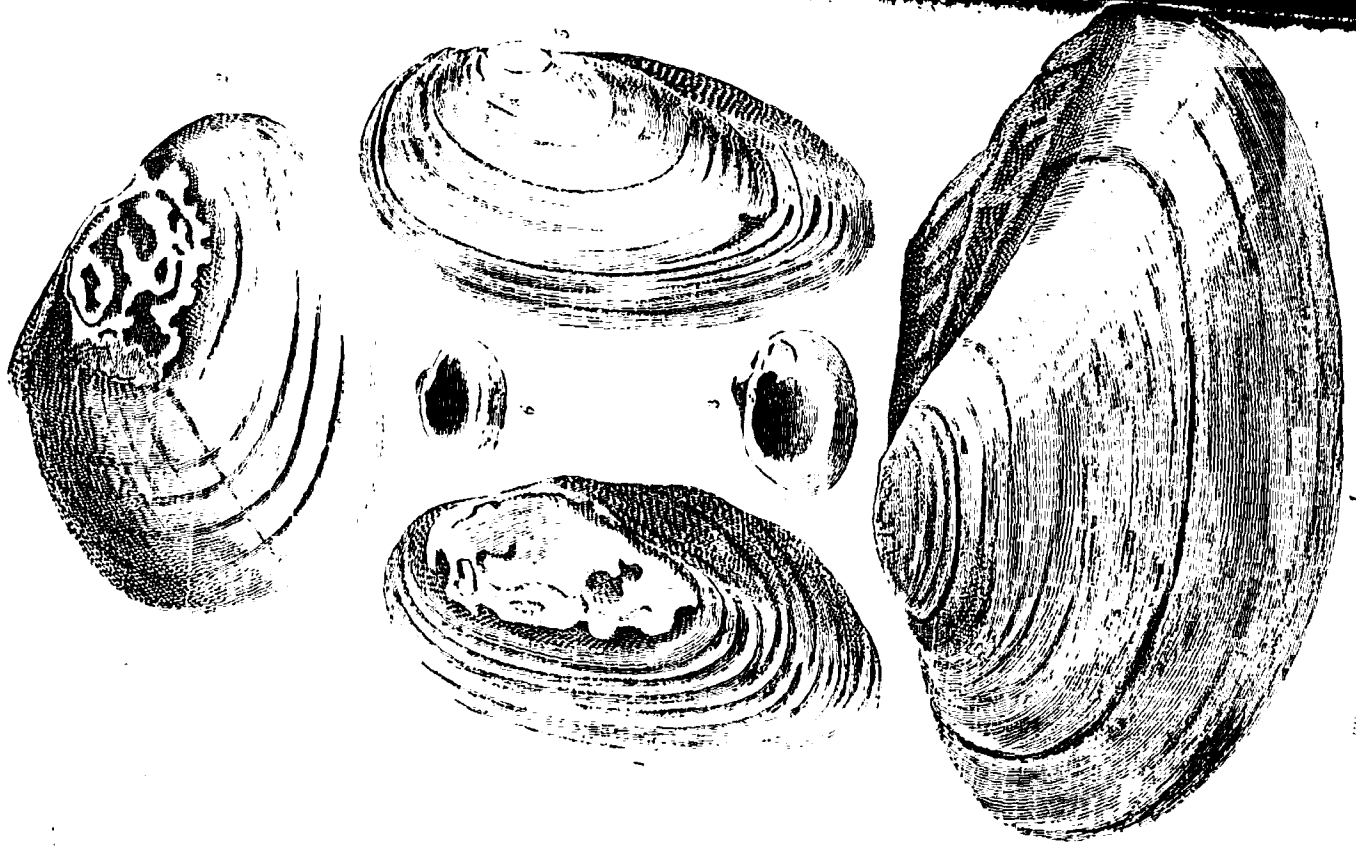


Amos 13.

Amos 14.

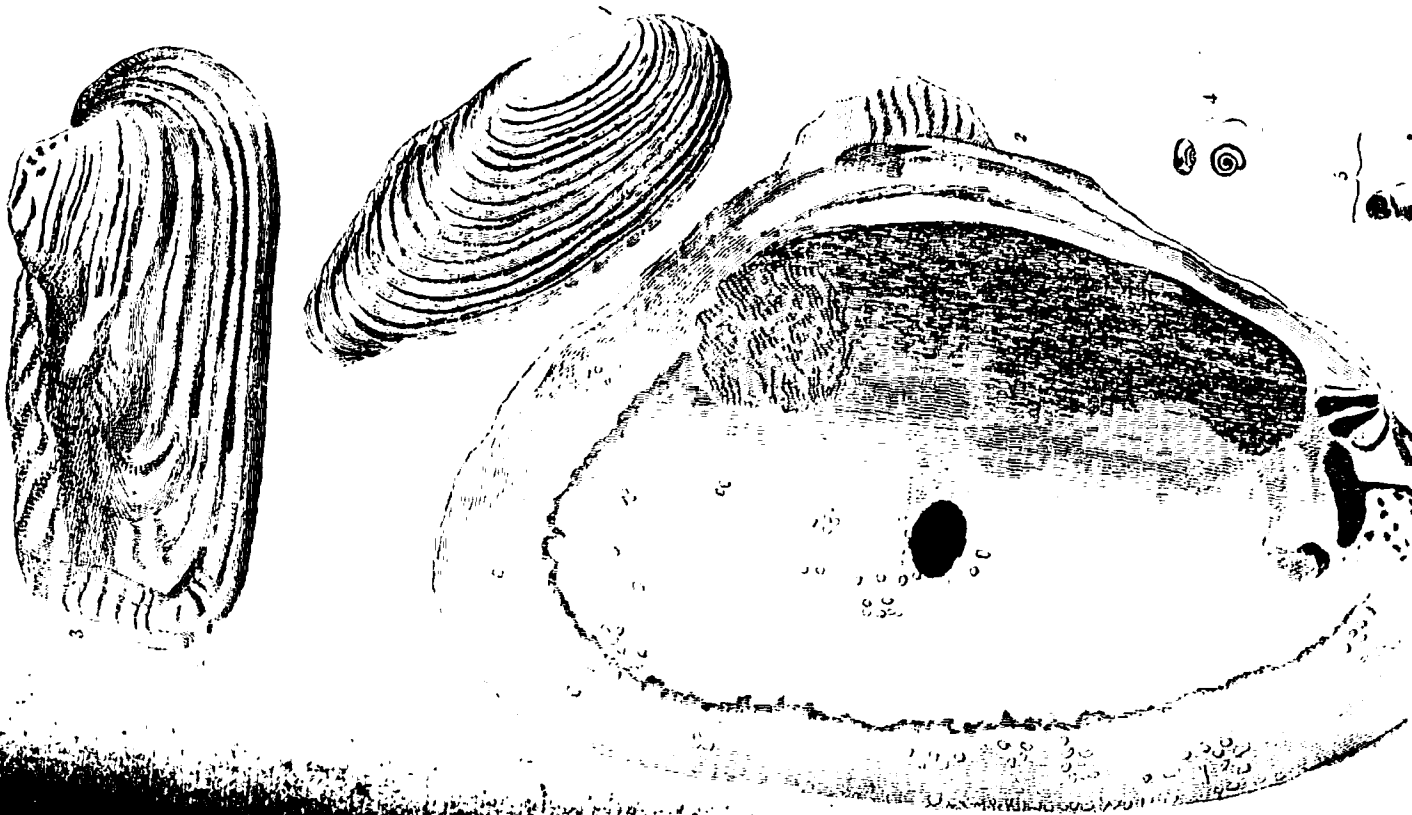
AMERICAN CONCHIOLOGY.

Plate III.



AMERICAN CONCHIOLOGY.

Plate IV.



First paper on the Conchology of the United States by an American author, Thomas Say, 1817

by RICHARD I. JOHNSON

Museum of Comparative Zoology,
Harvard University,
Cambridge, Massachusetts.

Early in the winter of 1817, Thomas Say's article, "Conchology" appeared in the second volume of the *First American Edition of the British Encyclopedia*, by William Nicholson. The article consisted of 15 unnumbered pages and 4 uncolored, engraved plates. The article was delineated by Say. Besides introductory remarks, it consisted of descriptions of common American land and fresh-water shells, mostly previously undescribed by European authors. The first edition of this first paper on the conchology of the United States is, obviously, the cornerstone of any collection of work on American conchology. The first edition is very rare, but Say's article is well known through two subsequent editions of the *Encyclopedia*, author's separates from the last, and Binney's (1858) reprint. Binney (1862: 254-256) had been unable to locate a set of the first edition of the *Encyclopedia* in the United States, and based his information of Say's article, including the date 1816 (when the first volume appeared) according to data supplied by Sylvanus Hanley, the well known British conchologist. (Since Hanley's set of the *Encyclopedia* is not in the British Museum (Natural History) where many of his shells are located, it is presumed to be lost). Binney (1864: 277) located a set of the first edition of the *Encyclopedia* at the United States Naval Academy, Newport, Rhode Island (transferred to Annapolis, Maryland, and discarded in 1923), and discovered that Vol. 2 appeared in 1817. Clench (1932), unaware of Binney, re-dated Say's article 1816, on the basis of an imperfect set he purchased in a Washington, D.C. bookstore. This set, consisting of Vol. 1 and the second part of Vol. 2, which was issued without a title page, is now in the Museum of Comparative Zoology. From a copy of the first edition of the *Encyclopedia*, in the Library of Congress, Washington, D.C., I recently received a reproduction of the subtitle to Vol. 2 (pl. 1, fig. 1) which conclusively proves that Say's article appeared in 1817. I am fortunate in possessing an untrimmed author's separate of the article (lacks the first unnumbered page which consisted of introductory remarks). It is a presentation copy to Constantine Samuel Rafinesque, New York (pl. 1, fig. 2) and has Vol. 2 printed at the bottom of this page inscribed by Say (pl. 1, fig. 3). It was sent to Rafinesque (1836: 51-53) in New York where he resided during part of the years 1817-1818. Rafinesque was obviously known to Say as a naturalist before he established himself as an American conchologist with the publication of his monograph of the bivalve shells of the Ohio River which appeared in 1820. Rafinesque died in 1850, in Philadelphia, and his effects were sold at auction. This article from the *Encyclopedia* appears to have been purchased by S. S. Haldeman, then a well known zoologist, who lived in the vicinity of Philadelphia. In 1842, Haldeman (*Amer. Jour. Sci.* 43: 281) published a eulogy to Rafinesque. Haldeman died in 1862 and the article was acquired by Binney in 1863, obviously too late for his use in the *Bibliography of North American Conchology* (1863). Binney died in 1909, and the article passed into the hands of A. F. Gray of Boston. I purchased it in 1943 with a number of other old papers, from a Boston dealer.

CONCHOLOGY OF THE UNITED STATES
AMERICAN EDITION

OF THE

BRITISH ENCYCLOPEDIA,

OR

DICTIONARY

OF

ARTS AND SCIENCES.

COMPRISING

AN ACCURATE AND POPULAR VIEW

OF THE PRESENT

IMPROVED STATE OF HUMAN KNOWLEDGE.

BY WILLIAM NICHOLSON,

Author and Proprietor of the Philosophical Journal, and various other Chemical, Philosophical, and
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VOL. II. B.....E.

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W. Brown, Printer, Church Alley.

1817.

2
C. of Rafinesque's
1st ed. of Nicholson's
New York

Hence it becomes impossible to ar-
range the far greater number of testace.
ous productions by the animals; the at-
tention, to guard the common observer
X

3

CONCHOLOGY OF THE UNITED STATES

The *Encyclopaedia* was apparently a success, since a second edition appeared in 1818, and a third from 1819-21. In the second edition, Say's article commences Vol. 4, and the type of the first page has been rearranged. Save for a few minor typographical changes, the paper is the same as the first edition. In the third edition (1819) Say's article also commences Vol. 4. This edition is augmented by new information, and is the best known. All sets that I have seen of the *Encyclopaedia* are bound in full contemporary leather and trimmed. Author's reprints of the third edition were distributed under the title, *Description of the Land and Fresh Water Shells of the United States*. Copies of it are in the British Museum (National History); Academy of Natural Sciences of Philadelphia (which possesses Say's manuscript) and my library.

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