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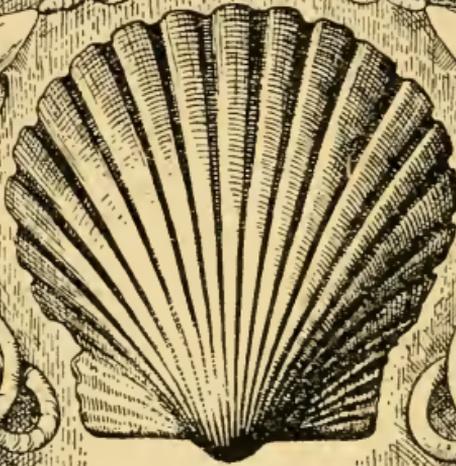
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THE  
VOYAGER'S COMPANION;  
OR  
SHELL COLLECTOR'S PILOT;

WITH  
*Instructions and Directions where to find  
the finest Shells;*

ALSO  
FOR PRESERVING THE SKINS OF ANIMALS;

AND THE  
*Best Methods of Catching and Preserving Insects,  
&c. &c. &c.*

BY JOHN MAWE.  
Author of Treatise on Shells, Lessons on Mineralogy,  
Travels in Brazil, &c.

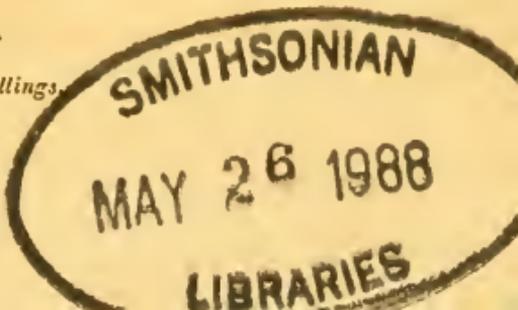
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*Third Edition, with colored Plates.*  
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LONDON:

PRINTED FOR AND SOLD BY THE AUTHOR, 149, STRAND;  
AND LONGMAN, HURST, REES, ORME, AND BROWN,  
PATERNOSTER-ROW.

1821.

*Price Five Shillings.*



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PRINTED BY W M'DOWALL, PEMBERTON ROW,  
GOUGH SQUARE.

## ADVERTISEMENT.

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MANY have been deterred from sending shells, fearing they might be seized by the officers of the customs. The following is a certain mode to prevent it: and it is particularly recommended to captains of ships, passengers, &c.

Any person desirous to send a box of shells &c. to the author, he will pay the charges, and make an adequate return in whatever way the consignor may direct. It is proper to observe, that they must be packed in cases, and entered on the ship's manifest, and marked as below, which will prevent any risk of seizure.

J. MAWE,  
King's Warehouse,  
LONDON.

N. B. Ships bound to any out-port, if the case be directed as above, it will be duly forwarded to the address.

## DESCRIPTION OF PLATES.

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### *The Frontispiece.*

Low water, and the beach strewed with most beautiful shells and coral, to tempt the traveller, and rouse his mind to contemplate on the beauties of the deep, and the wonderful works of an Omnipotent Being—

“ Who taught the little nautilus to sail,

“ Spread his thin oar, and scud before the gale !”

The bird is emblematical of—

“ Search, and ye shall find.”

A few snails are placed on the land, shewing, that although the animal is not pretty, yet he forms a shell often held in great estimation.

A few tropical birds are introduced, to show another variety of the beauties of the creation.

The plate of *Insects* requires no explanation.

## INTRODUCTION.



IN offering this little Work to the Public, more especially to sailors and travellers, it may not be improper to state, that the following pages are generally the result of my own observations, during fifteen years that I was at sea, and subsequently whilst I was resident for six years in South America, and the Brazils.

HAVING sailed to most parts of the globe, I may say, from my own experience, that there is no station which affords such facilities for collecting shells and various subjects belonging to Natural History, as that of commander or officer of a ship, whether he please to make it an amusement, or a traffic.

FINDING a sea-faring life hazardous during the war, after a favorable voyage I left off going to sea, and, with other business, commenced collecting minerals and shells: since which time, I may venture to assert, that the finest shells in the modern cabinets of Europe have passed

through my hands, and to such an amount as would appear incredible to any one not interested in the science of Conchology.

IN this, as well as in every other branch of natural history, the knowledge requisite to discover the scarce and rare varieties from the common, can only be acquired by practice. To particularize objects that may present themselves to the traveller, is not the aim of this work; but, for the benefit of science, and his own interest, it is desirable to excite him to collect all he may meet with, until he has skill to select the good from the bad;

and I can assure him that he will be amply remunerated for his labor. I say *all*, for however common they may be in the countries he visits, they may be scarce here.

SEVERAL years ago, I published a small pamphlet, entitled "Directions to Captains of Ships, Officers, and Travellers, particularly to those who visit the South Sea Islands," &c. which went through two editions. Since that time, science has rapidly advanced, and it may be said, there are but few who have not felt a desire to obtain something more than an ordinary knowledge of the pro-

ductions of nature. The accomplishing of this has been rendered extremely easy by recent publications, which embrace, separately, the various branches of natural history, more particularly that of SHELLS\*, describing and explaining the various orders and species, with particular instructions to collectors.

WHEN at sea, I have often lowered down my boat to take in floating wood,

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\* The Author has just published a small Treatise on Shells, with colored plates, and lists of the names of the various species under each genus, written expressly for learners.

(wreck), sea-weed, &c. from which I have collected many rare small shells.— Whales have frequently barnacles adhering to their heads and jaws; and the wood is often penetrated by the destructive worm, (*teredo navalis*)\*; which is extremely interesting to examine.

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\* The *Teredo Navalis* is a mucilaginous substance, in the head of which are strong muscles, terminated with hard shell-like substances, one of which is not unlike the cutting part of a carpenter's auger: this the animal works so as to bore holes in almost every sort of wood. It is supposed that the animal, when extremely

LIMPETS may be found in every harbour, on every rock, and on every coast: the sea seldom ebbs without leaving shells of various species; among the most common that are exposed for sale in the markets of the countries the traveller may visit, the connoisseur might discover some rare or interesting varieties.

I SHALL conclude my observations up-

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small; floats in the water, and attaches itself to the bottoms of ships, (if of wood), which it almost immediately pierces, and, like the pholas, grows and becomes larger as it penetrates.

on this subject, with strongly recommending the reader, whenever opportunity occurs, as ships loading, refreshing, &c. to employ the fishermen on the coast to collect for him; these men are well acquainted with the places where shells may be found, and for a trifling remuneration would gather a supply, which, on his return home, might gratify his friends, or otherwise be turned to advantage.

It would also amply repay him, to hire an expert negro to go into the interior in quest of **LAND-SHELLS**; for, although the animal be a snail, with his

house on his back, and less beautiful than sea shells, yet they are interesting and desirable, from being seldom attended to. In Brazil, at the royal farm at Santa Cruz, where I resided some months, holding a high official situation, I adopted what I here recommend, and succeeded to the utmost of my wishes.

The following is the Recipe for making the *Preservative Soap*. As both it and the *Powder* are deadly poisons, I have thought proper, by adopting the technical phrascology, to conceal (in some degree) the ingredients from those who might apply them to improper purposes.

<i>Arsenici Oxydi</i> .....	ʒj
<i>Saponis</i> .....	ʒj
<i>Potassæ Carbonatis</i> .....	ʒvj
<i>Aquæ saturatæ</i> .....	ʒvj
<i>Camphoræ</i> .....	ʒij

---

Preservative Powder.

*Arsenici Oxydi pulvis.*

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## CHAPTER I.

### *On Cleaning and Packing Shells.*

SHELLS frequently receive considerable injury, and sometimes are entirely spoiled, by the attempts of unskilful persons to clean them.— It is therefore of essential consequence that the following observations be most strictly attended to.

WHEN a live shell is found, it would soon become offensive, unless the animal were taken out. To perform this, nothing more is requisite than to put the shell into a kettle of water, and let it heat gradually, until it boils.

After a few minutes, the shell should be taken out, and put into a bucket of cold water; the animal will then shrink, and may generally be shaken from the shell: but if it should still adhere, it may be pulled out with a crooked pin or hook, great care being taken not to injure the mouth, which is commonly the most tender part of the shell.

OYSTERS, muscles, clams, or limpets, may be treated in the same way; or they may be opened with a knife, and the animal cut out, which must be done very gently, least the shell should be chipped or broken: but the former method is preferable, since the shell opens of itself, when in boiling water. The same care should be taken in separating limpets from the rocks, for the least chipping renders them but little esteemed.

THIS operation being performed, the shells should be immediately rinsed and stowed away;

and no further attempts at cleaning or polishing should be made. The rough outside, (epidermis), forms a principal character in the shell, and should on no account be removed—the perfection of a shell depends on its being in its *natural* state.

MANY shells are in themselves such beautiful objects, that the traveller should be as expeditious as possible in removing them out of sight, for they invariably create in the beholder a desire of handling them, which is generally injurious to the interests of the possessor.

WE shall now proceed to describe the best methods of *packing* shells. Pour some sawdust, or, if that be not at hand, some sand from the beach, into a chest or beef barrel; into this the large strong shells may be put, covering them with sand, or sawdust. For the more tender varieties, small boxes, about a foot square, and six inches deep, should be provided, (which

may be purchased for a shilling each), into which the shells should be placed in layers, with sawdust strewed amongst them. The Paper Nautili should be packed, keel down, in shallow boxes, which should be filled with sawdust, moss, cotton, or paper shavings, for any heavier substance would chip the edges of the shells, and diminish their value. The boxes, into which these are packed, should never contain more than one layer. Small chip boxes may be used for particular varieties, but as these boxes are very slight, they should be afterwards packed within the larger ones; and when all are full, they ought to be stowed away in an empty barrel or chest, which should be finally closed or nailed down; marked, and entered on the *Ship's* manifest, as SHELLS—to prevent the risk of seizure. The Custom House expenses are so trivial, and the process so simple, that the Author will have pleasure in assisting any one who may be unacquainted with the routine.

## CHAPTER II.

### *Localities of Shells, &c.*

SHELL-FISH are generally esteemed for food, and a great variety of shells are in the market of almost every sea-port, both abroad and at home: at Billingsgate, Portsmouth, Plymouth, &c. we have our periwinkles or whelks, muscles, cockles, scallops, gapers, and oysters; the same species are also exposed for sale in the markets of other countries, but they differ from those which are found on the English coasts. The pectens, scallops, cockles, &c. from France and Spain differ from our's, which renders it desirable to possess them. The common shells (except

the oyster), which are found at Cadiz and in the Mediterranean, especially at Cette, Marseilles, and Genoa, are desirable. When at Mogador, I found many good limpets, and scarcely any thing else worth notice, except some muscles and *land-shells*\*, which I persuaded the Moors to bring from the Interior. We receive many varieties of *land-shells*†, (some of which are large, and particularly in request), from the Gambia and the interior of Senegal. At Gorree, and along the African coast many varieties of shells occur, as well as to the southward, at Sierra Leon, and more especially Cape Palmas, the Gold Coast, and Bight of Benin. From the islands, St. Thomas's, Annabona, and the coast about Loanga, very good shells have

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\* Snail shells.

† The animals constitute an article of food; and I have often seen snails, boiled in their shells, served up with rice, in various parts in the Mediterranean.

been brought; also from the vicinity of the Congo, and the Portuguese settlement, Benguela. One of the rarest shells known, and several scarce varieties, have been gathered from these coasts, also sea-fans (*gorgonia*), and interesting weeds; all of which, as well as the *land-shells* from the interior, are desirable.— Farther south, as far as Saldahna Bay, the shells are similar to those about the Cape.

ALONG the coast of North America, and as far as the Spanish Main, few interesting shells have appeared: from the latter numerous varieties of volutes and camp-shells, (*pen-a-mar*), are brought continually. We know but little of the shells that may be found about Pensacola, or New Orleans, or along the coast until we arrive at Vera Cruz; but from this port, Carthagena, and the intermediate coast, we have received a few fine varieties. Some beautiful spined shells, of the Venus species, (not unlike cockles), have been brought from Trinidad and the shoals of the Oronoco.

THE West-Indies do not produce many of what are termed rare shells\*. I have picked up fine conchs, sea-fans, and weed, all over the coast of Jamaica, and in the interior some interesting *land* and lagoon shells.

A FRIEND of mine, a commander of a ship, who went to Demerara, employed at my request an expert negro to go into the Interior to collect *land* and fresh water shells. The man was absent a week, and collected a box-full of what are termed *snail-shells*, and muscles; these were packed with refuse cotton, and the whole expense did not exceed six dollars. And let me here recommend the traveller to hire a fisherman, or clever negro, (who ought to be well remunerated on his return), to collect, as well

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\* The collections of shells, in fine boxes, which are sold in the West-Indies, are too contemptible to notice; they can only please mere novices.

as to pack these objects, and thus free the employer from any trouble.

THE *land shells* and muscles which may be found over the whole of the vast territories of Surinam and Cayenne are very desirable. I would amply repay any one for what he might bring from the interior of those countries.

OF the shells from the Amazons, the great island Joannes, and from the district of PARA, we know little or nothing, except that there are in the interior many fine *helices* (snail shells), muscles, &c.—Shells, therefore, however common in those places, would be objects of attention here.

FROM Pernambuco to Bahia and Rio de Janeiro, the *land* and fresh water shells are quite as interesting, if not more so, than those which are found on the coast; to the southward of

Rio\*, near the isle of St. Sebastian, the Paper Nautilus, and other fine shells, are frequently met with. About six years ago, after a gale of wind, a spring tide ebb left a reef of Nautili and other shells along the coast of Bahia, mutilated by the surf of the conflicting elements: a Government-ship was at the same time loading with timber. On her return to Chatham, I received intelligence from an officer on board, that he had collected a quantity of them. I sent a person down, who purchased to the amount of twenty-five pounds. A similar circumstance occurred under my own observation, at the mouth of the Guadalquiver, near Cadiz, from whence I select-

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\* At the Royal Farm, Santa Cruz, about forty miles from Rio, where I held an official situation, (first administrator), I directed some expert negroes to pick up what snail shells and curious animals they might meet with: these they left at my house as they passed, and, by allowing them a small compensation, I obtained many fine shells, insects, birds, reptiles, and small animals of the monkey, ape, and hedge-hog species.

ed many fine varieties. Indeed, almost every gale of wind throws up some interesting shells.

FROM the interior, near Santa Cruz, also about Santos and Bertiojo, I collected many curious shells; but strange to tell, I have found it difficult to persuade any one to send me another supply, although so easily obtained. No, they think them common, and because they *really are so there*, they do not bring or send them.

WHEN at the isle of St. Catherines, and the bays near it, I employed the fishermen to collect for me, and obtained from them many varieties of shells, sea-eggs, star-fish, coral, and sea-weed, also muscles and land shells from the lagoons, to which I gave the preference.

IN the river Plata I was not equally fortunate; for though a gale, called a Pampero, had left the river dry in many places, from two to three miles in extent, I could discover no shells;

nor were the fishermen, whose attention I engaged, more successful. Notwithstanding, I am told, fine volutes are met with there.

MANY fossil-shells may be found under a black soil, resting on granite, near Monte Video.

I COLLECTED some good shells in the interior, and at Barriga-negra, near the river Sebollitee, where I was detained many months\*.

THE rocks which form the Falkland Islands, produce very fine limpets. Many good shells have been brought from Magellan Straits, and Staten Land; nor are the remote islands, called South Georgia, or Kerguelen's Land, without fine limpets, and thick strong shells, which are desirable.

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\* See the Author's Travels through the gold and diamond district of Brazil.

AFTER rounding Cape Horn, we know nothing of the shells that may be produced on the coast of Chili and the neighbouring islands; nor indeed, until we reach the coast of Peru, from whence many fine varieties have been procured, especially from the shores of Callao, and near Lima. All the species that may be found at these places, at low water, or obtained from the fishermen, should be carefully collected.

THE Gallipagos Islands, we know, are rich in shells, and it is wonderful that more have not been brought from thence.

FROM the islands at the entrance of the gulf of California, and from the rocks and beach, numerous fine Ears have been collected, for which in one year I paid above a hundred pounds.—The barnacles which adhere to the whales in these seas, are different from those which are found on the other side of the continent; so are

the limpets, clams, muscles, &c. consequently they are highly interesting.

IN crossing the Pacific, the Sandwich Islands are sometimes visited; the shells from whence are in great request. To the south of the line, is the rich group of the *Marquesas* and the Society Islands, from whence we have *many* beautiful and rare shells, chiefly collected by Circumnavigators. Here the commanders of whale ships, &c. are particularly requested to pay every attention, and to gather up whatever is strewed on the beach, and the limpets, which adhere to the rocks, as well as what land and fresh water shells they can possibly procure.

THE shells from Dusky Bay, New Zealand, and all along the coast, also the reefs about New Holland, particularly the western part, King George Island, the Marian Islands, Port Jackson, &c. will most amply remunerate the trouble

of collecting: and let me here state, that for several years I paid more than two hundred *per annum* chiefly for shells, &c. to gentlemen holding the first situations \* under Government. The finest lot of a peculiar species ever brought to this country, was gathered by two boys in Western Port.—A whaler off the coast sent a boat on shore to search for fresh provisions, as birds, animals, &c. whilst the crew were shooting, the boat grounded among stones and weeds, and during the time before she floated, the boys left in charge of her, employed themselves in gathering the shells entangled in the weeds and about the stones. On their return home they

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\* One of the finest collections of shells I ever bought, was from a Lieut. Governor of St. Helena, who was a connoisseur. He assured me that he obtained them from South Sea ships and Dutch, Danish, and Portuguese, Indiamen, whose commanders, wanting refreshments, found it their interest to present him with any fine shells they might possess.

brought them to me ; and though I gave them the price they asked, I thought it not only right, but political, to present them with a guinea each, to stimulate them to look out for shells on another voyage. I am sorry here to add, that it is, generally, only the boys or the cook, who notice these *rarities*, and who make a few pounds by them every voyage.

FROM Tongataboo, one of the Friendly Islands, Bligh's Island\*, and the cluster of Fejees, some varieties of extraordinary beauty have been brought.

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\* Named after its discoverer, Admiral Bligh. His lady possessed one of the finest collections of shells in Europe. The admiral having twice circumnavigated the globe, and being afterwards Governor of New South Wales, she was enabled to enrich her collection with the most rare and valuable species from all parts of the world. This extensive and fine collection is now in my possession.

FROM New Caledonia, and the vast group of the New Hebrides, we possess no shells whatever; but from the coasts of *Papua* and New Guinea, some very rare varieties have been received.

THE shells from the Chinese seas are generally interesting; from the Philippine Islands we have many fine varieties: the Dutch, Portuguese, and Danes, have also contributed to our cabinets in this department. At *Wampoa*, or Canton, shells from JAPAN, FORMOSA, and HAYNAN, may be purchased in shops of little importance. If any of the commanders or officers of our China ships would take the trouble to employ some Chinese fishermen to collect land and fresh-water shells, he might, for three or four dollars, depend upon obtaining whatever the country produced: and were he to extend his order to ten dollars for sea-shells, he would be amply repaid on his return home. The very commonest productions in China have been ne-

glected; they may probably, from their constant occurrence or uninviting appearance, have not been thought worthy of notice: whilst on the other hand, carved nautili, and large green shells, which have been ground, (and therefore injured), to display their pearly lustre, have been seized with avidity, but have failed to repay the collector, or gratify the connoisseur.

GOLD and diamonds, (which are found in the soil of the rivers), have been brought from Borneo, but we are totally ignorant of what shells may be produced there.

FROM the cluster of the Celebes, we have a few fine varieties, which have been noticed by officers of ships of war, or circumnavigators; but, strange as it may appear, the Author of the Narrative on the Pellew Islands has not noticed or described one single shell from thence.— One of the rarest and finest shells ever seen was brought up in the mud sticking to an Indiaman's

anchor, when getting under weigh, in the straits of Macassar.

FROM the islands in the Archipelago between the north coast of New Holland and the continent, but more especially from TIMOR and Amboyna, many valuable shells, as well as beautiful corals, have been brought.

A MAYLAY fisherman was employed for a fortnight by a friend of mine, whilst at Timor, from which I reaped considerable profit.

FROM Java, Sumatra, and the Malay shore, many shells have been brought, but by far the finest were collected at Bencoolen, by a gentleman high in the civil service of the Honorable East India Company, who employed a fisherman at my request.

FROM the Nicobar Islands, where there was once a European settlement, some very superior

shells have been collected; but since the time the English left the place, no more have been received in this country: they are consequently in very great request.

THE same may also be said of the Andamans, from whence very fine and rare cones, limpets, and chitons (boat-like shells), which adhere to the rocks, have been brought.

A SMALL thorny shell, (*nerite*), resembling a whelk, of a black unsightly appearance, is found on the coasts which form the bay of Bengal and the entrances of the Ganges; this shell is in request: but there must be many interesting varieties on these shores, as well as land and fresh-water shells, from the interior, of which we at present know very little.

A FEW years ago I received, by the kind remembrance of a gentleman, some very fine small snail-shells, (*helices*), from Seringapatam, which

are the only varieties of this species hitherto known.

MADRAS presents such a surf-beaten coast, that no perfect shells are found there; but many fine varieties, which were sent from Tranquebar, a Danish settlement, have enriched the cabinets of Europe.

WE now come to the famed island of Ceylon\*, well known to Conchologists, for the *rare* vo-

\* When Ceylon was taken, in the year 1795, the collection belonging to the Dutch Governor was purchased for me. It contained some of the finest shells that ever came to England. During the last ten years, I do not hesitate to say, that £.10,000 worth of shells have been sent from this island, more than two-thirds of which have passed through my hands. The *natives* who make up collections in fine partitioned boxes, scarcely ever put a good shell into them: the best shells they sell alone. A peculiar shell from these seas is held in great estimation in China, and is sometimes mounted in pure gold: it is reputed to add great virtue to medicine administered in it!

lutes found on its coast, and for the land and fresh water shells from the interior. The divers employed in the pearl-fishery bring up fine and numerous varieties.

ON the Malabar coast, at Tellicherry, I picked up some beautiful sea-weed, and a few small cowries of little importance. At Old-woman Island, near Bombay, I found a fine, though small, Weaver's-shuttle, (*bulla volva*), which shows that it is an inhabitant of the Indian seas.

HENCE, until we approach the Persian Gulph, I am not aware that any shells, worth notice, are to be found. From the sands and shores of the adjacent coast, many extremely fine varieties have been gathered, which bear the distinguished names of the *Persian Crown*, *Voluta Gambronica*, &c.

THE coasts of the great island Madagascar abound in shells, but they are generally large,

and of little value: some rare varieties are, however, occasionally found. Of the land-shells we are quite ignorant; we are therefore anxious to obtain them. A ship, in which the Author was an officer, sounded on a coral reef of great extent, in the channel of Mosambique, from whence, and nearer the island, he procured some fine specimens.

THE Red Sea and its islands produce many fine shells. Lord Valentia, (now Earl Mount-norris), during his travels in those parts, discovered some new varieties. I take this opportunity of acknowledging his Lordship's generosity, in presenting me with his duplicates.

WE know nothing of the shells that occur on the eastern coast of Africa, until we arrive at Zanzibar and Mosambique: from these coasts we have received a few interesting varieties, and immense quantities of the commonest class of cowries, which are brought home by the ships

that go on these coasts for *right* whales. A few rare fresh water and inland productions, as well as corals, have also been collected. The jaws of the whale in these seas are often covered with curious barnacles; numerous chitons may be found, with limpets, amongst the rocks.

THE Comora islands, particularly Johanna, abound in common cowries. I have seen large heaps of them shovelled up at low water; and, as a peculiar variety, which is found here, passes for currency in Africa, small vessels take in or load considerable quantites of them.

THE Isles of Bourbon and France are highly and deservedly celebrated for shells—and it may be remarked, that whatever is produced there, is the most beautiful of its species. A curious distorted land-shell, which is scarce and extremely interesting, is peculiar to these islands. The officers sometimes amuse themselves in fishing for these beautiful productions; both ladies and gen-

tlemen from thence have made considerable profit by the shells they brought with them.

THE ship which took out the first settlers to Algoa-bay, on her return home, brought me many interesting land and fresh water shells, which the commander was kind enough to collect. On the coast about the Cape, as well as on the rocks and islands in the bays, some good varieties have been found, particularly limpets and large zebra-striped land-shells, which are tender, and require great care in packing.

I HAVE now taken the navigator through most of the seas, and have briefly enumerated the places where he is most likely to discover fine and rare shells. I shall conclude this part of my subject in his own language, advising him to keep a *good look out*.

## AMBERGRIS.

AS this substance is a marine production, I have thought proper to introduce some account of it here.

THIS delicious perfume is, without doubt, the produce of the sperm whale\*, and probably is the result of a disease in the digestive organs. Captain Poole, in pushing a lance through the blubber, and near the passage of the abdomen, felt it strike against something hard, which he thought was a stone, and in drawing it out, the edge was found to be broken. Having cut into the intestine canal, he perceived that the lance

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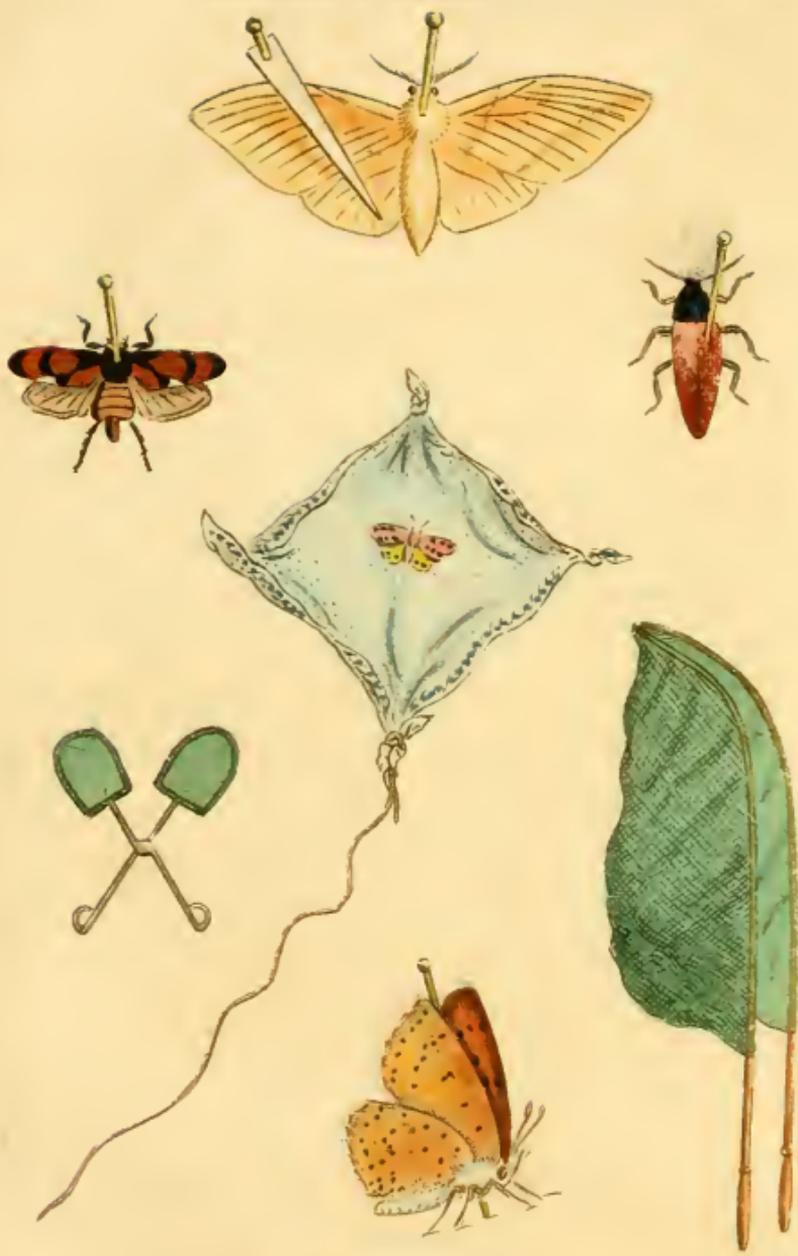
\* The fibres of the skin from the head of this whale, are of great tenacity; excellent ropes may therefore be manufactured of them, especially for situations exposed to much friction: it is said that they are stronger than catgut, and make better fiddle-strings.

had struck against two large pieces of Ambergris. There is every reason to suppose, that this substance sometimes stops up the passage of the abdomen, and ultimately occasions the death of the animal.

MANY other instances have have been recorded of Ambergris having been found in the sperm-whale, and also on the coast, after a sick fish has been seen near the shore.







Mawe 149 stand.

## CHAPTER III.

### *On Insects.*

THIS branch of natural history has received considerable attention; but to obtain even a slight knowledge of the subject, much time and great labor are required. The collecting and preserving of insects, is also attended with no small trouble; and what is still worse, it seldom repays those who collect with a view to profit.

We shall proceed to describe the implements that are used, and the methods that are adopted in catching insects at rest or on the wing; but

first, let me advise the collector to handle them as little as possible, least he should disturb or destroy the delicate down, to which many of them owe their greatest beauty. Before he proceeds on his search, he will do well to provide himself with a stock of pins, with which he is to pierce the insects he may catch, and a small box lined with cork, or soft wood. With a pair of gauze forceps he may catch insects when at rest; but if they are on the wing, and within reach, he must use a hand-net, which may be made of any light substance, as a piece of gauze about a yard and a half square, fastened to two pliable sticks or canes, with which it may be made to open or collapse at pleasure. If they are beyond his reach, he must use a casting net, which I have tried with considerable success. It may be made thus: tie a weight, (a halfpenny for instance), in one of the corners of a piece of gauze, (about the size of a common handkerchief), a sixpence in the second corner, and a bit of very light wood in the third: the

inequality in the weight and bulk of these substances, will occasion the gauze to open when thrown from the hand: a thin piece of twine, a yard or two long, may be tied to the remaining corner, by which the net may be drawn in at pleasure. The art of spreading it to its full extent may be acquired with very little practice.

HAVING caught the insects, the next thing is to preserve them. Moths, butterflies, locusts, and others of this class, may be killed by nipping them across the thorax. Wasps, bees, hornets, &c. when secured, may be treated in the same way, guarding the hand with a handkerchief; or they may be squeezed with a pair of forceps: but if the collector be not careful in performing this operation, he will in all probability have cause to regret his want of caution. Or they may be killed by putting them in a glass immersed half way up in boiling water, and covering the top close; or by placing them on a plate under an inverted tumbler, and setting it before

the fire for a minute or two. I have known gentlemen to put colleopterous insects, as beetles, wasps, &c. into a common pocket bottle half full of spirits, with which they have travelled some days, and brought them home quite perfect.

THE intestines of butterflies and large insects should be extracted, which may be done by cutting a slit with a fine-pointed pair of scissars, at the extremity of the body, and gently pressing them out; a small roll of cotton or paper, dipped in the preventive soap, should then be introduced, so as to extend the body to its natural form.

INSECTS have been frequently rendered less interesting, by packing them in cotton, which is perhaps one of the worst substances that can be used for this purpose, as the very delicate claws, feelers &c. of some species, are certain to become entangled in it. The best method is to stick the pins (on which they are fixed) very

fast into the bottom, sides, and top of the box I have before described. When the box is full, and the insects quite dry, a small portion of camphor should be placed securely in the corners, and the openings should be closed with pitched canvass, otherwise the ants, which are so numerous in hot countries, would enter and devour the contents.

THE finest insects are brought from the tropical climates. Brazil, India, Java, China, &c. produce beautiful species.

THE insects from new countries, and those islands and remote parts which are seldom visited, cannot fail of exciting interest, either by their beauty or rarity.



## CHAPTER IV.

### *On Birds.*

MANY species of Birds, of surpassing beauty, have been brought by travellers from foreign countries, and have been domesticated here; and the skins of others, (whose tender nature unfits them for our colder climate), have been brought home and preserved. Thus, to a great extent, we possess the fine varieties of the feathered creation, belonging to tropical climates.

THE process to be observed in taking the skin from birds, is not at all difficult; but it would greatly facilitate the acquiring dexterity in the art, to see the operation once or twice performed by a skilful practitioner.

BEFORE the operator proceeds to remove the skin, he should place the plumage as smooth as possible, and carefully clean it from any spot of blood or dirt that may appear upon it: a little soft linen rag, or paper, should be placed in the mouth, which should then be sewed or tied up, to prevent any blood issuing from it. The bird should now be laid on its back, and an incision made with a knife along the breast bone, (where the feathers divide), as far as the vent, taking great care not to cut the flesh: an ivory paper-knife, or the fingers, may then be introduced, to separate the skin from the breast \*. The thighs being gently forced up, the flesh should be cut off, leaving the bone quite clean. The skin may now be easily separated from the body down to the rump, which must be cut off; then draw it over the back, as far as the wings, which cut

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\* Some absorbent, as chalk or flour, should be applied occasionally to the inside of the skin, to prevent its adhering to the body.

off close to the body; then, pushing the joint from the outside inwards, the skin will easily separate from the flesh, which must be scraped off the bones. It may then be pulled over the neck and part of the head, as far as the eyes; the head must be pressed inwards and separated from the neck. In the back of the skull a hole should be made with a penknife, of sufficient size to admit an instrument resembling an ear picker, but rather larger, with which the brains, eyes, tongue, and the fleshy membranes may be extracted, taking care not to disturb the bones of the head. The skin must be very carefully examined, (particularly about the vent and rump) and every piece of flesh or fat removed, and the feathers placed in exact order.

As the skin in this state is extremely susceptible of enlargement, the greatest precaution must be used not to extend it. The preservative powder, or soap, is now to be carefully introduced into every part; and if any appearance of

moisture remains, it should be completely absorbed by a linen cloth, and the powder again applied. It is necessary to observe, that the skin must not be hung up to dry, unless a string is passed under it, from the rump to the head, so that it may hang on the string, and not by any part of the skin, which would otherwise stretch beyond its natural size.

THE skin may now be prepared for packing, by placing the wings and extremities in their proper positions, and laying smooth the plumage: a little cotton may be put in the inside, and sewed up, to preserve the form, after which it should be carefully folded in paper, or placed between the leaves of a book, and kept free from damp.

## CHAPTER V.

### *On Reptiles.*

IN treating upon this subject, I shall principally confine myself to the methods that may be employed in catching and skinning reptiles.

THE fangs with which they defend themselves, or attack their victims, are, in venomous serpents, placed in the outside of the jaw, and so fixed, that they may be erected or depressed at pleasure; they are mostly from half an inch to three quarters long, with a very small slit at the point, and generally a little crooked.

SERPENTS may be caught with a wire-noose, fixed to the end of a pole, by passing it over their heads. Thus I have brought them to a convenient place; and, with a pair of forceps, a bit of pointed wood may be introduced into their mouths, to extend their jaws, in order to examine them. They are easily killed by a slight blow on the head.

THE best method of taking off the skin, is to make an incision at the vent, a few inches in length, or even up to the head. The skin may then be separated, by introducing the fingers betwixt it and the body; or, if the scales are not large, it may be skinned in the same manner as is commonly practised with eels. The body must then be cut off from the head, and the brains, together with the eyes, and all the fleshy parts must be taken out, without disturbing the fangs, jaws, or tongue. The skin may then be pulled down as far as the tail, which should be

cut off an inch or two from the extremity. The body may be preserved in spirits, in order to show the moveable ribs and flexibility of the spine.

THE skin, thus freed from the body, must be examined and cleared from flesh and fat, and the head cleaned as well as possible. The preservative powder may be used where any muscular ligaments or flesh remain, and the soap may be applied to the skin, which must then be hung up in the air. If, after a day or two, any moisture should appear, it must be absorbed by a cloth, and more powder applied, until every part is dry. In these operations, the scales, &c. should be attended to, and if displaced by skinning or otherwise, they should be pressed into their exact position, before the skin is perfectly dry.

LIZARDS, alligators, frogs, &c. &c. may be

treated in the same manner. When the operation is completed, the skin should be rolled up, and packed securely in paper, and afterwards sewed up in canvass.

THE spine of a common sized serpent may be easily broken with a sharp blow from a stick ; after which, I have witnessed them very vicious, boldly attacking and biting whatever was opposed to them.

I ONCE drew a rattle-snake to a hog, which devoured it, notwithstanding its bite.

VERY large serpents, such as are thirty or forty feet long, are formidable beyond any ideas we can entertain. I have found it difficult to disengage one, not even four feet in length, that had coiled itself round my arm, when suspended by a wire to a nail in my door.

## CHAPTER VI.

### *On Quadrupeds.*

AS it is often impossible to convey home the quadrupeds a traveller may meet with in visiting foreign lands, it becomes necessary to take off and preserve their skins; many of which, especially those from newly discovered countries, interest us extremely, either by their beauty or their novelty.

THERE are few who have not seen a poulterer take the skin from a rabbit, or a butcher perform the same operation on a sheep or ox: a lesson from either of these persons would be of use to the traveller. In taking the skin from large or

small animals, the same process is required. The operation must commence by making a slit, of any length, along the belly, so as to give the greatest facility in using the fingers, or a knife, to separate the skin from the muscles, &c. The legs of small animals may be pressed inwards, and the skin stripped over them, inside out, great care being taken in passing the joints: the feet and tail must be preserved as well as possible, by cutting out the flesh, and preserving the hoofs, nails, or claws. The skin, freed from the extremities, and separated from the abdomen, may be stripped over the back to the neck. Particular attention will be required in stripping it from the neck to the ears and the nose, from the latter of which it must be cut off at the termination of the bone, carefully preserving the extremity. The skin, if necessary, may be cut under the jaw, as it can afterwards be sewed up. The head of the animal may now be cut off, at the back of which a hole must be made to extract

the brains ; it being desirable, in small animals, to disturb the skull bones as little as possible. The ears may be cut off close to the head, and afterwards cleaned. The eyelids, lips, jaws, and teeth must be preserved ; and every thing done to make the animal appear as if alive.

It is well to keep the carcass as whole as possible during the operation, to prevent the flowing of blood, &c. which would prove troublesome to the operator. Towels and saw-dust should be at hand, to be used when wanted.

THE skin, now free, must be wiped clean, the membranous and fleshy parts taken away, and the extremities, (particularly the head), kept as entire as possible, especially in small animals. The skin being now perfectly cleaned, may have the preservative soap and powder applied all over it: flax or bits of rag, well anointed with the soap, may be placed in the head, nostrils,

and about the hoofs, claws, and tail. It should then be laid out to dry for a day or two; and, on a second examination, where any moisture appears, it must be absorbed by a cloth, and more powder applied, until it is quite dry.

THE skin may now be stuffed with cotton, &c. and sewn up, to keep it in some degree in its natural form: or it may be rolled up and packed in canvass, and stowed away in a case or barrel. The hides of large animals, as oxen, seals, &c. &c. are often brought from remote parts with no other preparation than salt.

WHEN the preservative powder is used, the operator should be very careful not to leave any of it about, least a domestic animal should get to it and eat it. I once lost a beautiful monkey, which was poisoned by licking up a portion that was incautiously left.

THE learner will do well to practise on a squirrel, rabbit, fox, &c. and then he will be prepared for the practical difficulties he may meet with in taking the skin from the feet, head, and tail of other animals. The remaining parts of the operation are very easily performed.



## CHAPTER VII.

### *On Plants, &c.*

THERE is scarcely a more interesting science than that of Botany; and though the traveller may not be a professed botanist, yet he may be pleased with the endless variety of beautiful plants and flowers which every country produces, or gratified with the opportunity of enriching our gardens and fields by the introduction of new varieties. How much has our agricultural interest been benefitted by the inportation of varieties of grass, as lucern, clover, &c. and what do we not owe to him who first brought hither the potatoe? The Japan rose, and many

other exotics agree so well with this climate, that they may almost be said to be naturalized. The voyager, therefore, in distant climes, should not disregard any vegetable production. The corn, pulse, and roots that are used abroad in domestic economy, are highly worthy his attention, in a commercial point of view. There are two public institutions in this country for the reception of whatever is brought from abroad. The board of agriculture, for grass and whatever belongs to the economy of animals or man; and the horticultural society, for seeds or cuttings of fruit trees, exotic plants, &c. where every attention will be paid to their growth and culture.

Woods, bark, (dye woods), many are highly valuable in commerce, and much in request.

Lichens, (moss), some produce fine and permanent dyes, as the orchellâ, and are very valuable; others are medicinal, and continually in request.

Gums—Their general use and value are well known; they always form an article of commerce, and are used for an infinite number of purposes.

Seeds of every sort, and any remarks relative to the plant, will be interesting. They must be gathered and kept dry.

Plants, leaves, or flowers, may be preserved between the leaves of a book, forming a *hortus-siccus*: these are collected and preserved with very little trouble, and may be considered in two points of view:—First, as an agreeable amusement; and next, as giving that information which may become highly beneficial to society.



## CHAPTER VIII.

### *On Minerals.*

IT may be necessary to say something on minerals, in the pursuit of which the greater part of my life has been employed. A traveller who is unacquainted with metals, should procure a few in a rough state, and, by comparison, he would soon know how to discriminate one from the other. A small book which the author published, called "FAMILIAR LESSONS ON MINERALOGY," with colored plates, would greatly facilitate his inquiries, and cannot be too strongly

recommended to those who are desirous to know any thing of minerals.

PIECES of rocks, with the names of the places from whence they came, would be always interesting, as we are unacquainted whether many islands, head-lands, &c. are granite, limestone, or volcanic. Collections of rocks, with particulars concerning them, are highly desirable, in order to determine the relative connection of mountains, islands, &c.

THE soil at the bottom of streams or rivers, if gravel, generally partakes of interesting subjects. In India, precious stones occur in such soil: in Africa and South America, gold, platinum, diamonds, rubies, sapphires, and topazes, belong to, and are always found in gravel beds, alluvial soil, as is Tin, in the island of Banca. Silver, lead, copper, iron, &c. occur in veins.

WHEREVER there are mines, (subterraneous excavations), metals of some sort or other are produced; and it surely is not burthensome to the intellect to know lead ore from copper, or silver from lead, or gold from iron, or diamonds from pebbles.

PERMIT me to advise the traveller to look into the book of nature, which is always open, and learn what he can. A little information on this head may prove highly advantageous, as the wealth of nations mostly depends on the produce of their mines. It is earnestly to be recommended, wherever he goes, to bring from thence some of the rocky substances, and if any other present themselves, he should endeavour to possess himself of them, which he might examine at leisure, with the simple instrument the blowpipe, the use and mode of managing which is explained in a

small Treatise\* intended to accompany the Lessons on Mineralogy.

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\* How to detect gold when adulterated, is particularly explained; the book will be found useful to those who go on the coast of Africa, South America, China, &c.

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