

MARY HOWITTS
Illustrated
LIBRARY FOR THE YOUNG

Mary Frost -

a present from Blackpool

June - 1863 -

John

My dear friend

1862

MARY HOWITT'S

ILLUSTRATED

LIBRARY FOR THE YOUNG.



CONTENTS.

- | | |
|---------------------------|-----------------------------------|
| 8. Shells and Corals. | 11. Bears. |
| 9. China and the Chinese. | 12. Dogs. |
| 10. Household Pets. | 13. A Peep into the Insect World. |

LONDON: W. KENT & CO., 51 & 52, PATERNOSTER ROW.

1856.

MARY HOWITT'S

ILLUSTRATED

LIBRARY FOR THE YOUNG



CONTENTS.

- | | |
|----------------------------------|---------------------------|
| 11. Trees. | 8. Shell and Coral. |
| 12. Dogs. | 9. China and the Chinese. |
| 13. A Trip into the Inner World. | 10. Household Tales. |

London: W. KENT & CO., 51 & 52, PATERNOSTER ROW.

1856.



CROWN VOLUTE, IMPERIAL VOLUTE, TROCHUS FROM THE SEAS OF NEW HOLLAND, &c.

SHELLS AND CORALS; THEIR BUILDERS AND INHABITANTS.

CONCHOLOGY is the name of the science which teaches the arrangement of the shells of the molluscos or soft-bodied animals into their classes and species. It is one of the youngest branches of natural history; that is to say, until within a comparatively few years, shells were scarcely regarded as objects of scientific interest. Formerly, the collector only cared to possess such as were either rare or beautiful, and great sums were paid for single shells which furnished perfect specimens of these coveted kinds. The possessor of these costly treasures did not care at all to know anything about the curious little animals which had fashioned and lived in such beautiful abodes, but which, in fact, were no other than a sort of outer skeleton of the creatures themselves, and could not be properly understood apart from them. In a while, however, science—that true interpreter of the wonders of creation—stepped in, and showed him that the common oyster, the mussel, the periwinkle, nay, even the snail, were still more marvellous and still more worthy of our attention than the shell itself; that, in truth, the shell was nothing if the dweller within it were not understood. “A collection of shells,” says a clever writer on this subject, “is a beautiful and surprising sight; beautiful, because no more exquisite examples of elegance of form and brilliancy of colour can be found through the whole range of natural objects; and surprising, when we consider that these hard and durable relics were constructed by soft and fragile animals—the most perishable of all living creatures. Still more surprising is such a collection when we remember the endless variety of pattern and sculpture which it displays, for there are known to naturalists more than fifteen thousand perfectly distinct kinds of shells, each presenting some peculiarity of form or of ornament which distinguishes it from every other kind. Then again, while a great many species never vary at all from the design which we may suppose was first given to them, others seem to have the liberty allowed of changing or varying their appearance, so that it is difficult to find two of the same kind exactly alike. Some in the coiling of their whorls obey the most exact geometrical rules; whilst others are twisted and twirled into fantastic likenesses of cornucopias and trumpets, without regard to symmetry or order. Yet every one of these fifteen thousand and more kinds has a law which every individual of the species implicitly obeys, and has obeyed ever since the first shell-fish developed itself at the mandate of God on the fifth day of crea-

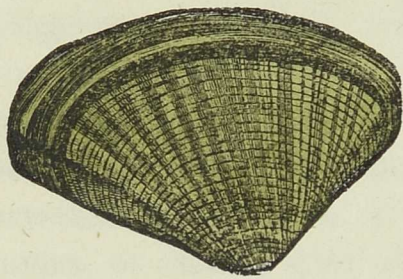
tion ; before man was called into being. The shell," continues the same writer, "is but an example of a process at work equally in the animal and the vegetable kingdoms. A shell, whether simple or compound in form and colour, is the completed work of the animal itself by many organs provided by nature for this purpose, in innumerable minute cells, two thousand of which would scarcely occupy an inch. In the hollows of these microscopic chambers is deposited the crystalline carbonate of lime, which gives compactness to the beautiful durable house, or rather, coat of mail that protects the simple mollusk. How astonishing is the reflection that myriads of exactly similar and exceedingly minute organs should so work in combination as to present an edifice rivalling, nay, exceeding in complexity of details and perfection of finish, the finest palaces ever built by man. But throughout all nature it is the same. The flower of the field,—the shell of the sea,—the bird of the air,—the beast of the forest, and man himself, are so many portions of the one wonderful edifice, whose masons we may discover at work through the aid of science, but whose Architect is beyond the reach of the highest intellect."

In shells consisting but of one piece, of which the snail and common periwinkle may be taken as specimens, the organs of the animal which supply the materials for its formation are placed in that portion of the mollusk which is called the "collar;" and in the margins of the "cloak," or "mantle," in those whose shells are bivalves, or consist of two parts, as oysters, mussels, &c. The process of the formation of the shell may be readily observed in the common shell-snail without the slightest injury to the creature. If a little piece of the shell be broken off, the snail will within four-and-twenty hours cover the opening on the inside with a thin coating, as if she had drawn a thin muslin curtain across it. In a few days this thin coating will thicken and harden, as if she had built up the wall or put up a wooden shutter. But as she works from within, the mend on the outside is lower than the original shell, and the broken edges remain.

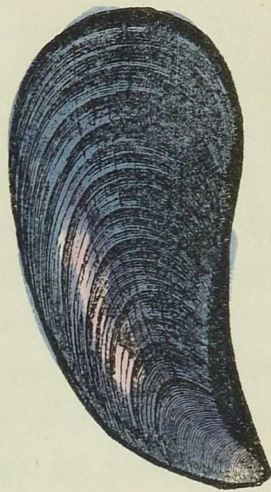
The substance which forms the shell flows through those minute cells in the mantle which we have mentioned, in a fluid state like liquid glue, and very soon hardens into shell.

The structure of shells is of two kinds, either *crystalline* or *granular*. The crystalline shells are called *porcellaneous*, or resembling porcelain, and of these the common cowrie shell is an example. The minute particles which compose the substance of the porcellaneous shells may be either what are called *rhombic* or *prismatic*. It is difficult to describe this, but it simply means that they are put together in the most exquisitely scientific manner, so as to produce the greatest possible strength, and to render it very difficult to break them. The prismatic crystalline shells greatly resemble mineral productions.

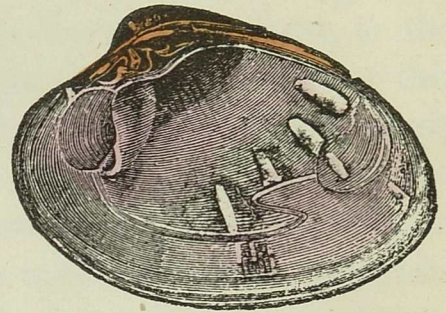
The structure of the granular shells is composed of layers, and is equally solid and compact as the other. To this texture of shell belongs, however, a pecu-



PEPPER MACTRA.



SHELL OF A MUSSEL.



INTERIOR OF A MUSSEL SHELL.



ASTRÆ HYOTIS AND SPONDYLUS DELESSERTI, NATURALLY UNITED—SNAIL SHELL—EGG, SHOWING THE SNAIL SHELL IN ITS EARLIEST STATE, &c.

liar pearly, rainbow lustre, caused by the effect of the light falling upon minute parallel grooves formed by the regular deposits of the shell. This lovely interior covering, called *nacre* by the learned, and known familiarly as "mother of pearl," from the idea that it was the substance from which the pearl itself is made, is one of those myriad instances of the affluence of beauty and grace which God has given to his creation, not so much to supply any want of the creature itself, but as it were, from that abundance of goodness and beauty which is poured out like the river of his love over all creation.

The growth of these granular shells, as in the oyster, is marked by *striae* or streaks, fine thread-like lines which show the successive additions made to the shell. The edge or opening is more or less completely formed, and in their earlier stages forms a thin border which thickens by age. The age of the oyster is told by its number of streaks or layers, each one of which, like the concentric circles in the tree, marks a year's growth. Oysters are said to attain perfection, or their full growth, in from five to seven years. These layers are up to that time, regular and successive; the oyster is then in the prime of life, after which, as he declines into age, they become irregular and are piled one over another. It is supposed from the great thickness of some oyster shells that this mollusk may attain to a patriarchal length of life. This is possible from the fact of such enormously thick oyster shells being frequently found in fossil oyster-beds. These were, of course the Pre-Adamite oysters that congregated, lived, and died in extreme old age, before oyster-eaters were in existence.

When the inhabitant of a spiral shell retires within its dwelling, the part of the body situated at the opening would be exposed to injury had not nature taught it to provide against such danger. For this purpose it constructs a sort of door of shell which exactly fits into the opening, and is called by the learned the *operculum*, or lid. Sometimes this lid, door, or shutter, whichever you like to consider it, is fastened to the shell by a hinge, so as to open or shut at pleasure. When the garden-snail, for instance, which is a mollusk as well as the oyster, retires into the inmost recesses of his shell for his winter repose, he forms a second partition within the first or outermost, so as to make all doubly secure. And when the pleasant spring time comes and wakes up the old snail in his inmost chamber, he exudes, or sends out a fluid which softens the fastenings of his partitions, pushes them down, and so walks abroad.

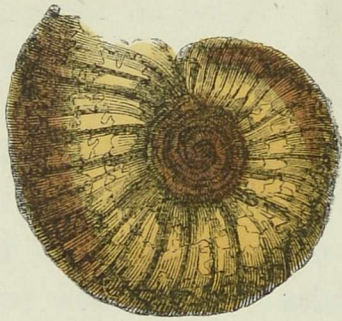
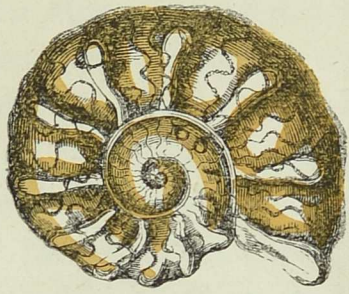
The shells which figure on the page opposite to page 16 are all univalves, or formed of only one piece, with the exception of the large one on the left hand, which is represented with its byssus, or cable, by which it attaches itself to rocks. This cable is formed of threads which the creature throws out in a glutinous state from organs provided for this purpose; in the mussel it is known as the beard. The helmet-shell, as it is called, just below it, is one of the tribe used for cameos, which, no doubt, are familiar to you as broaches. These shells being much in

demand for that purpose are become an article of commerce. The small prickly shell called the *murex* is common to the seas of China, and a species of the larger shell, which is somewhat rare, and of a brown colour, is employed in all the churches on the coast of Malabar.

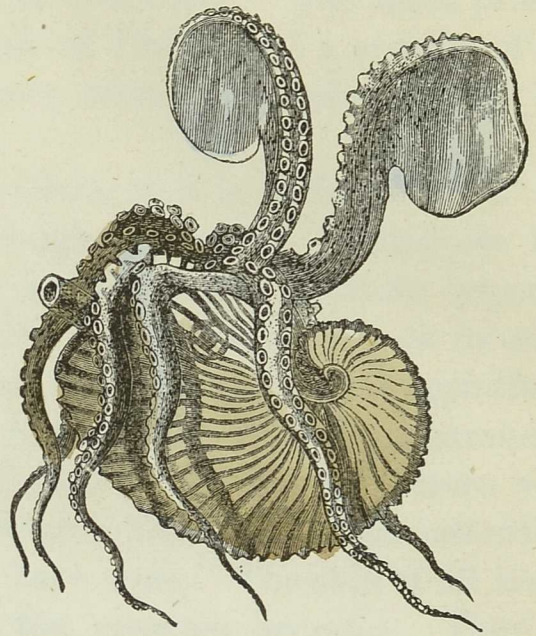
Our first plate represents, firstly, the *crown volute*, as it is called, one of the largest of the univalve shells, and which is brought from the Philippines and Moluccas. The shell on the right hand, is the *imperial volute*, or crown imperial, much valued for its beauty, and ornamented with a crown of points on its anterior or upper end, whence its name. The other shells are the *trochus agglutinans* and a *trochus* from the seas of New Holland. Such is the external appearance of some of those wonderful edifices in which dwells and works the still more wonderful mollusk whose peculiar construction deserves a little more of our attention.

Some of the mollusks have heads and others have none. The skin of all is soft and covered with a slimy, sticky matter, which the creature secretes. They are very sensitive to touch, and whenever disquieted withdraw themselves into their shells. The bivalve shells, or shells which consist of two parts, are fastened together by strong muscular hinges by which the creature can open or shut its two great doors at pleasure.

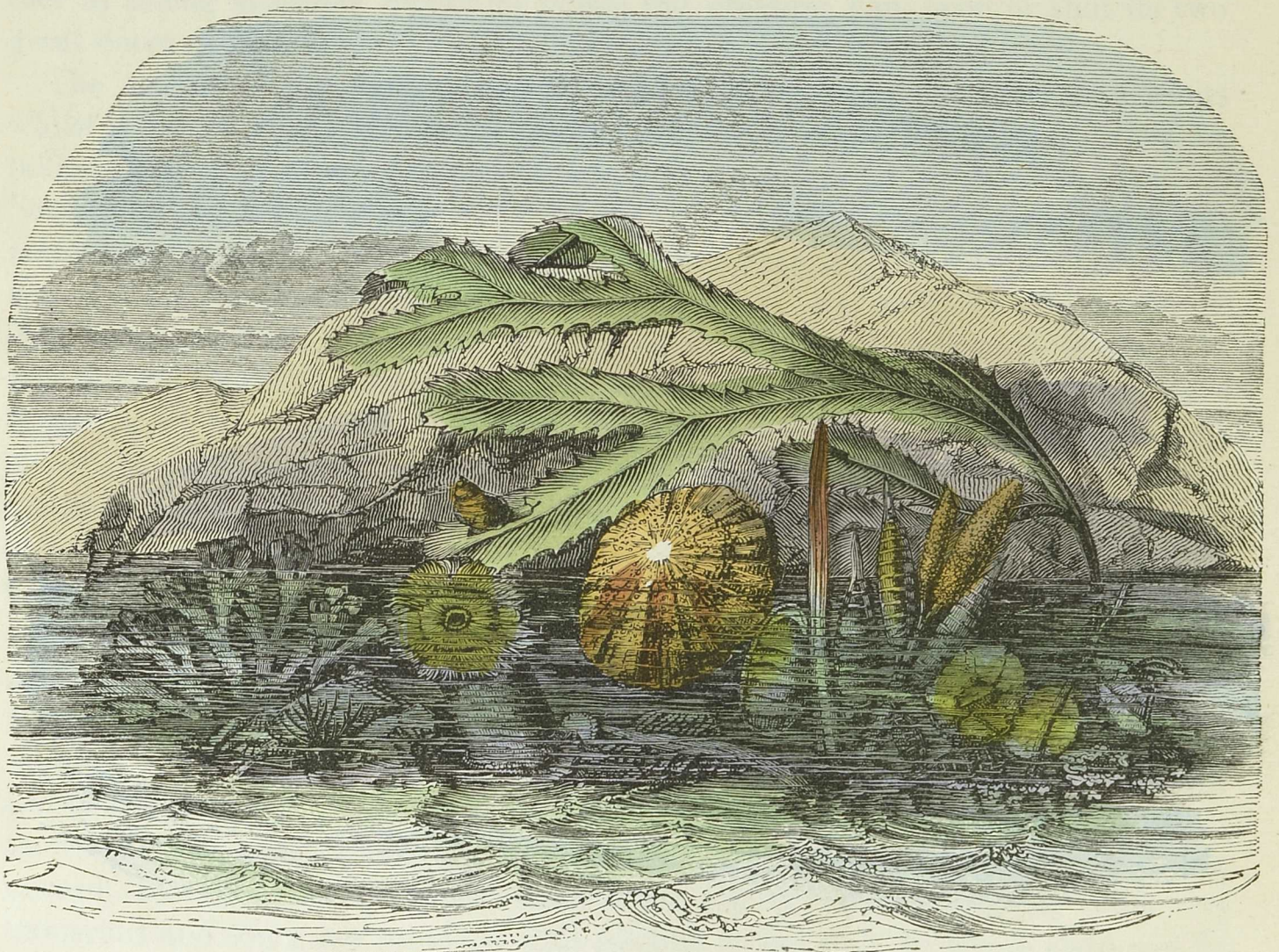
The mouth of the mollusk is very various in its form, and must be curious whilst it has no head ; but as the mollusk like every other living thing exists by taking food, it is never deficient of a mouth, even though the head be wanting. Sometimes the mouth is a little furrow or groove placed in different directions ; many have no teeth, others have horny jaws and long tongues set over with teeth, and of these we shall speak more particularly when we come to the teredo or ship-boring mollusk. In some the mouth is round and curiously fringed, in others it appears in the centre of a semi-circular hood. Some of the mollusks are furnished with a proboscis by which they seize their prey, or with which they pierce the shells of other mollusks, and suck up their flesh. Whelks treat the oyster in this way, and star fishes, whose mouths are in their fingers, poke them into the open shells of the oyster, and treat him no better. Some of these proboscis-mouths are set round with strong hair. When a mollusk is so fortunate as to possess a head, his stomach is frequently placed there ; and if he have none, his stomach, which must lie somewhere, may perhaps be found in his liver. Nor is the head the constant seat of the brain ; the brain is more frequently in the stomach ! Things are very queer among the shell fish ; nor are we yet at the end of the wonders. Out of the head of some of the mollusks proceed their arms, their organs of touch, which are very sensitive, and have the power of shooting inward, like those of the snail ; these arms are of various lengths, often very numerous and some are provided with suckers at the end, by which they can fix themselves to a body and hold themselves fast ; others again contain the eyes of the creature. If you watch the garden snail walking abroad, you may see this ;



AMMONITES.



THE ARGONAUT.



THE RISING WATER.

and it is just the same with all his sea-brethren. Look how cautiously he picks his way, putting forth gently his arms, horns, *tentaculæ*, or feeders to examine every object that comes in their way; in fact they appear not only to contain his eyes but all his other senses. The actions of the snail, says the clever writer whom we have before quoted, "show all the delicate perception and judgment with which a blind man explores with his staff the ground over which he has to pass; only that the mollusk has the advantage over the man, of carrying an eye at the end of his staff."

Of the feet of the mollusks we have not yet said anything, but the subject is important, as the circumstance of having feet divides the mollusk race into one portion and having no head into another. The lucky mollusk that has a head has also feet; but his feet are queer enough, for they are a sort of flat disc or plate, sometimes a furrow placed on the outside of his stomach, and upon which he creeps, climbs, or attaches himself to anything, as may be easily seen in the garden snail. Mollusks possessed of these curious feet are called *Gasteropodes*; and they always inhabit univalve shells. Possessed of heads and feet they are considered as one degree higher in organisation than their brethren, the *Acephales*, who have no heads, and live in bivalve shells. In some of the headless bivalves the eyes are placed in a very extraordinary position, being ranged in shining rows, like a little row of bright buttons, on the borders of the creature's cloak or mantle, just within the margin of the shell, and not a bad situation either, for he can thus peep out of the tiniest opening of his bivalve and see what is around without any ado. Nor does there appear to be any doubt among naturalists but that the mollusk can smell, though where his olfactory, or organs of smell, are placed is not exactly decided; some think that their whole skin may be a great nose; others maintain, as Professor Owen, for instance, with regard to the nautilus, that they are furnished with proper and distinct organs for smelling. And it probably is so. As to hearing, there is no doubt about that; for next to the sense of touch, which is very acute in the mollusk, his sense of hearing is equally so; and a very curious, and wonderful, and active little piece of mechanism is this ear of the mollusk, and quite as ingeniously and perfectly made to answer its purpose as the finely organised ear of man.

So much for the senses of the mollusk.

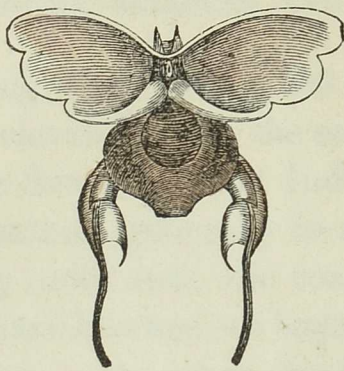
Our fourth cut exhibits in the first place a madrepore, or arborescent, that is, tree-like coral, growing on the shell of an oyster. These madrepores, or corals, are the products of minute zoophytes, or creatures half animal and half plant, and which bear among naturalists the name of *polypiaria*. They are often adorned with beautiful colours, and require the influence of light and the rays of the sun for their operations; for this reason their labours are never carried on in the dark and stilly depths of the ocean. Corals, however, do not exist merely in this small tree-like form, but frequently in vast beds, often upwards of one hundred feet in thickness, under water, thus forming sunken reefs; while again, on the contrary, as on

the shores of Timor, near Coupang, they form a bed from twenty-five to twenty-eight feet in thickness, over rocks elevated above the sea. These rock-forming madrepores are most abundant in the South Sea and Indian Ocean. Coral reefs are numerous in the Red Sea, and extend generally in a straight line parallel with the coast. In many places they unite with the coast, which they thus render inaccessible, and in this manner have blocked up bays and harbours, which vessels could freely enter in former times. In other cases the reefs are unconnected with the shore, and lie at several miles distance. Towards the sea they sink very abruptly, and gradually sloping on the side towards the land, form straits of smooth water, which vessels of moderate burden may enter. Besides these larger reefs are others of variable character, which, forming sunken rocks, are dangerous to the navigator. Coral reefs surround, more or less, the Isle of France, the Papuan, the Marian, and the Sandwich Islands. In the straits of Messina, in the Mediterranean, coral rocks lie from three to six hundred feet below the surface of the water. The coral here grows to the length of about twelve inches, and requires eight or ten years to come to perfection. In fishing for this coral, an instrument composed of two heavy beams of wood, placed at right angles, and weighted with stones to sink it, is made use of. Hemp and netting are attached to the under side of the beams, and this apparatus is let down from a boat by a strong rope to the places where the coral is most abundant. The branching form of the coral becoming entangled in the netting and hemp, is broken from the rocks and drawn up to the surface of the water.

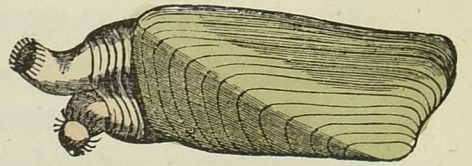
The shell upon which the madre pore is here represented as growing, is one deserving of especial notice, being no other than that of the pearl oyster. We have spoken before of that beautiful nacreous lining of the shells of certain mollusks, called mother of pearl, and which has ever been an object of attraction both to the savage and civilised man. All nacreous shells are now eagerly sought for, wherever found, as articles of commerce. The *haliotis*, as it is called by the learned, the sea-ear familiarly, is collected from the seas surrounding the Channel Islands, where the fish is eaten as food, and the shell sold for the decoration of papier-mache works, and when thus made use of, its brilliant colouring is no doubt familiar to all. The larger and more splendid kinds of these beautifully adorned shells are gathered for the same purpose on the shores and islands of the Pacific Ocean. These supply the deep-coloured and more intensely hued green and purples of the mother of pearl; the brighter and paler kinds are derived from the shells of the pearl-oysters, most of which are obtained from the tropical seas. These beautiful shells, the *haliotides*, specimens of which may be familiar to you under the name of Venus's ear, belong to the *gastropod* genus, and are among the most remarkable of that class. All round its foot to its mouth, which is a short proboscis, is arranged an ornamental sort of border, or membrane, cut out like little leaves, and urnished with a sort of double fringe or frill; its tentacles, or feelers, are



BYSSUS FOR THE ATTACHMENT
OF A SHELL.



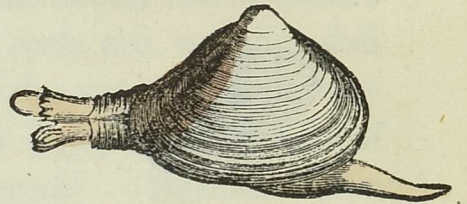
THE HYALÆ.



PERFORATED SHELL.



RAZOR SHELL.



SIPHONS OF A MOLLUSK.



CORAL FIXED ON MOTHER OF PEARL OYSTER SHELLS.

supplied with beautiful eyes; its mantle is divided on the right side to admit the water which it requires through two little holes in its shell. Living under its broad and open shell, as under a shield, it fixes itself with its foot to the surface of rocks near the shore, where it creeps about, feeding on herbage, which, according to some naturalists, it seeks for on summer nights. Excepting in the colder latitudes, the fish are common to all seas, but the largest and finest are natives of the tropics. Some of these shells are nearly as large as a plate in size, and are perfectly dazzling with the splendour of their colouring. Empty shells of the species found on the coasts of the Channel Islands, are not unfrequently washed up on the southern shores of our island.

The nacre of the pearl itself is the same as the substance of these shells; hence, if a pearl be cut through, it is found to consist of several coatings or layers of this matter placed in regular succession. The origin of the pearl is well worthy our attention. If anything goes wrong with the mollusk, if any particle of that chemical carbonate of lime, which is provided for the formation of its shell, should become displaced, or stationary where it is not wanted; if a grain of sand, or a particle of broken shell lodges anywhere to its bodily discomfort, the wise and philosophical mollusk does the very best that can be done under such circumstances. Instead of allowing troubles and trifles like these to fret it to death, or to destroy its power of life enjoyment, it encases them with the balm which nature has given to it for all such ailments, and thus transforms its troubles into treasures, and its pains into pearls. Sensible mollusk, most worthy of imitation, cannot we take a lesson from thee?

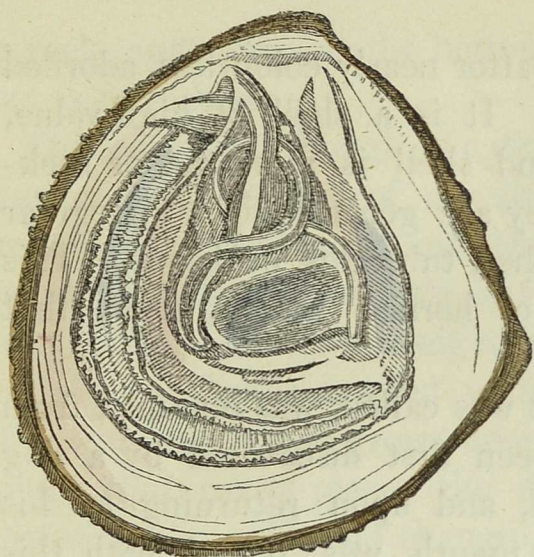
Pearls have been held in the highest value from the most ancient times. Job says, speaking of the incomparable treasure of wisdom, "No mention shall be made of coral, or of pearls, for the price of wisdom is above rubies." Neither can Solomon find anything more precious than pearls by which to extol the value of wisdom; three times he used them as a simile for the rarest of all human gifts, and of a good woman, he says, She is hard to find, and of as great value as pearls. The Saviour, too, when exhorting his disciples not to expose their knowledge of divine truth to the insults of the unworthy, bade them not to cast their pearls before swine. Pearls may well therefore be regarded as of great value.

A pearl, the weight of one carat, or four grains, is worth eight shillings, but should it weigh four carats, it is estimated as worth £6 4s. Of the most celebrated ancient pearls may be mentioned one valued by Pliny, the Roman naturalist, at £80,000 sterling. Julius Cæsar is said to have presented one to Servilia, the mother of Brutus, the value of which was £48,457; the pearl earrings of Cleopatra were estimated at upwards of £150,000 value. In 1574, a pearl, the size of a pigeon's egg, was brought to Philip II., which was valued at upwards of £13,000; and another, said to be in possession of the Emperor of Persia, and which was purchased from an Arab in 1633, was valued at £110,000.

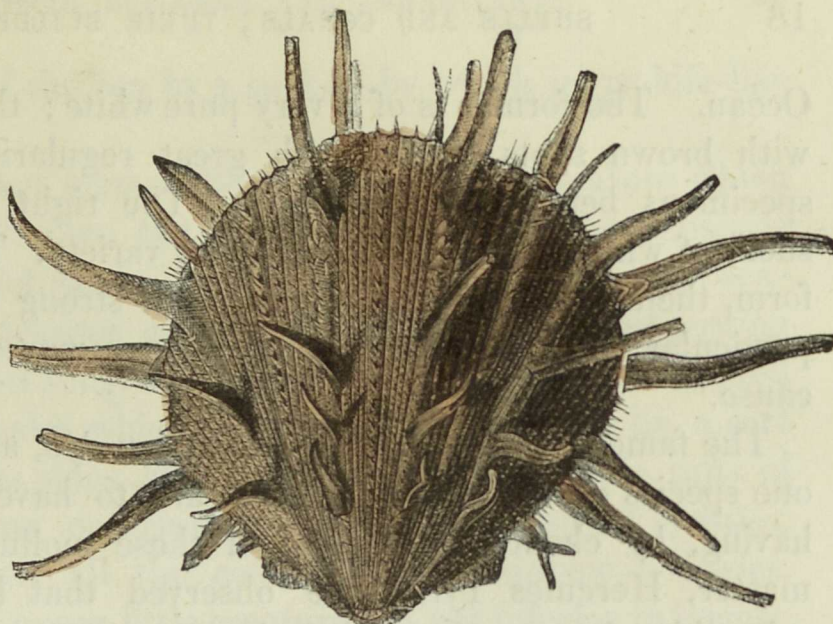
It would have been well before leaving this extraordinary oyster, which produces out of its troubles and inconveniences the worth of rich estates, to have related the mode by which they come into the possession of man, which is by means of the diver. Our space, however, is too limited to go into this curious and interesting subject, though we hope to do so on some other occasion. Suffice it now to say, that the pearl fisheries are some of them of very ancient date. Those on the west coast of Ceylon, of Coromandel, and the Persian Gulf, are the most celebrated in the Old World. In the New World they exist in the neighbourhood of St. Margarita, or Pearl Island, on the coast of Columbia, and in the Bay of Panama. The pearl oyster is collected by divers, men trained to dive several fathoms deep for this purpose ; they remain two or three minutes under the water ; but their occupation is unhealthy, and they live but a short time. Thus the pearl, precious as it is, costs that which is far more precious to obtain it—human life.

All the mollusks produce eggs ; some of them are *viviparous*, that is, the egg is hatched within the body, and the young brought forth alive, as some reptiles. Others are *oviparous*, that is, they lay eggs as fowls do, which are afterwards hatched. Garden snails, during the spring, lay great quantities of eggs, like little peas in shady places, at the foot of trees, among leaves and stones. Their eggs are hatched in from twenty to thirty days, and the young go forth perfectly formed. Eggs of mollusks are of various forms, many very odd, some standing on a foot, like a wine glass. Oysters produce multitudes of eggs ; a single one, it is said, in one year, will lay as many as 1,200,000. The eggs are produced in the form of spawn ; a white fluid, resembling grease, in which by aid of the microscope, myriads of little oysters may be seen. The fishermen call this substance “spats.” “As yet,” says a writer on this creature, “he is the embryo-oyster ; in a while he is detached from the mass, and then all the myriads are full of life and motion, flitting about within the sea, with wing-like lobes, flanking a head and shoulders ; and so he goes on floating about merrily from oyster bed to oyster bed, quite independent of parental care, sometimes devoured by the thousand enemies that are ever on the watch to snap up tender oysterlings, which are their favourite food. Out of myriads, however, tens of thousands escape, and so the young oyster finds a shell growing on each side of him before he is aware almost, and in short process of time he becomes the steady inhabitant of an oyster bed, and having in his turn become the parent of myriads upon myriads of other young oysters, adds layer after layer to his bivalves, lives his modern term of years, and being well grown and comely, and of a good species likewise, has the honour, perhaps, of being caught and sold for her Majesty’s eating.”

Turning again to our picture, we find just beneath the oyster two shells, the *fusus longissimus* and the *voluta junonia*, both of which are found in the Indian



THE OYSTER.



THE SPONDYLUS.



LARGE SHELL FROM THE MEDITERRANEAN, HELMET SHELL FROM MADAGASCAR SHELL FROM MALABAR, &c.

Ocean. The former is of a very pure white ; the latter nearly colourless, adorned with brown spots placed with great regularity. It is a shell of high value, specimens being extremely rare. The right hand shell is a *murex*, or rock-shell, of which genus there is a great variety. They are generally of an irregular form, their surfaces being covered with strong spines, tubercles, or horns. This particular shell is called the *murex cornutus*, or horned murex, from that cause.

The famous Tyrian purple, the Tyrian dye, as it was called, was obtained from one species of the murex. It is said to have been first discovered by a dog having, by chance, eaten one of these mollusks, and upon returning to his master, Hercules Tyrius, he observed that his mouth was tinged with this splendid colour, and applied the discovery to use, so that the Tyrian purple became the most valued and admired of colours, and was worn only by princes and great men. In order to produce the richest degree of this colour, a bath of the liquid extracted from the fish, was prepared. The wool was steeped in it for some time, after which it was dipped in a boiler containing an extract from another mollusk called the *buccinum*. Wool, thus prepared, sold at a very high price, which is not surprising when it is recollected that each mollusk contained but about one drop of the colouring fluid.

Our second cut shows us, in the first place, two large shells, an *astrea* and a *spondylus*, both of the oyster family, which are naturally united. The spondylus is the thorny oyster, and neither of these seem to have any of the amiable characteristics of the oyster proper, of which we have so lately been speaking. Nearly akin to these rugged shelled mollusks, and own brother, perhaps, to the *astrea*, is the *anomia*, the description of which we will give from the author we have already quoted several times. "The anomia has a hole near the beak of its under valve, through which a fleshy plug is protruded to serve as a cable, and moor it to the rock. It greatly resembles an oyster, and has sometimes been mistaken for such and eaten. Its pungent flavour tickles the palate ; but if once tasted, it should be immediately rejected, since this oyster, peppered by nature, is apt to produce ugly symptoms in its customers." Lower in the cut, and on the left hand, is a large species of *helix*, or sea snail, and beneath it a broken egg, showing the shell in its earliest stage. On the right hand is a curious creature called the *carinaria*, which inhabits the waters of the Mediterranean Sea. It is of a blue colour, and its whole body covered with plume-like tufts. It belongs to a genus or class of mollusks which are distinguished by having a paddle-like foot, with which they move themselves in the water. They have a flat tail which acts as a rudder, and a muscular tube for a mouth, armed with little hooks. The under part of the body is defended by a delicate, transparent shell, something like the shell of the Paper Nautilus ; but it cannot be of great protection to the creature, as it is too small for its body. The *Carinaria* adheres

to rocks and stones at the bottom of the sea by a sucker, by which its paddle-like foot is furnished.

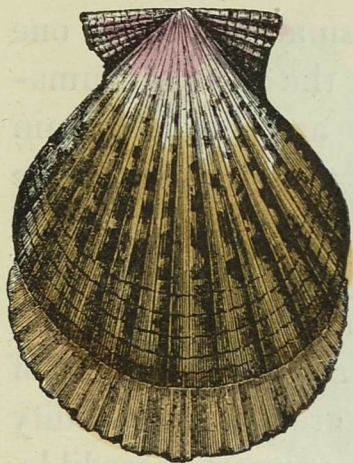
This carinaria, though of a different class, calls to mind a little creature which may be found on most of our shores when the tide has receded, trying to escape from view by burrowing into the wet sand. This is, in common phrase, the sea-mouse, or *aphrodita aculeata*, as the learned call it. It is a curious and interesting little creature, from six to eight inches long, and two or three wide. It has no shell to defend it, but is covered with scales which are hidden on the back by a sort of downy hair which grows upon its sides, and from which spring little tufts of spines that partly pierce the downy covering, and little tufts also of bristles, glittering like gold, and changing into all the colours of the rainbow. Cuvier, the famous naturalist, says that this queer little creature "is not inferior in beauty to the plumage of the humming-bird, nor to the most brilliant precious stones." After this you would, however, expect something much more gorgeous and brilliant than you will find in reality. That, however, is what he says, and when you are walking on the wet sands, it may amuse you to look for this little creature, which you are tolerably sure to find, and he is well worth examining. There are forty little tubercles, from which spring bristly tufts on each side, and between the two first are two small tentacles or feelers, furnished, we will hope, with eyes. There are fifteen pairs of scales on the back, which are sometimes puffed up, that is, we may suppose, when he is in his best condition; and fifteen small branchial crests on each side; the bundles of bristles in each side serve him for feet. Such is the sea-mouse.

Although it might be supposed that a small creature without either a head or bone in its body, could not be very dangerous to the most strongly constructed works of man, yet we can prove the very contrary by referring to two mollusks, the *teredo* and the *pholas*, both of them, *pholades*, members of the perforating or boring family. Both of them inhabit bivalve shells, and are found in all parts of the world, as if to be at hand to destroy the works of man wherever he might erect or construct them. The life-occupation of these pholades is to bore hard substances, hardened clay, wood, or stone. The pholas, or stone-borer, is less injurious to man than the teredo, of which we shall speak anon; it is mostly found in limestone or chalk, but how it forms its dwelling has not yet been clearly proved. As the entrance to these dwellings is the smallest part, it may be supposed that they penetrated the rock when young and small, and enlarged their chamber as they increased in size. Hence some suppose that the creature may be possessed of a chemical means of absorbing the rock. This narrow passage, or entrance, opens into a round hole, which receives and encloses the body while the proboscis is thrust to the opening to take in sea-water, on which it lives. Its brother, the teredo, now demands our attention, and certainly no mollusk whatever has had so much thought and anxiety bestowed upon it, as this

the well-known and much feared *teredo navalis*, or ship-worm. The mischief which this little animal has done, the amount of money and labour which it has rendered unavailing, are incredible. It has eaten into the wooden piles which support the embankments of all Holland, and thus endangered a whole country being overwhelmed by the sea. Our own, or other country's ships, and all wood-work under water in dockyards, are subject to destruction from it; the only defence to piles and such woodwork appearing to be the covering them with short, broad-headed nails, on which the action of the sea-water produces a coating of rust. As the whole of our seas swarm with these destructive creatures, and as, like many other mollusks, they are, while young, free to migrate where they will, they attach themselves to sailing ships, and no wood has yet been found hard enough to defy their labour; nor can even any chemical means which have yet been discovered, though the ravages of time itself may be prevented, render wood invulnerable to their attacks.

But we must describe the mode in which this small, but formidable creature performs its work; and again we quote from the author to whom we are already so largely obliged. "By a remarkable instinct, the ship-worm tunnels in the direction of the grain of the wood, whatever be its position. The tube with which it lines its bore is sometimes nearly two feet and a half in length; it is not always straight, for if the creature meets an impediment sufficiently hard to defy its power, it takes a circuitous course, and thus winds round the obstacle. In like manner, it never interferes with its fellow ship-worms, winding round them in such a way, that a piece of wood attacked by many ship-worms, becomes a perfect mass of hollow tubes, something like a honeycomb. The tube is not the shell of this dreaded mollusk; that body remains still in its shell at the innermost extremity of its bore. The tube is a shaft intended to keep up a communication between the animal and the sea-water upon which it exists. How the cavity is excavated, as in the case of its brother, the stone-borer, is not yet known. It may be by some chemical solvent, or mechanical means, or by both combined. Many sea-snails, as well as bivalve shell-fish, have the power of perforating solid substances; some, as we have said, bore through the hard, rock-like shells of their sea brothers, and suck up their juices. Some have long ribbon-like tongues studded with thousands of teeth formed of a flinty substance, though so small that 2,000 of them occupy less than an inch, and these file-like tongues rasp away at an inconceivable rate. Speaking of these wonderful toothed tongues, we may mention, though somewhat out of place, that many of our common garden slugs possess as many as 20,000 such teeth. No wonder that beds of cabbages disappear before them.

But to return to the *teredo*. Sir Everard Home, and other learned men, have anatomised, and studied, and examined the *teredo*, and they seem to have come to the conclusion that the creature does not bore into the substances in which it



THE COCKLE.



BARNACLES.



THE NAUTILUS.



THE RETIRING WATERS.

lives, whether mud, stone, or wood, for the purpose of deriving nourishment from them, but merely, as it were, to fix itself in a firm and comfortable abode, where it can have the convenience of a good supply of sea-water at hand, which is its true nutriment. The *teredo navalis*, of our seas, is a small creature; one much more terrible, eight inches in length, was brought from the coast of Sumatra, where it abounds, and examined by Sir Everard Home and Sir Benjamin Brodie, who laid their report upon it, with drawings made for the purpose, before the Royal Society. This is the *teredo gigantea*. The blood of this terrible creature, unlike the rule as regards fish, was found to be red, and the heart palpitated visibly. The same is the case in the *teredo navalis*; its blood is red, and its organs are very perfect. The living specimens which formed the subject of their observations, were furnished from one of the royal dockyards. The rapidity of their growth, and the speed with which they worked, was almost incredible. A piece of deal which was laid under water for forty days, was perfectly riddled by them; and solid new oak piles in one of the dockyards of Plymouth were greatly perforated in the course of four or five years.

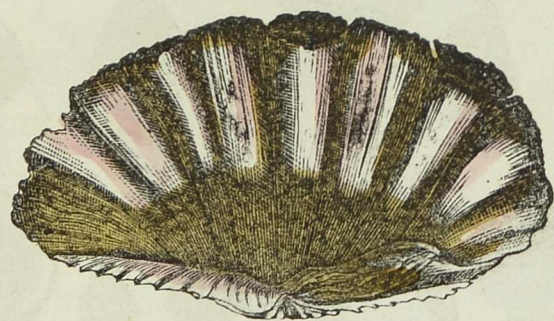
But it will be said that the Great Creator gives life to nothing in vain; gives life to nothing for the mere purpose of wanton destruction. For what, then, were these mischievous teredines brought into being? That is easily told. They are a kind of scavenger of the seas. It has been said that though destructive of ships and dockyard works, they yet help to preserve them. We are assured by writers on the subject, that we should less feel the want of one or two of the larger quadrupeds, than of these mean-looking animals. They attack every stray mass of floating or sunken timber that comes in their way, and reduce it to the harmlessness of dust. The immense fallen trees of tropical forests, overthrown by hurricanes, or partially destroyed by insects, and which are borne down the rivers into the adjoining seas, would endanger navigation were it not for these active little animals, whose purpose in creation is the destruction of useless matter.

We must here conclude: two other cuts yet remain unnoticed — the retiring and rising waters. All our young readers who have had the pleasure and the benefit of a visit to the sea-side, are familiar with these interesting occurrences of the day; the majestic march of waters landward, bringing in treasures of weed and shell, and the ebbing flow which left them stranded for their delight.

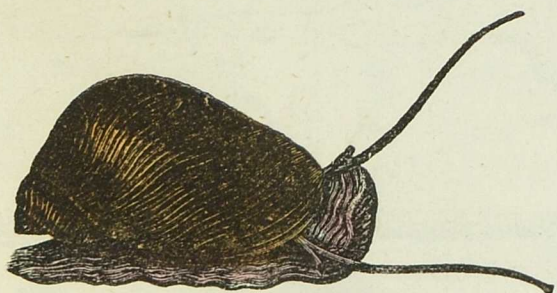
Curious and rare shells are often obtained by collectors by means which would not occur to ordinary people. They have been found in the stomachs of sea-birds and fish, and sticking to the lead with which soundings have been taken at sea. They are often found attached to the bottoms of ships which arrive in port from long voyages, especially specimens of what are called acorn-shells. The first specimen of the thorny acorn-shell, was taken from the bottom of a Danish ship which went into port at St. Helena.



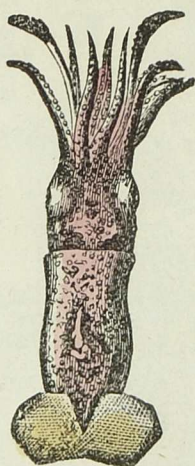
GROUP OF SHELLS.



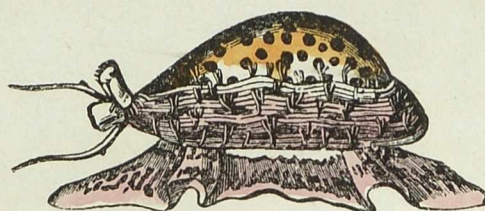
LIGAMENT ON THE EDGE OF A VALVE



THE SNAIL.



MOLLUSK WITH A HEAD.



THE CYPRÆA.

Peculiar shells, as might be imagined, belong to peculiar seas; the largest and richest being found in tropical latitudes. The richest shore in the world, however, for shells, is that of Timor, an island in the Indian Ocean. One collector alone obtained as many as twenty thousand shells, among which were many hundred distinct species.

You may never go to Timor, but upon whatever shore you go you will find shells, of kinds as yet unknown to you, and may thus supply the commonest and simplest elements of that which may, in time, become a valuable collection.



GROUP OF SHELLS.



CELEBRATION OF NEW YEAR'S DAY IN CHINA.

CHINA AND THE CHINESE.

THE Chinese Empire extends over a great portion of central and eastern Asia ; but to understand its situation perfectly, you must turn to the map of Asia. Thus you will find it bounded on the north by Asiatic Russia, to the extent of 3,300 miles ; on the east and south-east by the Pacific Ocean, which, as it nears the great continent, is broken into the gulf of Tartary, the sea of Japan, the Yellow Sea, the Straits of Formosa, the Chinese Sea, and the gulf of Tonquin. The land boundaries of the Chinese Empire on the south-west and west, are India and Independent Tartary. Of this vast extent of empire, about one fourth only constitutes China Proper, the remainder lying to the west and north, and having a line of sea-coast upwards of 2,500 miles in length. It is of China Proper that we alone intend to speak.

We call this country China from the Malays, who have given it that name ; but the Chinese themselves call it *Chung-kwo*, the central kingdom, and *Tang-shan*, the hills of Tang, *Tang* being the name of one of their celebrated lines of kings. But this country seems, in fact, to change its name very frequently, it being called by the present ruling family *Ta-tsing-kwo*, the kingdom of great purity, and in all government proclamations addressed to foreigners, it is called *Teen-shan*, the celestial empire. The whole empire itself is called by the natives *Teen-hea*, under heaven ; and they themselves, *Han*, or *Tang-jin*, men of Han or Tang.

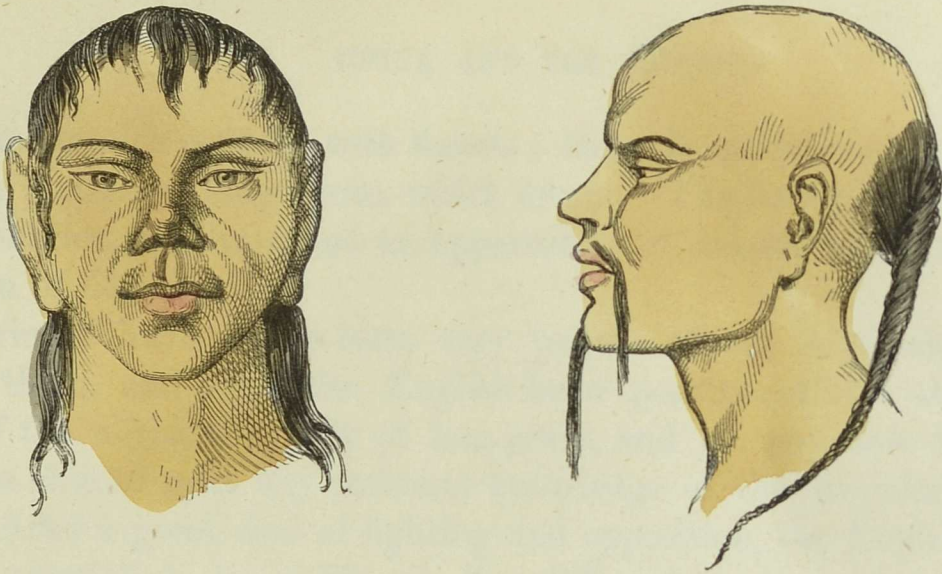
Many parts of China are covered with mountains, which rise to a great height, and give birth to some of the largest rivers in the world. The great mountain-chain of China is called the *Sine-ling*, or snow range, because it contains many snow-covered mountains. As yet, however, but little is known of the geology of this country, and the only mountain peak which has been measured by Europeans is one in the south, which is crossed by a celebrated pass called the Pass of Meilan. This mountain is 8,000 feet above the level of the sea. The province of Yunnan, which lies on the south-east, adjoining India, contains every variety of scenery which can be imagined, mountains, valleys, and extensive and rich plains, while its mountains abound in minerals and metals, among which are gold and very fine copper. In the recesses of this alpine region still remain great numbers of the most ancient tribes of China, the *Meaou-tsze* or mountaineers, a wild and hardy race, who maintain their own religious faith, rites, and customs, all derived from the most remote times. Among their religious rites is the sacrifice of the ox or buffalo to the great Ancestor or Creator, who, according to their belief, is the same being ; and at the commencement of spring, they erect a

pole, called the *kwei-kan* or fairies' pole, around which they dance and make merry, as was customary around the old May pole in country places in England. But however interesting these wild, primitive mountaineers may be, we must not linger over them, but proceed with our account of the country in general.

If we advance to the eastern side of China, and take a line from Peking in the north to Canton in the south, twelve hundred miles in length, we shall find the character of the country greatly varied, but the varieties are all on a large scale. Thus, for instance, we should travel for many days over a vast, unbroken plain; then, for as many days, amidst wild and barren mountains; and then our course would lie for the same length of time through lakes, swamps, and morasses: yet everywhere we should find a constant succession of large villages, towns, and cities, with large navigable rivers, connected with each other by artificial canals, all crowded with boats of every size and form; and yet amid all this variety, neither hedge nor tree would be seen.

The vast plain over which we have imagined ourselves travelling, is one of the great features of China, being 700 miles long and from 150 to 500 miles wide, from the great wall north of Peking to the great river Yang-tse-Kiang. It includes six provinces, and maintains a population of 170 millions; its northern portion is most favourable for the growth of wheat, its southern for rice, and its western and inland districts produce abundantly cotton, wheat, tobacco, and tea. It was for the protection of this rich plain from the invasion of the warlike and wandering Tartars, that the great wall of China was built. It is built of earth and rubbish, cased on each side with stone and brick, with a platform on the top paved with flat tiles, and wide enough for six horsemen to ride abreast. It is from twenty to thirty feet high, is five and twenty feet at the base, and twenty-three feet on the platform or terrace; it is highest when crossing valleys and plains, and in such situations is strengthened by square towers, at the distance of a bow shot from each other. It commences with a strong fortress on the shore of the Yellow Sea, and enclosing the north of China through an extent of 1,500 miles, ends at its western point, amid impassable rocks and vast deserts. It was commenced about two hundred years before Christ, but is now falling into ruin. The Great or Imperial Canal, the *Yun-ho*, as it is called, extends also 700 miles through this plain. It is a magnificent work, and connects the great navigable rivers, so that, as we have said, there is an almost unbroken chain of inland water-communication between Peking and Canton, that is, between the north and south of the country. We say almost unbroken, because in one place the mountains intervene, and it is at this point that the great pass of *Meilan*, which we have mentioned, is formed, and which was considered so great an achievement that the Mandarin who accomplished it, was honoured by a statue in a neighbouring temple.

The central provinces of China are said to be wonderfully fertile and beautiful, abounding in lovely valleys, open country watered by the finest rivers, and diver-



TYPES OF THE MONG OLIAN RACE: CHINESE.



VALLEY IN THE ISLAND OF HONG KONG, WITH AN AQUEDUCT IN BAMBOO

sified by mountains covered with forests ; these beautiful regions are called by the natives by a strange long name, which means " The flower of the middle," while the missionaries, who have had an opportunity of judging for themselves, call them the garden of China.

The Chinese have always been very jealous of the introduction of foreigners amongst them, and while the English have penetrated into almost every other country of the world, it is only of late years, and by very slow degrees, that they have been able to gain any intimate knowledge of this singular and interesting people. After a great deal of fighting and opposition, the English have at length obtained permission to reside at five different ports, and to have a consul at each, that is to say, at Canton, Amoy, Fou-tcheou, Ningpo, and Shanghai. The island of Hong-kong is one of a great number of islands lying at the mouth of the Canton river, and has been given up for ever to Great Britain by the Emperor of China, besides his paying a large amount of money. One great cause of quarrel between the Chinese Emperor and the British was, that they persisted in taking opium into the country, which he most resolutely forbade, but all to no purpose. The rich Chinese first began to smoke opium, and from them the habit descended to the poor, and produced all the terrible effect of gin-drinking in England, or cocca-chewing, as we have described it, in Peru ; the Emperor determined, therefore, like a wise ruler, if possible, to put a stop to it, and for that purpose decreed the severest punishments and fines on every person, high or low, who either bought, or sold, or smoked, or encouraged the smoking of opium. But it was all to no purpose ; and though by his orders twenty thousand chests of opium were destroyed belonging to British merchants, he was obliged afterwards to pay for their loss, and opium is introduced into the country to a greater extent than ever.

Leaving this sad feature of modern Chinese life, let us take a glance at the people themselves ; at that people with pictures of whose life, in gardens and summer-houses, by water-sides, and under drooping willow-trees, every little child has become familiar on a china tea-pot, or basin, or at all events on a common willow-patterned plate.

Here then, on page 9, is the interior of a mandarin's house at Peking. In the first place, however, I must tell you that though the word mandarin is universally applied by Europeans to the Chinese officers of government and men of rank, yet that it is not a Chinese word at all, but derived from a Portuguese word, which means *to command* ; the Chinese phrase is *kouon*, which means a public character. One circumstance, very remarkable in China, with regard to their choice of governors or mandarins, for we must use the word, is well worthy of attention. A man is only selected there for any office of trust or dignity who can prove himself worthy by former good services, or by distinguished abilities. The mandarins, therefore, though mostly

of inferior birth to the nobility, are the magistrates and real governors of the country.

Here then we see a mandarin at home, and we will suppose him a man, although of low birth, yet of very high rank, which has been attained by many trials, and some of a kind which I will now describe. Suppose, therefore, that he had gained in the capital of the province where he was born, all the literary honours and degrees which were possible, and now some great and important office being vacant he has come to Peking, the grand capital of the whole empire, to strive for it. There are two or three hundred candidates besides himself, perchance; but no matter, it will be all the more honourable for him if he surpasses all by his wisdom and genius. A great building under the guardianship of soldiers is appropriated to these literary candidates, and each one is shut up in a cell for three days and narrowly watched that he may have no help from any other person, and during this time he must write the very best theme or poem of which he is capable. At the end of three days the literary labours are all given up and submitted to judges, and the first intimation which the candidate has of his success is by seeing the feigned name under which he has written posted up on the walls of the lieutenant-governor's office. At a certain hour that functionary comes forth and bows to the official paper posted on the wall, and again retires; guns are fired and a banquet is given in honour of the successful candidate, who receives universal congratulations, and whose successful theme or poem is sent to the Emperor. That is the way in which mandarins are elected to office in China, having, as the Chinese say, to make their way through the forest of pencils before they can be employed in the administration of government.

Well, there sits the learned mandarin, with his fan in his hand, about to sip his tea; and his pretty wife sits opposite to him with a large feather fan also in her hand, dressed in her long loose garment, which falls gracefully from her low shoulders over those little feet of hers—those miserable little feet, only two inches long, upon which she cannot walk without rolling from side to side, and which yet the poets of China sing about as “golden lilies.” Very pretty she is, no doubt with her fair complexion and arched eyebrows, and beautiful are those round arms of hers which are displayed by her loose sleeve, and very elegant and becoming, to her Chinese taste, those long, claw-like nails, which she softens with warm water each night, and binds round her wrists to preserve from breaking, and on which in the day she wears tips of silver. Wonderful is fashion! and this wife of the mandarin is a very fashionable lady, dressed in the richest embroidery, and covered with jewels. And there is the little fat child too, and his nurse, and a very good little child he is, and will be brought up to be very obedient and dutiful to his parents, as is the law and custom in China; for though the China men and women are not Christians, yet they understand the true law of God in many ways. And obedience and love to parents is one which they most faithfully carry out.



INTERIOR OF A MANDARIN'S HOUSE AT PEKIN.

And not only are children obedient to their parents but to their teachers also. Mr. Tradescant Lay, a gentleman who has lived long in China and studied the people thoroughly, relates many beautiful instances of this kind, a few of which we will give. On one occasion, he says, he and another gentleman were taking an excursion upon the island of Honan, in the river near Canton, when their path led them to a delightful villa. They entered the gates and advanced up the principal pathway, admiring the shrubs and flowers, until they reached the mansion, where in one apartment they saw a number of young men seated at different desks quietly pursuing their studies. This was in fact a private academy, and one of the gentlemen made some remark to one of the youths, but received no reply. But this was no mark of ill-breeding or rudeness in the young man; the mistake was in the European gentleman addressing him, for it is in China a point of duty and decorum for the student to consider nothing so interesting as his lesson, nor could he, according to his notions, disregard, for any reason, the commands of his teacher, which had been those of strict attention. Very soon, however, the master made his appearance, and the strangers were then politely invited to accompany him into a hall where he received guests, and where he bade them be seated, and ordered tea to be brought in for them. A little boy waited upon him as page, who was sent to let the ladies of the household know, that they might come and see some foreigners who had just called. The ladies came in, toddling on their little feet and smiling very sweetly, while the gentleman of the house apologised for the liberty he had taken in sending for them, because ladies do not usually appear in the presence of strangers; nor did they stay long, for the gentleman soon bade the little page tell them they might withdraw; therefore, still smiling very sweetly, they toddled back again, and no doubt would very soon order their sedan chairs, and be carried out to call upon all their friends, and communicate to them the wonderful events of the morning.

Chinese ladies are very fond of making long calls on their lady friends, and hence sedans are seen in the forenoon moving about in all directions, and again in the evening when they are returning home. These sedans are accompanied by one or two female attendants, according to the rank of the lady; for as women of the lower class have natural sized feet, they can easily walk about. If a lady cannot afford a sedan, she may be seen walking along accompanied by a little girl as a servant, carrying a light box or bundle containing such articles as she will require for the day; just as the nice little maid might attend Mrs. Jenkins, and carry her best cap in a band-box, when she went to spend a long evening with her friend Mrs. Judkins.

One little drawback from the comfort of Chinese domestic life would be, according to our notions, that the master of the house might have two wives, but it does not seem to cause much discomfort in the celestial empire. Mr. Lay says, that he and a friend went one day to the house of a great merchant, who

was just dead, to see his remains laid out in state, and which they found in a large hall, fitted up for the occasion like a sort of chapel, with his insignia of rank, and a number of little figures, male and female, which were all to be burnt, in the idea that, some way or other, they would contribute to his pleasure in the paradise to which he had departed. A portion of this hall was divided off by temporary curtains made of some kind of tough China paper, and behind this screen were all the ladies of the family, dressed in white—which is the mourning colour in China. Their mourning, however, in reality, could not be very deep, for the paper curtains were lifted many times to peep at the strangers, and the merriest laughter sounded behind them; but the strangers, with all their desire to see those pretty, laughing faces, could not get a single glimpse. Presently, therefore, they left the hall with its dead body and chapel-like arrangements, and walked into the gardens, which though somewhat neglected during the illness of the proprietor, were still very fine, with their lake, their rockeries and bridges, their fanciful summer-houses, and scattered works of art; and on their return, had the pleasure of beholding the whole array of white-attired ladies. For just as they reached the house, the whole bevy crossed a passage in single file, having no doubt watched the strangers through the garden, and now on their return took this means of obliging them by a sight of themselves.

As a proof of the affection of children in this country to their parents, we will again give a few words from the author just quoted. "I have often," says he, "admired the conduct of a son when he has brought an aged parent to the hospital; the tenderness with which he conducted him to the patient's chair, and the feeling with which he related all his sufferings, showed how sincere was the sentiment of filial piety in his heart. At Macao, a Chinese shoemaker, who had done some work for me at Singapore," continues the same gentleman, "called to ask for some further encouragement. 'Why,' said I to him, 'did you leave Singapore, where you had a good business?' 'Because,' replied he, 'my mother is getting old, and she wished me to live near her.'" In compliance, therefore, with her wishes, he had left his good business at Singapore; and we will hope that he soon found one equally as good at Macao. Nor is the respect considered as due to parents confined only to their lifetime. The Chinese, if not able to bury their parents with sufficient respect, will keep their coffins above ground until they have acquired money enough for the purpose. With the following anecdote we will conclude this portion of our subject.

On one occasion, a person having committed some offence against the state, fled to the house of a friend, where he was seized, and together with him, his friend, who was also imprisoned and brought to trial, for having concealed a state criminal. On his trial, the younger brother, who had no family, came forward and accused himself as the offender, declaring that he alone was guilty. A contest took place in court between the two brothers, each wishing to bear the



REPAST OF WEALTHY CHINESE.

blame himself, and declaring the other innocent. The judge by his cross-questioning discovered the truth, and then demanded from the younger brother the reason of his singular conduct. "Alas!" replied he, "I had good reasons for acting thus. It is long since our mother died, and we have not yet been able to bury her; besides which, we have yet a sister unmarried. My elder brother has the means of providing for these wants, which I have not; it is meet, therefore, that I die in his stead. I conjure you, therefore, to let it be so." The judge was so much affected by this instance of filial and brotherly love, that he reported it to the Emperor, who pardoned the true offender.

Our next plate shows us our learned Chinese mandarin entertaining a party of his friends, and as such an entertainment must be very unlike what we are used to, we may as well join their company.

When a gentleman makes a feast for his friends, he sometimes gives it in a tent raised for the occasion; at others, in his hall of audience, as in the present instance. The guests are seated at different tables in various parts of the room, which are decorated with flowers, but without table-cloths. The dinner consists of a succession of courses of every imaginable and unimaginable made-dish: soup of swallows' nests, sharks' fins, and of every substance yielding an animal jelly, all being brought as first courses in little basins; stewed fish, fowl, and quadruped; perhaps even stewed owls, hawks, or even earthworms, cockroaches, or rats, follow in rapid succession, the size of the basins increasing as the meal proceeds. Every now and then, the host rises from his seat and pledges one of his guests, who rises to accept the compliment, the two bowing to each other, and having emptied their cups, turning the bottom upwards to prove the fact. The early part of the feast is agreeable enough to the foreigner, who enjoys a passing taste of all the savoury messes placed before him; but he is soon satisfied. Alas, for him! The courses increase still in rapidity, and the basins grow bigger and bigger; and his host and all his friends press him to eat, and still to eat; and to oblige them, for this is true Chinese politeness, he eats on, hoping that surely the end of the feast is at hand. But no such thing! Large tables are presently brought forth into another part of the hall—the real dinner is only just beginning. The next moment, all the different sizes of basins having been presented in turn, a servant brings in a huge dish, on which is a huge joint, a quarter of a sheep, perhaps, which he respectfully presents to each table, holding it up aloft that they may see what abundance is yet in store for them. After half a dozen huge dishes have been thus presented, the joints are cut up and handed round to the guests on plates, to be eaten without vegetables, and with knife and chopsticks. Again the poor foreigner is pressed to eat, and he still does the best he can, whilst the China gentlemen all round him eat on still with good appetites for two or three hours.

At length the heavy part of the dinner is over, everything is cleared away,

and the attendants place flowers on the tables, interspersed with plates of sweet-meats and cakes, and a variety of fruits, plantains, oranges, and the aromatic lichi, dried or fresh, together with apples and grapes, chestnuts and walnuts.

This long ceremony being at length over, the party adjourn to the next room for tea, which always forms the commencement and the close of every entertainment or visit among the Chinese. The tea is presented by servants in porcelain cups, each with a saucer-like lid which prevents the delicate fragranciness of the tea from escaping.

Whilst the husband is entertaining his guests in the hall, the lady of the house is receiving hers also in one of the retired apartments, where they are welcomed and regaled with as much variety and as many delicacies as the gentlemen.

Among the poor, the husband and the wife appear much more on an equality. She is an active, busy, and often clever manager; fetches fuel from the hills, or engages in any kind of labour. She is always a clever cook: and travellers assure us that the common people dress their rice, which constitutes the greatest part of their food, in a way which surpasses all our skill; and not their rice only, but any other vegetable or meat which may find its way to their table.

But speaking of Chinese food, we must not forget some of their favourite meats. Pork is in great esteem with them, and they seem to understand perfectly the wayward nature of the pig, which, in China as well as in this country, has a wonderful faculty for doing just that which you wish it not to do. The Chinese, therefore, as we learn from Mr. Lay, avail themselves of this piggish propensity, when, instead of driving a pig from one place to another, they carry him in a sort of basket or cradle hung on a pole, and borne between two men's shoulders. When they want him, therefore, to go into the cradle, they put it before his nose and pull his tail, which makes him instantly run forward into the very place where they want him; and when at the end of his journey, they treat him still more uncivilly,—they spit in his face, and he bolts out of the cradle.

The dog, also, continues our author, is a favourite dish among the natives. He is well fed for the table while young, and being clean and well conditioned, may be contemplated, even by a stranger, as an article of food without much disgust. Nice little fat puppies may be seen exposed for sale in baskets, and they seem very well contented with their lot. Not so the cat, though she is reckoned a great delicacy by epicures, or lovers of good eating, and no doubt figured in one of the stews at our mandarin's table. The cat certainly does not like it, for, whether tied up in a bag, or seen peeping through a wicker cage, she utters many a loud and dismal yell. The dealers in cats are, we are sorry to confess it, on Mr. Lay's authority, the most unfeeling wretches in the world; and the poor cat, therefore, has good reason to howl. This gentleman mentions a curious scene which he once witnessed. He was passing a shop in which he saw an old



CHINESE YOUTHS.

man anxiously engaged in persuading his cat to lap some milk which he had placed before her. It is not often that cats refuse milk, but no entreaties in this instance could prevail on the poor creature to take it. The old man heaved his breath between a sigh and a groan, while two kittens were heard piteously wailing just by. He glanced at Mr. Lay for some time, as if uncertain whether to tell him his trouble or not; at length he did so; the cat was very ill, he said, and unable to bring up her kittens, and thus he should have no young cats to sell this season.

Buddhism, or the religion of Fo, as it is called, prevails extensively in China, though the literary portion of the people profess the religion of Confucius. The Jesuits, since the first arrival of the Portuguese in this country, in the 16th century, have endeavoured to convert the people to Catholic Christianity, and Protestant missionaries have also laboured hard of late years to gain proselytes, and have translated the Bible into Chinese, but without much success. There are also a few Jews and Mahomedans in the country, but the great mass of the vast population adhere to their old notions and their old gods. And their gods are without number: the hills, the valleys, the woods, have all their divinities; so have families, and shops, and kitchens; so also have fire, thunder, rain, wind, grain, birth, death, and small-pox; in fact, everything, according to their notions, has its own ruling spirit. Merchants worship, as might be expected, the god of wealth, who is represented with a wedge of gold in his hand; and sailors the god of the East Sea, *Tung-hai-vaung*. The Chinese have vast numbers of temples, and their priests are called *bonzes*. They, however, have no sabbath, and do not divide their time into weeks. They work all the year through, and very hard-working people they are, making a holiday only on the last day of the year, which they consecrate to the memory of their ancestors, and the first day of the year, which they devote to family visiting, with fire-works, drums beating, gongs sounding, and as much noise as may be. The time of the full moon is, however, celebrated with noise and riot all night long, for the Chinese love noise and never rejoice without it; and during the first two days of the first full moon in the year, the feast of lanthorns, as it is called, is celebrated, when the whole country is illuminated; every house, and every village, and all the shipping on the canals and rivers, being hung with painted lanthorns.

The flying of kites is also a great delight to the Chinese, who seem in their sports like a set of overgrown children; and very ingenious kites they make. Not only in the form of birds, butterflies, and fishes, but, by some ingenious means, they contrive to give them the peculiar motion of all these creatures. Our picture represents a fête day, when the Chinese world is making merry, with all kinds of jugglers' tricks, sleight-of-hand performances, gambling with cards, dice, or dominoes; but above all with kite-flying. The ninth day of the ninth moon is a day particularly devoted to this pastime, when crowds of people may be seen

wending away to the mills to send up their kites. A kite imitating the fishing-hawk is a great favourite at Canton, and these are made to hover over the river just like the bird when about to pounce on its prey; the great amusement being to deceive the stranger, who may be looking on, into the idea that it really is the bird.

The fifth day of the fifth moon is the celebration of the dragon; the Dragon Boat performing, says Mr. Lay, its fantastic feats on the river. It is a very long and narrow vessel, made to imitate the dragon, as it appears in Chinese pictures. It is rapidly urged along, and a large drum, the size of half a hogs-head, with an ox-hide stretched over the head, and which stands in the middle, is beaten by three men at once, so that the noise, one might think, was loud enough to please even a Chinese. Just by the drum stands a man whose office it is to make the most comic and hideous grimaces, rearing himself on his toes in harmony with the drum-music; at the head of the boat stand other men, with flags and halberts, who brandish their weapons and make all sorts of flourishes, in order to frighten away the dragon, who is supposed to lurk in some of the coves of the river.

This dragon figures largely in China. He may be seen sprawling with his terrific claws, goggle eyes, and wide-open mouth on China plates and basins, as also on the cakes of Indian ink sold in the shops, where, however, the superscription informs the purchaser that "the flying dragon is in heaven." Tradition says in China that an eclipse is occasioned by this terrible and hungry dragon endeavouring to swallow the sun or the moon, and for this reason gongs are sounded during an eclipse to frighten him away. On some occasions enormous dragons made of paper and lighted within may be seen at night, borne aloft by men, with trains of fish and other creatures, the attendants of the dragon, formed in the same manner and illuminated; and travellers who have met such a procession advancing at night among trees and tufts of bamboo, describe the sight as strange and wild; for the huge monster, with his horned head, flaming eyes, and wide, yawning jaws, seems to glare fiercely upon the crowd below, while the men who carry him contrive, by capering and sidling about, to give him a characteristic movement.

But we have said enough surely of Chinese merry-making. And yet, childish as all this may seem, these very people are great admirers of literature, and schools abound in every town and village, where the best education of the country may be obtained on low terms. The officers of the state, as we have already said, must prove themselves worthy and qualified for office by their literary endowments before they can be elected.

Books in China are almost as numerous as in England, and are sold at very low prices. The Chinese are fond of history and biography, and possess many works on religion and metaphysics, or the science of the mind, translated from the



A FETE DAY IN CHINA.

Sanscrit ; they cultivate poetry to a great extent ; and have lyrical, narrative, and descriptive poems, dramas, plays, and novels, which describe most exactly the everyday life of the Chinese, high and low, and very amusing books they are, as are also their romances, which are full of wild adventures. They have vast encyclopedias, and great libraries, to all of which there are good catalogues, so that people can readily find any book they want. Books are printed on silk paper, but only on one page, because the paper is thin. As a specimen of one of their great national works, we may mention the Imperial Geography, as it is called, which consists of 260 quarto volumes well supplied with maps. Two hundred and sixty volumes seem alarming for the geography of the country, but then it must be remembered that the Chinese language will not print into small space ; as, for instance, the translation of the New Testament into this language occupies four large volumes. The Chinese have also their newspapers, and the Emperor is obliged to explain the motives for his conduct, if displeasing to his people, in the newspaper ; he always considers himself responsible for any public calamities which may occur, such as famine, sickness, or earthquakes, and supposing that he has offended heaven, compels himself to fast, or to perform some severe penance.

Superior as we may imagine our knowledge to that of the Chinese, it is yet a fact that in various important discoveries or inventions they were long beforehand with us. They understood how to make gunpowder before it was known in Europe ; they practised wood engraving and block printing in the tenth century, and were acquainted with the mariner's compass before we were ; whilst to this knowledge may be added the manufacture of silk and porcelain. They are also still in advance of the English in making use of the decimal system of arithmetic, or the mode of calculating and dividing every number by ten. So completely masters indeed are they of this method, that they have constructed a machine by which to work every decimal operation of figures. This machine is called the *swanpan*, and is in use in Russia and Poland.

In the fine arts of painting and music the Chinese have made no great progress, for though their colours are extremely beautiful and durable, their perspective is always bad, as may be seen in any little landscape on a tea saucer, where a bridge will appear to stand on the top of a tree, instead of beyond it. They have a variety of musical instruments, such as different kinds of lutes and guitars, flutes, and other wind instruments ; a harmonicon of wires touched with two slender slips of bamboo ; bells and pieces of sonorous metal ; drums, kettle drums, and gongs, as well as a kind of clarionet, which sounds very much like a Scottish bagpipe ; but according to European taste all their music wants harmony and melody.

Before closing our account of the Chinese, we must say a word or two on their wonderful industry and ingenuity. Besides their manufactures of silk and porcelain, which have been carried to great perfection from time immemorial, they are skilled in a vast many other works. The bamboo, which, by the bye,

is the great instrument of punishment, supplies material for many purposes ; for instance, it serves for an aqueduct in the island of Hong Kong. The cotton cloths of China have long been famous over the world. A great deal of their furniture is excellently made, and with so much elegant simplicity as deserves imitation. They are skilful in working metals, and in cutting and polishing precious stones. They excel in embroidery, dying, varnishing, and in carving ivory ; and in this latter particular their ingenuity, patience, and skill almost surpasses belief ; as, for instance, in those balls of ivory, which contain within them sometimes as many as ten other balls, all covered with an exquisite transparent pattern, and yet all different. The fans and card-cases carved in the same way, are equally beautiful, though less surprising : each one of the above-mentioned ivory balls is said to occupy a month in the carving, so that the patience, as well as the delicacy of hand, is immense. All the delicate fancy-work of the Chinese is a master-piece in its way, whether of filagree, or artificial



CHINESE BANK NOTE.

flowers, or whether elaborate copies of the works of other nations. So exact, indeed, is the copy which they produce of any pattern which they have to imitate, that the very crack has been produced when the model sent happened to have such a flaw. The rate of wages is very low, yet, nevertheless, they seem contented and happy.

But the labour of the Chinese is not alone devoted to the delicate works which we have mentioned. They are perhaps the most industrious husbandmen in the world. The whole of their vast country, even the steepest mountains, is cultivated for the production of food. The hill sides, however steep they may be, are cut into terraces, and the waters which flow below are raised from terrace to terrace, by means of chain pumps worked by men, while reservoirs are dug on the hill tops, to catch the rain water, which is also let down in streams to fertilise the terraces below. Nothing which by any possibility can be made use of to enrich the land, is thrown away ; even the clippings of men's beards are carefully collected in bags for this purpose. The whole face of the country is scattered over with peasant inhabitants, and both men and women are for ever at work. The women rear

silk-worms; spin and weave cotton into cloth, which forms the general dress of the people. Very few cattle are, however, kept; neither cheese nor butter is used, and but very little milk. The few horses that are kept, are for travelling.

The larger ferocious animals are almost entirely extinct in China, although tigers are said to exist in the forests of Yunnan, which adjoins India; and bears are met with in the wooded hills west of Pekin. The lion, however, is unknown; he has, no doubt, long since disappeared before the swarming population, and the general cultivation of the country. Of snakes they seem to have none, and very few indeed of any kind of reptiles. Locusts, however, are very destructive, and they have the scorpion, and the centipede, which is called there, as with us, the hundred legs, which in Chinese is *pè-tso*.

The most remarkable vegetable production of China is the tea; and the orange, known as the Chinese orange in Europe, is their finest fruit. They have many beautiful flowers, some of which have been brought into this country, as the camellia and the tree peony.

Two centuries ago China was conquered by the Manchoo Tartars, and the governors are of the Manchoo dynasty. A large party has long secretly existed in the country, who are anxious to restore the line of the native sovereigns. The members of this society were bound by secret oaths, and had signs and passwords among themselves, like the freemasons; their numbers amounted to several millions, and they were found in every province. The connection, real or supposed, of this society with the Jesuits, gave rise to the cruel persecutions of the Chinese Christians at the commencement of this century. They are called *Pe-lien-kiao*, or worshippers of the water-lily. A revolution, for the same purpose of upsetting the Manchoo dynasty, is at this present moment going forward under a leader who bears the name of the Prince of Peace, and that with such signal success that they may probably accomplish their object.



ANGORA CATS.

HOUSEHOLD PETS.—CATS AND PARROTS.

CATS are called *feles* by naturalists, and all animals of the cat-tribe *feline*. These species are very numerous, and some of their kindred may be found in every part of the world, with the exception of Australia and the Islands of the South Pacific Ocean, but by far the greater number inhabit the tropics and warmer climates, the hot jungles of India and Africa, and the dense forests of South America. It is a fact, however, that though these species have been found in the Old and New World alike, yet that no one kind is common to both.

The instincts of these animals impel them to seek a living prey, for the taking of which they are most wonderfully formed by nature. "The feline tribe," says Sir William Jardine, "are cunning and watchful, and gifted with great acuteness both of hearing and sight; their forms are strong, and they possess powerful weapons of offence or attack. Their peculiar instincts and structure have gained for them the character of being ferocious, malicious, and cruel. Whether tiger or cat it is all the same. They lie in wait for their prey, and steal upon it by stealth. When the prey comes near, the animal gathers up his strength for the spring, and by a succession of leaps, or by one immense bound, seldom fails of reaching it. Or if the prey has to be approached, he flattens himself, as it were; and crouching, advances swiftly, but imperceptibly, the velvety pads of his feet touching the ground without noise, his eyes gleaming on his prey, and seeing nothing else, while the slightest hindrance is made known to him by his sensitive whiskers. The measured distance is gained; the muscles are braced for the fatal spring; the peculiar cry or roar of triumph is uttered, and which, thrilling through the poor victim, overcomes him with terror; he can neither fly nor make resistance, and is carried off to be devoured in quietness in some neighbouring retreat.

The most striking feature in the form of all the cat tribe is the muscular activity of the whole body, united to a great degree of slender elegance and grace of motion. The principal organs of destruction are the jaws and teeth, the fore limbs, and claws. The teeth are shaped like thin wedges, and cut into any substance with the greatest ease, the peculiar joint of the jaw assisting in this operation. In addition to these instruments for tearing and cutting their food, must be mentioned the rough surface of the tongue. You have, no doubt, perceived the singular and grater-like roughness of the tongue of the cat as she licked your hand, but the lion will grate a bone with his tongue which is too hard for him to break with his teeth. The fore limbs of this tribe are so strong

that a blow from a lion or tiger will break the skull of a man. The hind feet are armed with four claws or talons, and the fore feet with five. These claws are retractile, or capable of being drawn back within a sheath, which protects them from being worn or blunted. The most wonderful mechanist could not have contrived, with spiral bell-wire or steel springs, anything so perfect, so simple, or so beautiful in design as the foot of one of these animals, with its arrangement of bones, muscles, and elastic ligaments, or bands, which draw back or throw forward the keen, knife-like talons at the instantaneous requirement of the animal. The foot of your own little cat is formed in the same wonderful manner, and though you cannot see all this wonderful mechanism under the nice soft skin, yet you can see another wonderful contrivance to enable her to steal on her prey without the slightest sound. This is the elastic velvety pads which are laid by nature, one under each toe, and one large one in the centre.

The senses of the feline animals, such as sight, hearing, and smell, are very keen, although scent is less keen than among the canine or dog tribe. Their eyes are formed for seeing either by night or day. The sense of feeling is aided by the whiskers, each one of which is connected with a nerve, and which, projecting from either side of the mouth, communicate, like electric wires, the slightest impression of touch to the animal, and are thus very useful to him as he glides through brushwood and narrow openings amid the profoundest darkness.

As I have said, all these remarks apply as much to the great king lion as to the little cat at your feet; and thus we are brought at once to this familiar fireside guest, to this little inmate of almost every dwelling, whether high or low.

It is an interesting question where our domestic cats originally come from; whether they are the descendants of the wild cats of this country or of the Egyptian cat, the *felis maniculata*, as the naturalists call it? And the more general idea is that it is descended from the Egyptian cat, because the skeleton of a common cat of the present time is exactly like that of a mummy-cat, or a cat embalmed and preserved by the ancient Egyptians. The cat, as we have already said in one of our former volumes, was held sacred by the old Egyptians, and when one died in a family the right eye-brow was shaved as a sign of mourning. Diodorus, a Roman historian, relates that he himself witnessed the execution of a Roman who had killed a cat. Cats were also trained by the ancient Egyptians to assist the fowler in taking birds. There is an old Egyptian picture in the British Museum which represents a cat so employed, being in a boat with a fowler, about to catch water-birds most probably, from which we might suppose that in those days cats did not dislike water as much as they do now. It is supposed, therefore, that in the ancient times one or more of these sacred and useful domestic animals were conveyed across the Mediterranean into Europe, perhaps as a valuable present to some great monarch, and so they advanced northward and westward until at length they reached our island. Some suppose that domestic cats came in with the



A GROUP OF DOMESTIC ENGLISH CATS.

Romans. Cæsar, at all events, does not mention these animals as possessed by the ancient Britons at the time of his arrival in this island."

If any of my young readers, therefore, chance to have a whitish gray cat which has eight small streaks on its forehead, two streaks running along the cheeks, two rings round the chest, cross streaks and bands on the hinder parts of its body, a long thin tail, and a great attachment to the house in which it lives, they may consider it a faithful representative of the first cat which came into Europe from Egypt, and which may be found to this day wild in Nubia. If, again, they happen to have a cat of a yellowish gray, with a few widely-separated streaks on the forehead, passing behind the ears; a dark stripe down the back, stripes on the limbs and sides, fading away towards the stomach, which is nearly white; the inside of the legs yellowish gray, and the soles of the feet black; with a thick tail, ringed with alternate black and light gray; then they may consider it to resemble rather the wild cat of our own country, of which it probably is a true descendant; for all naturalists have remarked that, in many cats, there is a great disposition to leave their cultivated and domestic habits and return to a wild life in the woods. It is said, that if a domestic cat should by chance taste a living prey, it will from that time disregard its civilised home, and escape to freedom at the earliest opportunity. A wild life seems very congenial to them: they carefully conceal themselves, feed upon birds and young animals, rabbits or hares, and bring forth their young in hollow trees or thickets.

Cats were so scarce in the tenth and eleventh centuries in Europe that a good mouser brought a high price. "And that excellent prince, Howel Dha, or Howel the Good, who died in the year 948, after having reigned thirty-three years over South Wales, and eight years over the whole of Wales, did not think it beneath his dignity," says Pennant, "to legislate, or make laws, on behalf of cats." Cats, indeed, were not insignificant animals in those days. The price of a "kitling," before it could see, was fixed by law at a penny; if it had caught a mouse, at twopence. It was required, besides, that its senses of hearing and seeing should be perfect; it should be a good mouser, have all its claws whole, and be a good nurse. If it failed in any of these qualities, the seller was to forfeit one-third of its value to the buyer. If any one stole or killed the cat that guarded the prince's granary, he was to forfeit a milch ewe and her lamb, or as much wheat as when poured on the cat suspended by her tail, with her head touching the floor, should form a heap high enough to cover the tip of the tail.

From this we may see what simple old-fashioned times those were, and also that domestic cats could not be the common natives of these islands, where, if they were then so abundant, no such great value need have been set upon them. If all be true which tradition tells, or even if there be only slight ground of truth in it, cats must have been scarce at the commencement of the fifteenth century, when Sir Richard Whittington became three times Lord Mayor of London. At all

events, the stone still stands on Highgate-hill which commemorates the spot where he, a poor, penniless lad, not even at that time worth a cat, sat to rest when leaving London, and was recalled, as he believed, by the church bells, which rang out merrily, "Turn again, Whittington, thrice Lord Mayor of London!" and near to it stand the alms-houses which he built in grateful acknowledgment of what appeared to him an interposition of Providence; nor is the famous cat forgotten, it figures still as a public-house sign, in the name of a court, and otherwise. Let us believe, therefore, that Whittington, having been called back to London by the pealing bells, did send abroad his cat in a great merchant ship as his one venture, and that it arrived, most opportunely, at some great court overrun with mice, when the monarch, having heard of cats, but never till now able to obtain one, was willing to pay its weight in silver and gold.

There is almost an endless variety of common cats in their state of domestication; white cats, tabbies, black cats, yellow cats, white-gray, yellow-gray, and tortoiseshell cats. The most remarkable varieties, however, are the Chartreuse cat, of a bluish-gray colour; the Persian cat, which has long white or gray hair of a silky softness, the tail long, and covered with long hair, with a tuft at the tip something like a plume of feathers, and which, as if aware of the beauty of her tail, she frequently carries over her back like a squirrel. The Chinese cat has long drooping ears; and the cat of Angora, which is more known in this country, has a mane or silky tippet, and green eyes, as may be seen in our frontispiece. This cat, which is a great favourite in drawing-rooms, has beautifully long and glossy fur, and is of a mild and gentle disposition, but not much distinguished as a mouser.

The Spanish, or tortoiseshell cat, when a fine, well-fed animal, is perhaps, after all, the most beautiful of all the varieties. It is so rare to meet with a male tortoiseshell cat, that very high prices have been given for such by cat fanciers. There is a wild tortoiseshell cat found in South America, which is supposed to have been carried over to that country by the Spaniards in the early times of their settlement, and now become wild there.

A singular breed of cats is met with in Cornwall and the Isle of Man, which is without a tail; and Sir Stamford Raffles mentions another in Madagascar, which has a twisted or knotted tail.

Wild cats are found in Germany, Russia, Hungary, the north of Asia, and Nepaul; they grow largest in cold countries, and are there hunted for their fur, which is considered valuable. They are also found in North America. In England they are beginning to die out; are very rarely found in the south, and only occasionally in the wilder parts of the north, where formerly they were very abundant. In Scotland and Ireland, however, they still may be met with in considerable numbers. The general length of a wild cat, from the nose to the tip of the tail, is about three feet.

Fossil remains of cats are found in many parts of the world, and all seem to have



JEALOUSY.

been of a very large size. Some bones which were found not far from Main, in Germany, and which are still preserved in the Museum at Darmstadt, appeared to have belonged to a true cat as large as a lion; the remains which have been found in the cave at Kirkdale, in Yorkshire, where such vast numbers of fossil bones have been discovered, were of an equally large size, as were also others found in a cave near Plymouth.

It is generally supposed that while the cat is very much attached to places, she is hardly capable, like the dog, of attachment to persons. Instances, however, are on record which seem to prove the contrary; and almost every one who has any knowledge of cats has his own story to tell of their affection and faithfulness. A singular instance of this kind is given in the "Naturalist's Library." A cat in Edinburgh took a great fancy to the watchman of St. James's-square, in that city. As soon as this man began to go his nightly rounds, the cat made her appearance, and never left him during the whole night. If any one approached, the cat would sidle up to the watchman and rub against his legs until the stranger had passed. Towards morning she ventured to a greater distance, but always came at the call or whistle of her friend. She was faithful to him for some years.

Cats, like dogs, have an instinctive sense of those who are naturally friendly to them, or have any liking for them; hence a cat will rub against, purr, and spring upon the knee of a perfect stranger, but she will never fall into the mistake of taking so great a liberty with any one who will push her down and say that he hates cats. On the contrary, the person will always be found to receive her attentions kindly, to stroke her, call her pretty puss, and declare that he is fond of cats, and that all cats find him out the moment he enters the house. Cats are often, also, extremely attached to each other. Two female cats living in a farm-house were as tender to each other as two human friends. They had families very frequently, and the one cat was as kind and as attentive to her friend's kittens as to her own; and the one was always present at the birth of the other's family, showing for her a regard and anxiety which was astonishing to every one who witnessed it.

Cats frequently show great sagacity; will pull at an easy bell to attract attention, having, of course, observed that people gain attention by the same, especially a door or gate bell which gives admittance to the house. They very frequently, also, will endeavour to open a door which has a thumb-latch by pressing their forepaw upon it; so that they cannot be devoid of intelligence, although it may not be developed to the same extent as that of a dog. While the old cat, therefore, excites our regard by her small attempts at reason, and by her individual likings and dislikings, what can be prettier than the gambols of the kitten? Poets and philosophers have been struck with these. Wordsworth has written a poem on the subject, and Sir Isaac Newton was never without a kitten to amuse him with its antics and merry gambols. There is something very human

in the behaviour of many animals. They seem to be imitating us; and we cannot watch them without feeling that they are our distant relations, and as such are entitled to our kindness and our sympathy. A writer in "Chambers' Journal" speaks pleasantly on this subject. He says that, like children, the sportive young of all animals have a great deal of *make believe* in their mirth. "One day," he says, "a kitten amused itself by running along past its mother, and giving her a little pat on the cheek every time it passed. This was a little practical joke, and very good fun to the kitten. The old cat for some time took it all in good part, but at length she acted as a grown person, of somewhat short temper, might have done under similar circumstances,—she gave the poor little kitten a cuff with her paw that sent it spinning to the other end of the room. The kitten looked marvellously astonished at such a proceeding, as if it said: 'that was too serious earnest for my little joke!' and then, no doubt, feeling troubled, it lay down, and went to sleep." The same gentleman says, that he has noticed the same sort of fun going on among spiders. He has seen little spiders capering about their mothers, running up to them, and then away again, like lambs or kittens. I wish we could see them! Ants, too, he says, have their gambols. They pat each other on the cheeks, wrestle, and tumble about like a set of schoolboys just let loose from school.

Among young monkeys, too, you may be sure there will be a great deal of fun and mischief going on. If we, for instance, could only transport ourselves into the countries where monkeys abound, we should see many an amusing scene. We should see, in the cool of evening, the old mother monkeys sitting in a circle, like a company of queer old women, and their young ones gamboling and frolicking all round them. Now they jump over one another's heads, now they get up mimic fights, now they run after one another's tails, and scream, and chatter, and mop and mow at one another, like so many crazy little creatures, while their old mothers sit looking on with the gravest faces, mopping and mowing to each other in their turn, and, no doubt, greatly enjoying the fun. Sometimes, however, it happens that a young monkey will be guilty of some unbecoming piece of rudeness, according to monkey notions, when up starts the old mother, and, plunging into the youthful throng, seizes the offender by the tail, and whips it, just as children used to be whipped in old-fashioned times; after which she returns to her old gossips, who have sate silently looking on, and the monkey urchins pursue their play for a time with somewhat diminished merriment.

The family name of the Parrots, among naturalists, is *Psittacus*; and they themselves are called collectively the *Psittacidæ*. We, however, will simply call them Macaws, Parrots, Cockatoos, Parakeets, and Lories, under which appellations they are already more or less familiar to us; and Parrots when we speak of them generally.



FEATHERED TRIBES.

Parrots, therefore, as a class, are distinguished from other birds by having very large beaks, which would be too heavy for the head to support were they not hollow, and, consequently, light; their beaks are curved above, and hooked at the point; the feet are short and strong, calculated for climbing; and they have a large, fleshy tongue, resembling the human tongue in form, and which enables them to learn readily to speak. But the education of talking parrots ought to begin from their earliest youth, if they are to gain any great proficiency.

Macaws, of which there are several varieties, are natives of America. Parrots properly so called, which are short and even-tailed, are found in all parts of the world between the tropics. Cockatoos, of which there are several species, are natives of the Indian continent and its islands, as well as of Australia; so, also, are the Parakeets and Lories. Besides these, there are "Broad tails," as they are called, or slender-legged parrots, natives of Australia; and black parrots, of Madagascar.

"The form of parrots, generally speaking," says Bechstein, "is somewhat clumsy, and deficient in elegance; their head and bill appearing too large for the rest of the body. In parakeets, this disproportion is in great measure counteracted by the length of the tail, and many of them exhibit an elegance and grace not surpassed by any other bird. The general formation of the feet—two toes placed forward, and two backward—seems to prove that woods and forests are the natural habitat of the race. It is, accordingly, in those regions where trees are clothed with perpetual verdure, and where a never-failing succession of fruits and seeds can be procured, that parrots are found in the greatest number and profusion. Thus the recesses of the endless forests of South America are enlivened by the presence of the superb macaws; those of India and its islands by the scarlet-clothed lories and their elegantly formed congeners; while those of Australia resound with the harsh voices of the cockatoos, and the shriller screams of the parakeets. In these their natural situations, their movements are marked by an ease and gracefulness which we never see exhibited in confinement. They are represented as climbing about the branches in all directions, and as suspending themselves from them in every possible attitude. In all their movements, they are greatly assisted by their hooked and powerful bill, which is used, like the foot, as an organ of prehension and support. The broad and pointed wing of the parrot shows a great power of flight, and accordingly we have learned from those who have had the pleasure of seeing and studying them in their native wilds, that it is rapid, elegant, and vigorous, capable of being long sustained, and that many species indulge in aerial circles and evolutions before alighting upon the trees which supply their food."

Audubon, the American naturalist, says, when describing the Carolina parakeet: "Their flight is rapid, straight, and continued through the forests, or over fields and rivers, accompanied by curves of the body which enable the observer

to see alternately their upper and under parts. When any impediment occurs in their direct course, they glance aside to avoid it in a very graceful manner. A general cry is kept up by the party, and it is seldom that one of these birds is on the wing for ever so short a space without uttering its cry. On reaching a spot which affords a supply of food, instead of alighting at once, as many birds do, the parakeets take a good survey of the neighbourhood, passing over it in lofty circles of great extent, then gradually lowering until they almost touch the ground, when, suddenly reascending, they all settle on the tree of which they are in quest, or on one close to the field in which they intend to regale themselves."

Many species of parrots are gregarious, or live in companies; others, as the black cockatoo, in pairs or families. They hatch their eggs and rear their young in hollows of decayed trees, making hardly any nest, by laying their eggs, which are never more than six in number, upon the decayed wood in the hollow. Their roosting places are also in hollow trees. "At dusk," says Audubon, "a flock of parakeets may be seen alighting against the trunk of a sycamore, or any other tree in which is a considerable hollow. Immediately below the entrance, the birds all cling to the bark, and crawl into the hole, to pass the night. When such a hole does not prove large enough to hold the whole flock, those around the entrance hook themselves on by their claws and the tip of their beak, and look as if hanging by the bill."

Parrots and parakeets which are imported into Europe are generally taken young in the nest, and brought up in their native country. Such as are taken full grown, are frequently caught when intoxicated by eating the seeds of the cotton tree; or are brought down by arrows which have a button at the end, without wounding them. M. D'Azara says that the natives of Paraguay take them in the following manner:—They build a little cabin, covered with palm-leaves, sufficiently large to conceal the fowler, among the branches of some tree frequented by these birds for the sake of its fruit. The fowler has with him a decoy parrot, which attracts its wild brethren of the forest by its cries. As the birds, full of curiosity, and, perhaps, compassion, approach the prisoner, the concealed fowler passes round their necks a running noose fastened to the end of a long wand which he moves from within his cabin. In this way he succeeds in taking as many birds as he has wands—perhaps five or six—for they make no attempt to escape unless the string presses upon their necks.

The younger the bird, as we have said before, the more easily it is taught. The means of its instruction partly consist in punishment. It is plunged in cold water, of which it is very much afraid, or tobacco smoke is puffed into its face, if unwilling to learn. When it is docile, and performs its task well, it is rewarded, perhaps, with sugar, of which it is very fond, and sweet wine. It is necessary to treat it with determination, to show no sign of fear, and to speak to it with authority, and in a loud tone of voice.



THE INDIAN PARROT.



THE GRAY SCARLET MACAW.

Parrots may thus be taught to perform various gestures, and to assume different postures. Some will lie down on their backs, and rise only at the master's command; others will perform exercises with a stick, or dance in a grotesque manner. They are taught to speak by the words which it is wished that they should learn being repeated close to them. Some species learn to speak with much more ease than others. The red and blue macaw, which, however, is a malicious bird, and is apt to fly at the face and eyes, learns to speak readily with great distinctness; so does the great green macaw, but not the blue and yellow one, which, however, easily and correctly imitates the bleating of sheep, the mewling of cats, and the barking of dogs. The yellow parrot of Angola talks readily and well; so does the long-tailed green parakeet and the Pavouan parrots, both natives of South America. The whiskered parrot, a native of the South Sea Islands and New South Wales, is a good talker, easily tamed, affectionate, and engaging; so also is the red-crested parakeet, and the gray-breasted parrot.

The cockatoos, of which there are eight or nine kinds, are not easily taught to speak, but they are mild and affectionate in disposition, and capable of learning a variety of tricks and little accomplishments. There are instances on record of the great white cockatoo having been taught to tell, by signs, the number of persons in a room, the time of day, &c. The great red cockatoo, though less affectionate than its white cousin, imitates the cries of animals, the cackling of hens, and the crowing of cocks.

The common gray or ash-coloured parrot, a native of the interior of Africa, is perhaps one of the most interesting of all this class of birds. Bechstein, speaking of its attractive qualities, says: "This parrot, like all the various species of lory, not only learns very easily to speak and whistle, but to make all kinds of gestures, and is very affectionate towards those who treat it kindly. It is very fond of imitating children, and prefers being taught by them. Buffon mentions a gray parrot which was taught to speak by a sailor in the course of a long voyage, and so exactly acquired his harsh voice and cough as to be frequently mistaken for him. It was afterwards instructed by a young man; and although it then heard no voice but his, the former lessons were never forgotten, and it often amused the bystanders by suddenly passing from a soft and agreeable voice to an old hoarse seaman's tone. This bird has not only the power of mimicking the human voice, but by its attention and manifest effort shows also a desire of imitation. It continually repeats the syllables which it has heard, and in order not to be misled in memory endeavours to overpower all sounds which may disturb it. Its lessons make so deep an impression that it often dreams of them aloud. When young, its memory is so good that it can retain whole verses and sentences. Rhodiginus mentions a parrot of this kind which could repeat, without any mistake, the Apostles' Creed, and was therefore bought by a Cardinal for one hundred crowns."

The purple-capped lory, from the Moluccas and New Guinea, is a charming bird, affectionate, and docile; it whistles tunes, and has in speaking somewhat the power of a ventriloquist. The white-fronted parrot of Mexico learns English words readily, but German words with great difficulty; it imitates the cries of animals with correctness and spirit. The little rose-ringed parakeet, a native of Guinea, India, and Java, known familiarly as the Java sparrow, although it cannot be taught to speak, is one of the most interesting of all these birds. "They are so affectionate," says Bechstein, "that they cannot be kept except in pairs; and if one dies, it is necessary, to preserve the survivor, that a mirror should be hung near the cage to cheat it into the belief that it is not alone. The same affection exists in the Illinois parrot, which can only be kept in pairs, and one often dies of grief at the loss of the other. The male is especially attentive to the female, frequently caressing her and offering her food."

Those who keep parrots—and the same applies to all other captives—should be strictly attentive to them as regards cleanliness and proper food. Parrots in captivity are liable to many complaints, consumption and gout being of the number.

We conclude this portion of our little book by some remarks on Australian parrots, written for us by an Australian traveller.

It may be very agreeable to read the descriptions of birds by naturalists, with all their long Latin names, as *Haliertus leucocephalus*, *Polyborus vulgaris*, *Plectropharus nivalis*, and the like; but give me a quiet nook to watch them in on a fine summer's day, either in this country or any other. Their free and frolicsome motions, their glancing colours, their voices more expressive of joy, of life, of spirit, and passion than any Latin; their habits and ways of living, all peculiar to themselves, that is a treat and a lesson indeed in natural history. I have seen the parrots in the Australian woods, thus making the dusky gum-trees all alive; and they gave me ideas and a divertimento that I never find in reading of them as the *Platycercus*, the *Trichoglossus*, or *Plyctolophus*. In the one case I seem to be looking into a museum of the stuffed defunct; in the other, into the living world itself.

I assure you it is a fine sight to see the great black cockatoo, large as an eagle, with his fine golden crest, enjoying himself amongst a few friends in a sunny tree top. How he seems to bow and salute his companions; how he cracks off the twigs, and brings the honeyed flowers within his reach; how he utters odd notes of joy and humour, as it were, all the while his brilliant dark plumage flashing and glowing in the sun. You would hardly imagine that he was the solitary bird that, always before rain, might be seen flying along at a great height, crying in a melancholy tone, "Calao! Calao!"

And it is equally a pleasant sight to see a huge flock of the large white cockatoos, and that you may see almost any day. "What a splendid flock of geese," you say, "sitting on yonder green meadow. How beautifully, snowy



THE ROSE-CRESTED COCKATOO.

white they are." Yon geese, my friends, are cockatoos. There they sit—hundreds, thousands of them—basking motionless in the sun, and in charming contrast with the rich, green grass. Now, don't get down your gun and attempt to shoot any of them, for they require three days' stewing to make them tender. But yet, do as you please, for you will only have your labour for your pains. Quiet as they seem, and still as so many stones, they have their sentinels on the alert; and before you could come within a minié rifle reach of them, they would be up, and almost rend your ears with their rasping cries. Of all lovely birds they have the most horrible grating screech; and when a whole flock of thousands is passing over, it is, as your lovers of Latin would say, "*monstrum horrendum*."

And yet, that sound is often a delightful sound to the traveller, for where the white cockatoo is water is not far off. They are pretty sure to roost in the tall red gums which skirt a brook or river. Not so sweet, however, is the scraping note of the white cockatoos to the farmer, for they are dreadful plunderers of the corn crops. They assemble by thousands about the ripening wheat fields; and what is a flock of sparrows to them? Havoc and devastation are the work of these handsome, snowy birds, with their lemon-coloured crests.

The third and last of the Australian cockatoos that I have seen is the gray cockatoo. This is the least of them all; has a gray body, and a red head and neck, and is seldom seen more than two or three together, and always making a queer cackling kind of a cry as it flies.

But as for the parrots and parakeets, they would demand a book; and for their appearance and names, you must look in Mr. Gould's splendid book of the "*Birds of Australia*." The blue mountain parrot, with his rich crimson body and blue wings, is one amongst the very loveliest, and he has what I never heard in others of these birds, a very soft, musical note. The hen of this kind is green, and homely looking. Then there was the rich rosella parrot, and the whole flocks of green parrots that you see robbing the corn-fields, but that, especially, in Van Diemen's Land; and all the tribe of lories and parakeets—what a showy, sprightly, happy-looking generation they seem. Amongst the most beautiful are the little budgerigors, or shell-birds, as they are called, from a fanciful notion that they are marked like certain sea-shells. But my great favourites were the little green parakeets, called, from their colour, leeks. They are in thousands, flying in large dense flocks, and making a most wiry, cutting sort of music as they go. But, sharp as it is, it is cheerful, and that makes it passable. Swift fly the little green and yellow flocks, and the next moment may be seen hanging all over the flowery tops of the gum-trees, feasting on their honey, and looking anything but the queer, moping, half-canny creatures that parrots do in cages. Yes, see these merry fellows sporting about in the woods of Australia, of India, or South America, and you will never want to see them again in cages, or chained to a little stump,

liberty and fun exchanged for a life of moping and gibberish. And what lives these and all other parrots live—thirty and sixty years! Captivity for sixty years! what a serious affair! and how careful we should be to make that captivity as pleasant as possible!





COMMON BROWN BEAR (URSUS ARCTOS).

B E A R S .

THE Bear, which is called *Ursus* by the learned, is found in every quarter of the globe, though less frequently in Africa than in any of the other three.

These animals are all distinguished by similar characteristics; their feet are five toed, and they walk on the sole of the foot laid flat to the ground, whence they are called *plantigrade*, or flat-footed; the tail is short, the limbs short in proportion and ponderous, the head large and broad across the top, the eyes small and lively, the whole appearance unwieldy, and the gait heavy. Their toes are furnished with huge claws, which cannot be withdrawn, as among the animals of the cat-tribe, and which are their weapons as well as their tools, whether for climbing trees, collecting food, or digging in the earth. They are carnivorous, or flesh-eating, at the same time that their more general food is roots, grain, fruit of all kinds, and honey, of which they are extremely fond. They are by nature savage and unsocial, living solitarily in desert places, in caves, and dens, and hollow trees. They generally hybernate, that is, pass the winter in a dormant or sleeping state, at which season the female brings forth her young.

Bears were common in Palestine, and we find them mentioned several times in the Scriptures. David, when a stripling, whose business it was to keep sheep in the wilderness, was sent down by his father with ten loaves and some parched corn to his brothers who were with the army of Saul. He arrived there at the very time when the great champion of the Philistines, Goliath of Gath, came daily to defy them, and no man dared to encounter him. David, having heard his boastful defiance, felt inspired to go out against him, and told his brothers so. They were angry, and reproved him as a conceited upstart; but nothing daunted, the shepherd lad still asserted his wish to go out to overcome him, and one and another spoke of it; and at length it reached the ears of Saul himself. Saul sent for David, and, seeing him, said, very naturally, "Thou art not able to go against this giant Philistine; for thou art but a youth, and he a man of war from his youth." And David told Saul how, as he was keeping his father's sheep in the wilderness, a lion and a bear came out to devour the flock, and he attacked them himself, and, when they turned upon him, he took them by the beard and killed them; and thus, as he had overcome both the lion and the bear, he feared not, with God's help, to kill the giant Philistine. Again, as the Prophet Elisha was going up to Bethel, immediately after having made the waters of Jericho sweet, a number of rude lads ran after him, making fun of

him, and calling him names. Elisha, who perhaps was somewhat short tempered, was angry at this, and, turning round, spoke sharply to them, and immediately two she-bears came out of the wood and wounded forty-two of them. And, again, when Hushai, the friend of King David, was in conversation with the rebel Absalom, and wished to give a strong picture of the agitated and distressed state of the king's mind, and the minds of the army, he said, "They are mighty men, and their minds are chafed, or made angry, as a bear robbed of her whelps in the field." And we shall presently see, when we come to speak further of the bear, how true a simile this was.

Of bears there are various kinds: we will begin with the common Brown Bear, or *Ursus arctos* as it is called by the naturalists, and which figures in our first plate. This species is found in all the mountainous districts of Europe, from the arctic circle to the Alps and Pyrenees; it is met with in the North of Asia—that is to say, in Siberia, Kamtschatka, and as far eastward as Japan; in the northern regions of America it is known as the Black Bear; and it is found also in the Andes of South America. At the time when the Romans had possession of this island, British or Caledonian Bears were sent to Rome to supply the Roman games, and captive Christians were probably among the victims who were exposed to, or fought with them—as Paul with the wild beasts of Ephesus. In this country, too, even down to a late period, dancing-bears, trained to this exercise by cruelty, were taken about to fairs for the entertainment of the people; while, a little further back, bear-baiting was a very favourite amusement even of Queen Elizabeth herself.

The Brown Bear is solitary in his habits. At the commencement of winter he retreats to some cavern or hollow tree; or, if these are not to be found, he makes a sort of den, which he is said to line with moss, by digging in the earth, and now, being fat with his good summer food, he lies dormant till the following spring, when he again comes forth very lean, and ravenously hungry. During the winter, also, as we said before, the cubs are brought forth, and this, say the superstitious people of the north—who have many wild and singular traditions about the bear—always takes place at Christmas.

Brown bears are seldom the first to attack man, unless rendered dangerous by hunger; but when once roused are a most formidable antagonist, and display great activity and tremendous strength. So great, indeed, is their strength, that one was seen in Sweden to carry a dead horse in his paws while walking on his hind legs along a fallen tree, which was thrown across a river as a rude kind of bridge. The firm support given by the broad sole of the foot, and the form of the hinder legs, enable them to walk upright with ease, even while carrying heavy burdens. They rear themselves up and sit upon their hams when pursued by the hunter, and brought to bay; and then catching with their long claws at either dogs or men as they approach, suffocate them in their strong arms.



JUNGLE BEAR OF BENGAL (URSUS LABIATUS).

Nevertheless, the brave peasants of the north will occasionally, single-handed, encounter the bear armed only with a sharp-pointed and very strong knife, and their left arm defended with many folds of bear-skin fur. Armed and defended in this simple fashion, they watch the moment when the bear rears himself, rush forward as quick as lightning, and make several rapid stabs, taking care never to be caught in his grasp, nor torn down by one of his lifted hind feet.

Bear-hunting was formerly reckoned a princely sport in Germany and Poland; hundreds of people used to go out on such occasions, both on horseback and on foot, with packs of hounds, bear-dogs, and mastiffs, accompanied by whole troops of country people, with nets and the means of making great fires, and furnished with horns, trumpets, drums, and other noisy instruments, to drive the game together, which was thus destroyed wholesale.

The brown bear lives to a great age, and grows to an immense size; some which have been killed have weighed 700lbs. Still, though so heavy, they climb rocks and trees with great ease and dexterity, descending again in the same position, but skilfully making use of every projection that can aid them. They swim extremely rapidly, and during the summer frequently take to the water for their own pleasure. The affection which the mother shows to her young, and the courage with which she defends them, have been noticed by all who are acquainted with the habits of this animal. The most dangerous enterprise of the bear-hunter is to attack the mother with her cubs, for then she faces her enemy with tenfold resolution, and nothing but death can force her to leave them undefended.

The bear is hunted in the north and taken in traps and pitfalls; while in Lapland, Kamtschatka, and other of those rigid, arctic regions, this animal is one of God's blessings to the poor inhabitants, every portion being turned by them to good account.

The Syrian bear, which we have already spoken of as that mentioned in the Scriptures, is noticed also in the wars of the crusades. The old chronicler, Matthew of Paris, says that Godfrey of Boulogne was dangerously wounded by one of these animals which he encountered at the siege of Antioch, and slew, after it had attacked a poor wood-cutter. A bear of this species figures in the procession of Ptolemæus Philadelphus, at Alexandria, and is described by old writers as a white bear of large size. Again it occurs in a procession as led by Egyptians, together with a lion, an elephant, a giraffe, and a leopard.

Although bears were formerly numerous in Palestine, they are now but rarely seen, and, according to the best accounts, only upon one of the two snowy summits of Mount Lebanon. Those summits are called Makmel and Gebel Sanin, and it is upon the former that the bears are found, near to the village of Bischerre. During the summer they remain in the neighbourhood of the snow, but frequently pay destructive visits to the cultivated fields in winter, their food

being, for the most part, vegetable, though they occasionally attack animals. A female bear was killed here a few years ago which was about four feet two inches long. She inhabited a rude den, formed amid a chaotic mass of fallen rock, and her flesh, which was cooked and tasted, was not found to be at all agreeable.

This bear is of a yellowish white, sometimes varied with yellowish brown. The ears are somewhat long and pointed; a mane of stiff, erect hair runs between the shoulders; the fur is woolly underneath, above which is long or slightly curled hair; its tail is about six inches long; it is tall in stature, and about the same bulk as the common brown bear.

The American black bear, *Ursus Americanus*, which may be seen in our engraving, is found in every wooded district of the American continent, from Canada to the Carolinas, and from the Atlantic to the Pacific Ocean. It has, however, like the Indians, been driven away by White civilisation, and is now rarely to be seen in the older states, although it is occasionally found in the Blue Ridge, a mountainous district of Virginia. Vast forests, however, still remain untouched by the axe, and the bear dwells for the present undisturbed amid wildernesses and mountains, to be hunted and driven to still remoter regions by the pioneer settler of the woods. It is still common in Canada.

The black, like the brown bear, is not carnivorous, or flesh-eating, by choice, but seems rather to prefer a vegetarian diet; nor does it willingly attack man, unless in the instance of a female with cubs, whose safety she considers to be endangered, and in that case she will not only attack, but flee with a speed which is almost incredible when her bulk is considered, never, however, for a moment losing thought or care for her young. "In the fur countries," says a writer on this animal, "the bear hybernates, or passes the winter in sleep. Having chosen a spot for its den under a fallen tree, it scratches away a portion of the soil, and lies down in the hollow at the beginning of a snow-storm, when the snow soon furnishes it with a close, warm covering. Its breath makes a small opening in the den, and the quantity of hoar-frost which gathers around it, serves to betray its retreat to the hunter. In more southern districts, where the timber is larger, bears often hide themselves in hollow trees. About 1,000 bear-skins are obtained by the Hudson's Bay Company from animals killed in their winter retreats. The Indians say, unless the bears are fat at the beginning of winter, that, instead of going to sleep for the season, they migrate southward in search of food. The young are all produced in the winter, and so carefully do their good mothers conceal themselves and their cubs, that the keen eye of the Indian hunter but very rarely finds them.

The Indians—as well as the northern nations of the eastern hemisphere—regard the bear with a species of reverence, and many are their traditions and superstitions regarding him. All believe that the bear will, under no circum-



THE MALAYAN SUN-BEAR (*HELARCTOS MALAYANUS*).

stances, injure a sleeping man. The American Indians relate many stories of women having been preserved unhurt even by the irritated bear, and hence the tender regard and almost reverence with which they regard it, even while hunting for its life. Several Indian tribes look upon the bear as their great progenitor, or ancestor, and as exercising a mysterious influence over their own destinies; hence they never undertake the chase without many ceremonies and superstitious observances. Not only is the dead bear entreated to pardon its slayers, but tobacco is smoked over its body, the smoke breathed into its nostrils, mysterious words are whispered into its dead ears, and various other ceremonies made use of to propitiate its offended spirit, nor until all these rites are performed will they venture to eat of the flesh, which then furnishes a great feast. The Red Indians, like the Kamtschatdales, make use of every portion of the bear.

Speaking of the superstitious regard which is paid to the bear, the writer on this animal in the Naturalist's Library says that the same prevails among the Mongol race in the northern and central parts of Asia; and that fragments of it remain to this day in Norway and Sweden. He says that heroes and nobles have gloried in the Scandinavian name of Bjorn, or the bear; and he traces the honourable surname of Biron, in France, and Byron, in England, to the same origin; this name being often translated in the middle ages by the Latin word *Ursus*. He tells us that bear-hearted would have had the same significance in the north that lion-hearted had in the south; and that for the same reason the teeth and claws of the bear were worn as necklaces and ornaments by the old Pagan warriors, and the shaggy bear-skin for mantles. Bear-skins were used by many nations as military ensigns or banners, and those were most esteemed for this purpose which were of unusual colours, yellowish, piebald, or white; the same were worn by the wizards in their magical incantations. After the introduction of Christianity into the north, they were made acceptable offerings to churches, where they may be found even to this day, spread out as rugs to keep the feet of the pastor warm during the performance of divine worship.

The black bear is not, however, the only animal of this genus found in America; the grizzly bear, or the *Ursus ferox*, which is a native of the Rocky Mountains, is one still more terrific. We will take an account of this species from the Naturalist's Library:—"The grizzly bear is the meeshek musquaw of the Cree Indians, and the hoppot of the Chopemish; and by hunters of the West it is familiarly called 'Caleb.' It does not differ very much in appearance from the black bear, excepting that its colour is a brown-black, the back grizzled with white, and the limbs coal-black; the muzzle is more or less rust-colour, and the ears hairy, and rather large. The most remarkable character consists in the very great size of the claws, which are nearly six inches in length on the fore paws,

but not sufficiently curved for climbing; hence, as it grows old, the grizzly bear does not climb trees. This is the largest of all the bears. Messrs. Lewis and Clarke found one that was nine feet from nose to tail, and which weighed eight hundred pounds. A few years ago, one was exhibited at Plymouth which walked erect without any supporting pole, and which was, in this posture, more than seven feet high. But it is in the bulk of the limbs and the great size of the head that this bear appears gigantic; and where these characters are united to great ferocity and tenacity of life, which belong to it, we need not wonder at the extraordinary stories that are told of it, or at the mysterious notions which the Indians, and even the Anglo-American hunters, entertain of it. Mr. Catlin, the great traveller among the Indians, describes an instance where one of these bears walked round him and his companions while asleep, as the track of her paws clearly showed, and then went to their canoe, which she plundered of all the eatables. It seems to be an understood thing among the backwoodsmen not to meddle with Caleb; and on this occasion, when Mr. Catlin had embarked, his companions would not allow him to fire at her, which indeed, independent of any danger there might have been from her pursuing them on the water, and the almost impossibility of killing her, she did not deserve, after the forbearance she had shown towards him the night before. In most cases, however, this bear is not disposed to attack human beings unmolested; it will rear itself on its hind legs, show its teeth, then turn round to depart, and perhaps again repeat the same menace. On other occasions it may be frightened by noise, such as that used by Mr. Drummond, who beat upon a large tin box. Still it is the most formidable animal in America, capable of striking down a bull bison, notwithstanding its enormous strength, and of dragging the carcass to a convenient place, there to bury it, in order to have several meals from the prey, which may weigh even more than twelve hundred pounds. The bears from the eastern side of the Rocky Mountains, being much more abundantly supplied with animal food, are more ferocious than those on the west, where they in a great measure live upon wild fruits. This species extends to the north beyond the sixty-first degree of latitude, and into the Mexican territories on the south.

The Malayan sun-bear, the *Helarctos Malayanus*, called bruang by the Malays, and of which we have given an engraving, is a native of Sumatra. It is about four feet long from its tail to the tip of its nose, and two feet high on the shoulders, and is remarkable for a singular power of protruding its lips; its tongue is very long, its fur is short and smooth, and its claws are very long also, though they do not appear so in our picture. Its colour is black, the face and lower parts are buff, and it has a white crescent upon its breast. It is a very docile animal in captivity. It is fond of sweets, and in its native forests preys upon the hoards of the wild bees, its long pliable tongue being an instrument well calculated by nature for scooping out the honeycombs from the hollows of



BROWN BEARS AT PLAY.

the trees. Vegetables form its principal diet, and it is attracted to the neighbourhood of man, by its fondness for the young shoots of the cocoa-nut-trees, to which it is very destructive.

Sir Stamford Raffles gives the following account of one of these animals, which he had domesticated :—

“It lived,” he says, “for two years in my possession. It was brought up in the nursery with the children; and when admitted to my table, as was frequently the case, gave a proof of its taste by refusing to eat of any fruit but mangosteens, or to drink any wine but champagne. The only time I ever knew him to be out of humour was on an occasion in which no champagne was forthcoming. He was naturally of an affectionate disposition, and it was never found necessary to chain or chastise him. It was usual for this bear, the cat and dog, and a small blue mountain bird from New Holland, to mess together, and eat out of the same dish. His favourite play-fellow was the dog, whose teasing and worrying was always borne and returned with the utmost good humour and playfulness. As he grew up he became a very powerful animal, and in his rambles in the garden would lay hold of the largest plantains, the stems of which he could scarcely embrace, and tear them up by the roots.”

The Bornean sun-bear, which is first cousin, or rather, brother to the above, differs very little from him, although he is somewhat less in size, and is adorned with an orange-coloured spot, or ornament, on the chest, instead of white. He, too, is a great lover of the young shoots of the cocoa-nut, and being a very expert climber, mounts the tree, and eating out the centre shoot, thereby kills it. He can both sit and stand upright with the greatest ease, and is so docile and playful in captivity, as frequently to be in that case and always a great favourite. His begging gestures are very amusing, and when a piece of bread or cake is held beyond his reach, he thrusts out his nostrils, lips, and even his tongue to reach it, while he makes the most comical use of his paws for the same purpose. When he has possession of it he fills his mouth, and then places the remainder on his hinder paws, as if to prevent its being soiled by the floor, and so helps himself as long as it lasts. He is fond of notice, and conscious of kind treatment; if, however, he is vexed or ill-used by any one, he will receive no further attentions until the offender has removed from sight. Among his other tricks, he has the habit of tumbling and performing various queer antics. This habit, however, is still more remarkable in his ugly relative, the sloth-bear, or ursine sloth, who is called from this circumstance the Tumbler.

For many years this unsightly animal was thought to be a sloth, but he is now discovered to be a true bear. He is a native of the mountainous parts of India, and seems to delight in the wildest rocky mountains and forests, where he can climb trees and gambol about at his will. As we have no picture of him, I must describe him as carefully as I can. He is a rough, clumsy creature, with short,

stout legs, and huge hooked claws; in size he is about equal to the brown bear of Europe, but the head is large and distorted, the nose and lips being very movable, and capable of being thrust out hideously; but that which gives it a still wilder and more dismal appearance is the quantity of long and shaggy hair which grows on the upper part of the head and neck, and which separates into two parts, the one falling over its eyes, and the other forming a thick mane on its shoulders. It is marked on the breast like the sun bears, with a white spot, which, in this instance, is of a triangular form: his general colour is black mixed with brown. He walks like a pig, with his back arched and his head hanging low. Yet, hideous and apparently sluggish as is this animal, he is led about by jugglers and mountebanks in India for amusement, as the brown bear used to be formerly in this country.

These bears are remarkable for their sense of smell, and their sagacity and playfulness. Even when in captivity they will sport about together in a most amusing manner, uttering the while a loud, roaring noise which seems anything but playful. When sleeping they huddle themselves up into a shapeless mass. Although they move with a shuffling, awkward pace, they can overtake a man at full speed, and climb trees with the greatest ease.

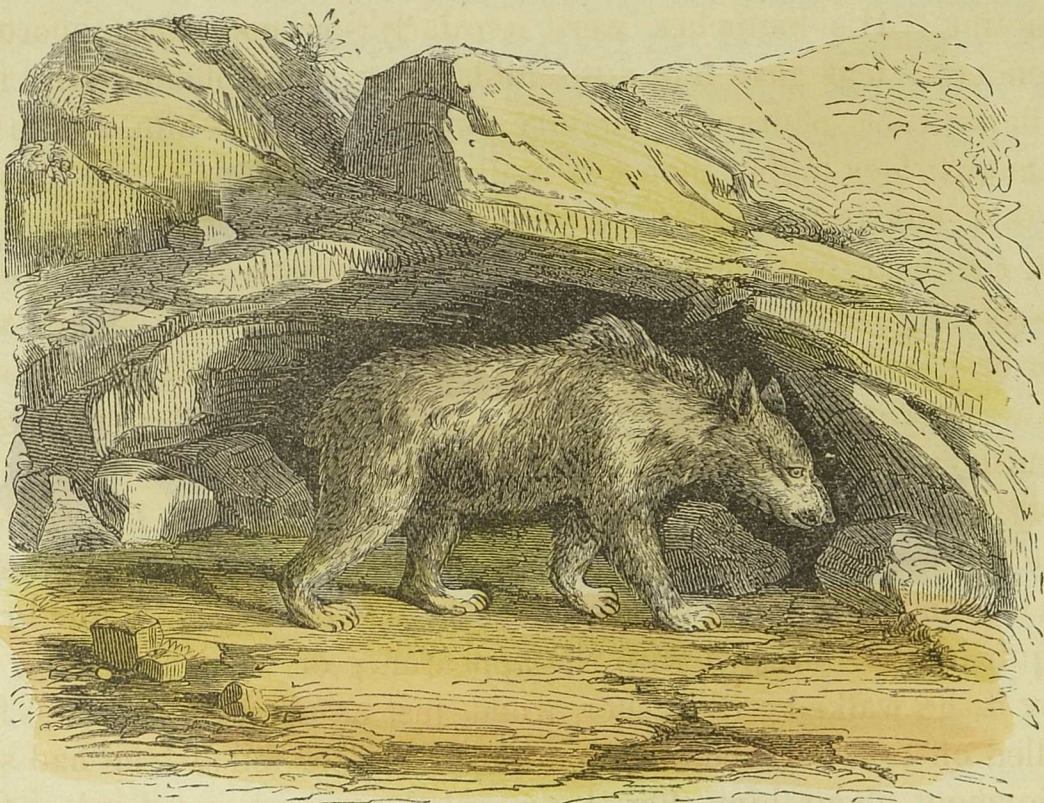
Notwithstanding all their amusing qualities, the true character of this animal seems to agree with its hideous and savage appearance. It is said that in its native country of India it will attack a single traveller, not, however, killing him at once in a noble sort of way, but munching up his limbs, beginning with his hands and feet, breaking the bones and sucking the flesh, and thus killing his victim by inches. And yet, even before he has made this murderous attack, he may have been seen by the unhappy traveller gambolling before him on the forest path or playing his antics among the trees.

From the hot regions of India, with its gambolling but blood-thirsty sloth-bear, we will make a sudden leap to the cold and icy seas of the Arctic circle, and find the Polar bear lying in wait for the seal, and attended by his faithful companion the stone-fox.

The Polar bear, the *Ursus maritimus* of the naturalists, and the nennook of the Greenlanders, is the largest and most formidable of all the bear tribe. "Formed by nature to endure the most intense severity of cold," says a writer on this animal, "this monarch of the realms of frost prowls over wastes of snow, over bleak, icy rocks, over fields of ice, or even swims out from one floe or island of ice to another, ravenous for prey. Animals of the land and the sea, birds and their eggs, the dead and the living, are alike devoured. The seal forms a favourite diet, together with the flesh of dead whales and the bodies of sea animals drifted on shore. In summer, mountain-berries are eagerly sought for, nor are seaweeds and marsh plants rejected. This bear swims admirably. Captain Sabine saw one about midway between the shores of Barrow's Straits, which are forty



THE AMERICAN BLACK BEAR.



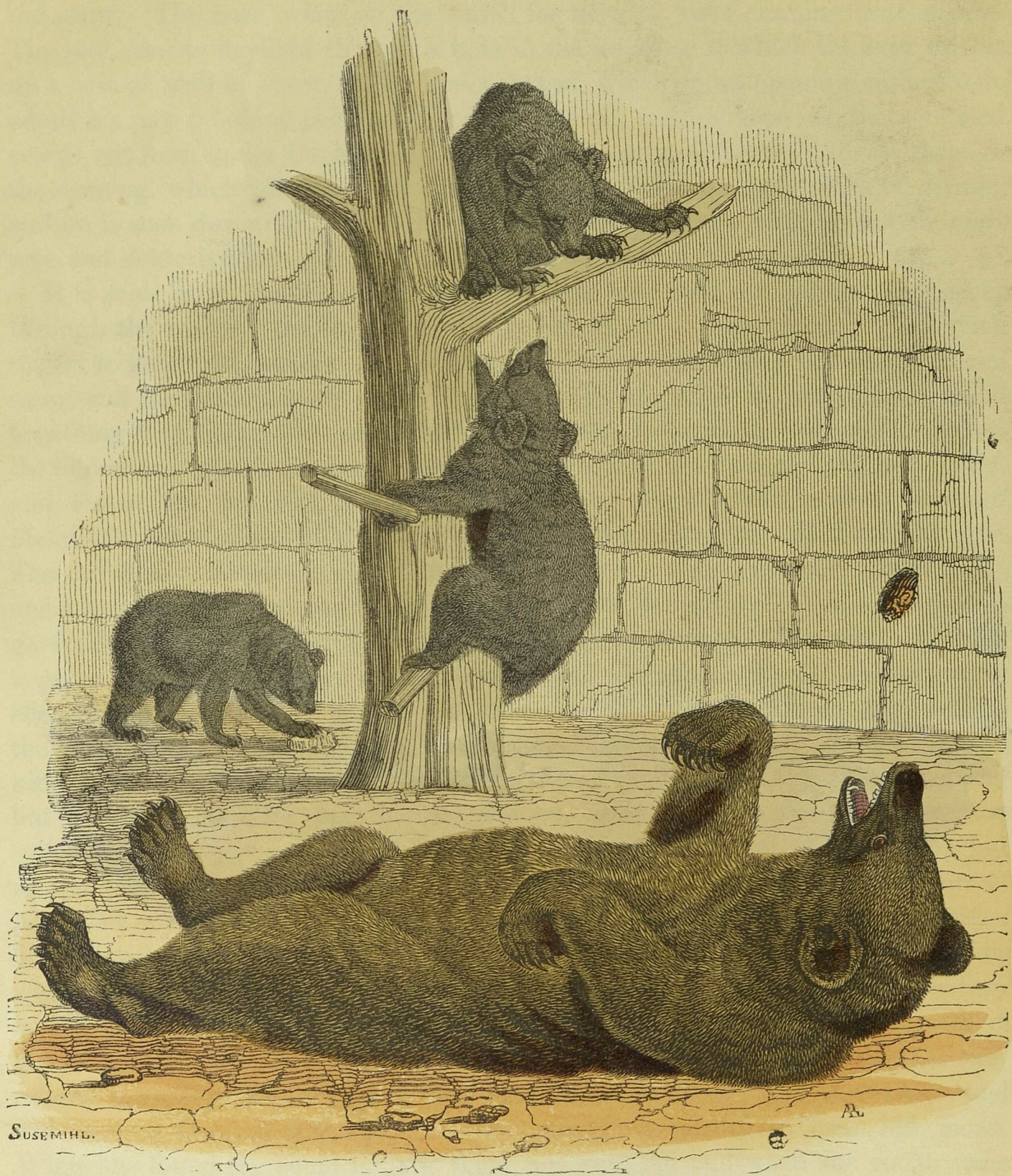
THE SYRIAN BEAR.

miles apart, and between which there was no ice on which he could rest. He is, indeed, so well fitted for mastery in the water, that he will attack the walrus in his own domain; and diving silently to the spot where the seal is lying, will, if he lie still, make a powerful spring upon him, kill him on the ice, and devour him at leisure, or if he dive to escape, his enemy is even more certain of his prey.

His gait on shore appears shuffling, but he can outgo the speed of a horse at full gallop. His length is from six to between even eight and nine feet. One killed by Captain Lyon in 1818, was nearly eight feet eight inches in length, and weighed 1,600 lbs. Let us now imagine ourselves up in the extreme north, in July, 1852, amid floes or islands of ice, and at work with a little ship's crew in endeavouring to release the vessel from the ice which was threatening to close in upon it. "While thus engaged," says the surgeon of that vessel, "I was startled by the cry of 'Bear!' And sure enough it was that menagerie wonder. Not, however, the sleepy thing which, with begrimed hair and subdued dirty face excites your pity as he walks for ever backwards and forwards in his wet cage. Our first Polar bear moved past us on the floes, at about half a mile's distance, with the leisurely march of fearless freedom. He was a bear of the first magnitude, about nine feet long, as we afterwards found by measuring his tracks. His length appeared to us still greater than this, for he carried his head and his neck in a straight line with his body. His colour seen against the white snow was a delicate yellow, and his black, blue-black nose, looked abrupt and in strong contrast with every other tint. His haunches were regularly arched, and supported as they were on ponderous legs gave him a resemblance to an elephant. His movements were peculiar. A sort of drawling dignity seemed to oppress him, and to forbid him lifting his august legs higher than was really necessary." Greatly excited by the view of this monarch of the icy wilderness, the crew set off in pursuit of him; but the bear, without ever seeming to trouble his mind about them, or condescending to be in any hurry, lost himself from their view amid a labyrinth of icy rocks. A few days later they saw another bear close to their ship; "he was a young animal, not more than six or seven feet in length, with a colour even more delicately tinted than the former, for the yellow was only apparent at the arm-pits, on his haunches, and along the line of his back; his muzzle, lips, and dewlap were of dark purple. When first seen he rose upon his hind feet, and lifting his neck in the direction of our brig, snuffed the air inquiringly. Satisfied with the appearance of what he saw, or rather not alarmed by it, he walked within shot, when, just as we were about to fire at him, he gambolled off to a neighbouring hummock. Poor fellow! he had such a look of life-enjoyment about him that I was glad we had not fired. Once again upon this little hill of ice he was at home, and favoured us with some bear's play, snapping at the icebergs, rubbing his mouth sideways against the snow, and rolling over and over, from top to bottom."

We have spoken of the stone-fox as being the constant attendant of the great Polar bear ; and so he is, the tracks of the two being generally seen together in the snow. The bear, when on the watch for the seal, uses cunning to take him. The seal rises to daylight through a hole in the ice, close to which the bear throws up a sort of wall of snow, in the lower part of which is an opening sufficient to admit his paw ; behind this the bear lies in wait, and, as soon as the poor seal creeps out from under the ice, he is caught by the paw of the bear, thrust through the opening, which with one pull drags him away from his only place of refuge, and he is soon devoured. But the little stone-fox is there also, and, with boldness and dexterity, lays claim to, and carries off part of the prize.

It is said, by good authorities, that the Polar bear does not hybernate or sleep through the winter ; the female, however, retires on the approach of that dark season to some rift among the rocks or ice, where she digs a lair in the frozen snow, and the falling snow buries her to a great depth in her den, a small breathing-hole being, however, always left. Here, towards the end of December, the inhabitants of the north say, always at Christmas, she brings forth her young, and leaves her den with them about the beginning of March, when they are about the size of a mastiff dog, and she, lean and gaunt, is ferocious with hunger. The devotion and courage of the mother-bear to her young are very remarkable, and many are the instances on record in which her dying agonies have been unregarded from her anxiety on their account. We will satisfy ourselves with one which is given in Phipp's voyage to the North Pole. It appears that a walrus having been killed a few days before by the crew, the she-bear had been attracted by the smell to the spot. " She came accompanied by two cubs, and, like a generous, kind-hearted mother, carefully divided the flesh among her young ones, reserving but a small portion for herself. As she was fetching away the last piece, the sailors levelled their muskets at the cubs and shot them both dead, and in her retreat they wounded the dam, but not mortally. It would have drawn tears of pity from any but unfeeling hearts to have seen the affectionate concern expressed by this poor beast during the last moments of her expiring young. Though she was herself dreadfully wounded, and could but just crawl to the place where they lay, she carried the lump of flesh which she fetched away, as she had done others before, tore it in pieces, and laid it before them ; and when she saw that they refused to eat, she laid her paws first upon one, and then upon the other, and endeavoured to raise them up. All this time it was pitiful to hear her moan. When she found she could not stir them, she went off, and when she got to some distance looked back and moaned ; and that not availing her to entice them away, she returned, and smelling round them, began to lick their wounds. She went off a second time as before, and, having crawled a few paces, looked again behind her, and for some time stood moaning ; but still her cubs not rising to follow her, she returned to them again, and with signs of inexpressible fondness went round,



BROWN BEARS IN THE ZOOLOGICAL GARDENS, PARIS.

pawing them and moaning. Finding, at last, that they were cold and lifeless, she raised her head towards the ship and uttered a growl of despair, which the sailors returned with a volley of musket-balls. She fell between her cubs, and died licking their wounds."

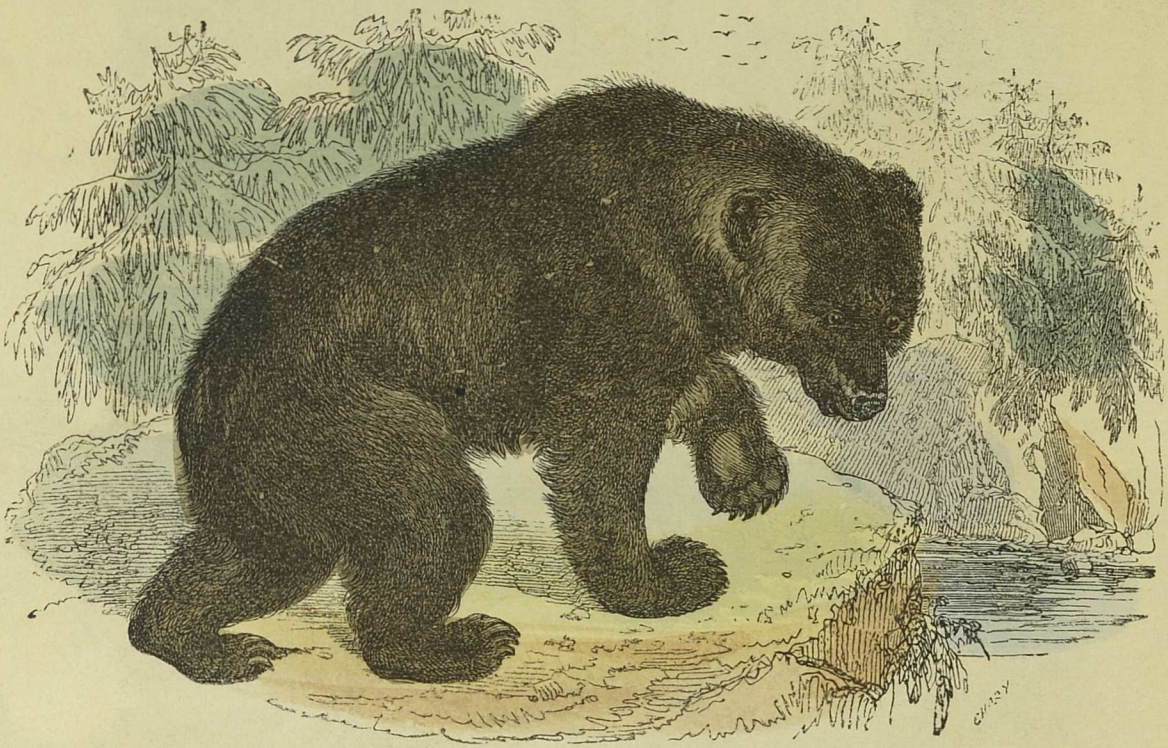


POLAR BEARS.

The male Polar bear wanders about the marshes until November, then goes out to sea on the ice in search of seals, and becomes very fat. Bears are sometimes carried away on floating masses of ice, and landed perhaps in Greenland or Iceland, where they commit great ravages.

The bear is abundantly provided by nature with defences against the extreme cold to which he is exposed. His fur of silvery white tinged with yellow, though outwardly coarse and shaggy, is thick and close and short as wool upon the skin, while his whole body, like that of the walrus and seal, is coated by a layer of fat, which entirely prevents the escape of the natural internal heat.

The fossil remains of bears have been found in various caverns of Germany, Hungary, and England, together with the bones of the wolf, hyæna, the glutton, and other large feline, or animals of the cat-kind.



THE BROWN BEAR OF THE ALPS.



THE DOGS OF ST BERNARD

THE DOG.

THE dog has some disreputable relations: he is first cousin to the wolf, and second cousin to the hyena and jackal; but he has so many good qualities himself that no one has a right to reproach him with his kindred, even if, as some naturalists say, his first ancestor was no other than the first wolf himself. However, be that as it may; if the first pair of wolves were the parents of the first dog, that dog was intended by the great and good Creator to become the friend, and companion, and useful servant of man. We may therefore, even in that case, suppose that the first children of our unhappy first parents, being equally different themselves in character, Cain dwelt in the forest among the wolves, and Abel, the first shepherd, was followed in love and good service by a faithful dog—the first shepherd-dog in the world. That dogs were employed in the very earliest times to guide or defend the sheep, is proved by the words of Job, who is supposed to have been a contemporary of Moses, and who speaks of the dogs of his flock.

The dog, in the Mosaic law, was ranked among the unclean beasts, and hence was held in abhorrence by the Jews. No doubt, however, he was so placed to preserve the Israelites from idolatry—the great sin to which they were prone—the dog being considered as sacred among the ancient Egyptians, from whose bondage they had lately escaped; and that more especially as its superior intelligence might easily have seduced them to this sin. The Egyptians shaved themselves—which was their sign of mourning—when a dog died in their families. The star which rose above the horizon at the season of the overflowing of the Nile, and which was a season of great joy in Egypt, because the country became fertilised by its waters, was called the Dog-star, and worshiped. Anubis, also, one of their deities, was represented with the body of a man and the head of a dog. In the East, both among the Mahommedans and the Hindoos, the dog is still considered to be unclean, and is never found as an inmate of a house, or a chosen companion of man. He is wild and masterless in those countries; an outcast and a vagabond. He is the street scavenger, and lives upon charity, upon offals, and even upon dead bodies. It is so to this day, and it was so in the time when Elijah foretold that the dogs should eat Jezebel by the wall of Jezreel. For when Jehu, the appointed scourge of the house of Ahab, came to Jezreel, Jezebel painted her face, and put on a splendid head-dress, and looked out of the window, and taunted him; on which Jehu looked up, and told some of his friends who were with her to throw her down; and they did so; and he trampled her

under his horses' feet, and rode into the palace to eat and drink ; and as he did so, he bade some of his people to go out and bury her, for that she was a king's daughter ; but the fierce half-starved street dogs had already eaten her body, and only her skull, her feet, and the palms of her hands were left.

Leaving this tragical history of the old Israelitish Queen, we will turn to the pleasant story of Tobit, where we shall find the dog, as amongst us, spite of his supposed uncleanness, the cheerful and accustomed companion of man. Tobit, and his wife Anna, and their son Tobit, natives of Galilee, were carried away captive to Nineveh by Shalmanezzer, when he took Samaria. Tobit the father had many alternations of fortune in Nineveh, where, though among the worshippers of idols, he still remained faithful to the true God. On one occasion, having buried one of those dead bodies which were thrown out into the market-place to be devoured by dogs and wild beasts, he slept that night in the court, under the eaves of his house, and became blind, in consequence of the sparrows, which no doubt had nests there, dropping something injurious into his eyes. This misfortune, like the afflictions of Job, caused many of his friends to insult him, by asking him what was the use of all his virtues and his good works, when God allowed him to become thus blind and helpless ? But he trusted in God still ; and his son Tobit, going to a town in Media, to recover some money which had been lent to a man named Gabriel, was accompanied by a young man, a guide, who was in reality the angel Raphael, one of the archangels of God. This journey was not only prosperous in every possible way, but Raphael gave Tobit a remedy for his father's blindness. Young Tobit was a long time absent ; at least his parents thought so, and grew very uneasy about him ; and his mother went out on the road by which he would return, in the hope of meeting him, At length she saw him coming in the distance, accompanied by the young man and his dog, and she ran to tell her blind husband the good news ; and the next moment, he, having stumbled against the door, because of his blindness, not only heard the dog barking for joy of his return, but was clasped in his son's arms. Nothing can be more beautiful than this old picture of life, which, as far as its truth and simplicity goes, might have happened only yesterday.

Very beautiful, also, are the allusions made to the peculiar habits of the dog, in two different instances, in the New Testament ; first, when the Saviour described the miserable condition of the sick beggar Lazarus, who had neither home nor friend to tend him ; and as he lay at the gate of the rich man, the dogs—those very homeless and outcast dogs of the East—came and licked his sores. Again, where the poor woman, who was of rather a despised class, came to the Saviour to ask his aid on behalf of her sick daughter, and Christ, who appears at that moment to have desired quietness, or perhaps to try her faith, would have put her off with a remark which seemed to imply that she was asking more than she had a right to ask ; for that “it was not meet,” or befitting, “to take the



FREEMAN DEL.

A. J. HAMMOND SCULPT.

“THE TWA DOGS.”

(From a Painting by Sir EDWIN LANDSEER, R.A.)

children's bread, and give it to the dogs ;" on which she, like a witty Irishwoman, replied, " Yes, Lord ; yet the dogs under the table eat of the children's crumbs ;" and the Saviour, for those very words' sake, which had such truth in them, cured her daughter.

Dogs, therefore, we see, in the days of Scriptural history, were just as now ; the same faithful attendants on the long journey of the master, bounding home before him to announce his return, or sitting watchful and eager at the table, craving for a morsel, and gathering up the crumbs which the children let fall.

The Creator made the dog, as we have said, to be the friend and companion of man, and has endowed him with those very qualities which are required for that high character. Buffon, the naturalist, in describing him, says truly, " He flies to his master with joyful haste, and lays all his strength, and courage, and talent at his feet. A glance from his master is sufficient, for he understands the slightest sign of his will. He has all the warmth of friendship and the constancy of affection which is in man. Neither interest nor desire of revenge can corrupt him, and his only fear is to displease. He is obedient and ready to serve. He soon forgets ill-usage, or only remembers it to attach his master more firmly to him. He licks the hand that punishes, and endeavours to overcome anger by submission." The dog looks up to man as we ought to look up to our heavenly Father, with love and obedience ; duty is to him his law, and obedience his delight.

All dogs, according to Linnæus, have several peculiarities in common. They are carnivorous, or flesh-eating ; their stomachs digest bones, and they eat grass as an emetic when nature tells them that they require such a medicine. Their sense of hearing is very quick ; they appear to dream when asleep ; they bark at strange dogs ; snap at a stone thrown at them ; howl at certain musical notes ; and turn round several times when about to lie down. They fawn at the approach of their master, and will not patiently suffer any one to strike him. They run before him on a journey, often going over the same ground ; on coming to cross-ways, they stop, look back, and wait to observe which of them he takes. They sit up and beg ; and, when they are guilty of theft, or any other misdemeanour, slink away with their tails between their legs. They are also suspicious of beggars and ill-looking people, and will attack them without the least provocation. To these characteristics, as given by the great naturalist, we may add that they also have an intuitive sense of physiognomy, and will discover, without a word being spoken, the person who is kindly disposed to their species generally. They will imitate the actions of their masters ; lead the blind ; and may be taught all kinds of intelligent tricks.

Of the great attachment of the dog to his master, little need be said, for it is universally known. We will, however, give one of the oldest instances on record, that of Ulysses and his favourite dog Argus. Ulysses, the King of Ithaca, went to the siege of Troy ; he was ten years there, and ten years on his homeward

journey. Of course twenty years must have altered his appearance greatly ; besides which he returned to his palace disguised as a beggar ; for there were many enemies there who would gladly have killed him if they could. At the door of his palace he met with a faithful old servant, who, though he longed for his master's return, did not recognise him at all. Not so his old dog Argus ; for, as Ulysses and the old servant

“Near to the gates in conversation drew,
Argus, the dog, his ancient master knew ;
And, not unconscious of the voice and tread,
Lifts to the sound his ears, and rears his head.
He knew his lord—he knew, and strove to meet ;
In vain he strove to crawl and lick his feet :
Yet all he could, his tail, his ears, his eyes,
Salute his master, and confess his joys.
The dog whom fate had granted to behold
His lord when twenty tedious years had rolled,
Took a last look, and, having seen him, died.”

There are innumerable varieties of dogs, and wild dogs are found in many parts of the world, especially in Africa, in all parts of the East, and in Australia. Bishop Heber says, that in India they hunt like hounds in packs, and attack wild beasts, and even tigers. Throughout the whole of the East, as well as Egypt and Constantinople, every village or portion of a city has its own troop of dogs ; and if any of these are found out of their own bounds the others drive them away. These wild dogs are called dingos in Australia, and dholes in some parts of India. The pariah dog is also of the same class. Major Forbes says, that in Ceylon the traveller is sure to be beset at any resting-place by multitudes of pariah dogs, which assemble there, with every variety of lank sides, lame legs, blind eyes, and blotched bodies. These poor animals having ascertained where stand the provision-baskets, next examine the physiognomy of the traveller, and may be seen cautiously approaching and staring in his face, apparently for the purpose of discovering whether they may hope to be permitted to pick up the crumbs and fragments of his feast. A kind look is sufficient to attach one of these dogs, and as they hold the same rank in the canine species that the vagabond does in the human, they have also been gifted with that sharpness of wits and ease of digestion which enables them to exist where the dog of higher descent might starve.

“On one occasion,” says the same writer, “when accident had deprived me of a watch-dog, I accosted civilly a large pariah dog which passed me as I was travelling ; the animal showed his gratitude by wagging his tail and following me home, and from that time he commenced attending regularly at dinner ; he also took upon himself the task of barking at strange people, and biting all strange dogs that approached my house ; and, in short, from the first day, Lebuna, or the tolerated, as



THE PAUPER'S DOG.



THE NEWFOUNDLAND DOG.

he was called, performed the duties of an accomplished watch-dog. This animal became very fat ; but though now so well fed, could not forbear stealing, which he had been accustomed to formerly from necessity ; and at last he was killed by a butcher, while waddling off with a quarter of mutton." The pauper's dog of our own country must resemble the pariah dog in appearance, though it differs from him in one very important respect,—it has a master. The one we have represented is evidently full of distress because its unhappy master has been received into the Union, where no dog may enter ; it is reduced, therefore, to the condition of the pariah dog, it is without a master ; and hard as the world has been to it hitherto, it will be still harder now.

An interesting anecdote is related also by Captain Williamson of another of these dogs in India :—" A tiger which was in captivity was fed daily upon a pariah dog, which was thrown into his cage. On one occasion, however, the dog showed such spirit as astonished both the tiger and the spectators ; he crept into a corner, and whenever the tiger approached, seized him by the neck or lip and made him roar piteously. Again and again the tiger, which was ravenously hungry, renewed the attack, and always with the same result. At length, out of regard to the courage of the dog, other food was given to the tiger, and the tiger not only ceased to molest him, but began to treat him with so much kindness that he allowed him to eat with him of the rice and milk which was given to him daily. The two animals became greatly attached to each other, the dog was allowed to pass in and out freely, his home being the cage of the tiger. At length, however, the tiger died, and the dog moaned piteously, and for a long time appeared inconsolable for his loss."

The wild dogs of Africa cannot be better described than by that wonderful hunter, Gordon Cumming. He was in the wilderness of Africa,—truly a howling wilderness, for there were hyenas in his neighbourhood, as well as other savage beasts,—when one night he lay down to sleep near an antelope which he had shot, and was awoke from a terrible dream about lions, by a peculiar sound which startled him. " I heard," says he, " the rushing of light feet, as of a pack of wolves, close on every side of me, accompanied by the most unearthly sounds. On raising my head, to my utter horror I saw on every side nothing but savage, wild dogs, chattering and growling. On my right and on my left, and within a few paces of me stood two lines of these ferocious-looking animals, cocking their ears and stretching their necks to have a look at me ; while two large troops kept dashing backwards and forwards within a few yards of me, chattering and growling with the most astonishing volubility. Another troop of wild dogs was fighting over the wild beast I had shot, which they had begun to devour. On beholding them I expected no other fate than to be instantly torn to pieces. I felt my blood curdling along my cheeks, and my hair bristling on my head. However, I had the presence of mind to consider that the human voice and a

determined bearing might overawe them, and accordingly, springing to my feet, I stepped on to the little ledge surrounding my shooting hole, where, drawing myself up to my full height, I waved my large blanket with both hands, at the same time addressing my savage assembly in a loud and solemn manner. This had the desired effect. The wild dogs removed to a more respectful distance, barking at me something like collies. Upon this, I snatched up my rifle and commenced loading, and before this was accomplished, the entire pack had passed away, and did not return."

Leaving now the wild dogs, we will speak of some species more familiar to ourselves, and particularly those which are most useful to man. The dogs of Greenland and Kamtschatka somewhat resemble the shepherd's dog in appearance, but are much larger and stronger. The dog is to the Greenlander what the camel is to the Arab; its flesh supplies him with food, and its skin with garments; and harnessed, four or five together, to his sledge, they draw him from one part of his dreary country to another. The Newfoundland dog, which is a kind of large spaniel, one of the most valuable and sagacious of its species, is extremely useful to the settlers on the coast of the country from which they are named, by bringing down wood from the interior of the country to the seaside. So great is their strength, that three or four of them, it is said, yoked to a sledge, will draw two or three hundred weight of timber with great ease. They are not attended by a driver, but having delivered their load return again to the wood for a fresh supply. Great as are their services, they are, however, hardly and cruelly used; tasked beyond their strength, ill-fed, and frequently die of ill-usage.

The Newfoundland dog is web-footed, swims with great ease, and is perfectly fearless of water; he is most useful in this country for his good services in the preservation of human life from drowning. Mr. Youatt, in his work on the dog, mentions one which had saved no less than four human beings. They are faithful, good-natured, and ever friendly to man, remarks the same author. They will defend their master and their master's property, and suffer no person to injure either one or the other; and, however extreme may be the danger, they will not leave anything entrusted to their charge for a minute. They seem only to want the faculty of speech in order to make their good wishes and feelings understood, and they are capable of being trained to all the purposes for which every variety of the canine species is wanted.

We will close our account of this interesting and valuable dog by an anecdote of one which lived a few years ago with a family in one of the southern states of the American Union. The family were about to proceed to St. Augustine, and had embarked, when just as the vessel was leaving the pier, they perceived that the dog was not with them. They whistled and called, but no dog appeared; the captain was impatient; swore he would wait no longer, gave the order, and



THE LIFE PRESERVER.

the vessel swept along the water before a strong and favouring gale, and was soon a quarter of a mile from the shore. The father and daughter were standing at the stern of the vessel looking back to the city, when suddenly the dog was seen at the water's edge with something in his mouth. With a glass they discovered that it was his master's pocket handkerchief which had been dropped somewhere upon the road down to the vessel, and which he now recollected, with some compunctions of conscience, that he had sent him back to search for. The dog looked piteously round upon the bystanders, then at the retreating vessel, and leapt boldly into the water. His master immediately pointed out the noble animal to the captain, and requested him to throw his vessel into the wind until the dog could near them. He also offered a large sum if he would drop his boat and pick him up: told him of the manner in which he had saved the life of his daughter, and again offered him the price of a passage if he would save the faithful creature. The girl joined her entreaties to those of her father, and implored that her early friend might be rescued. But the captain was a hard-hearted savage; he was deaf to every appeal of humanity; kept obstinately on his course, and the poor dog, which was the better animal of the two, followed the vessel until his strength was exhausted and he sank below the billows.

The Alpine Spaniel, or dog of St. Bernard's, belongs to the same class as the Newfoundland, and is possessed of the same sagacity and general good qualities, and is equally entitled to the gratitude of man for its valuable services in saving human life. The passes or roads across the Alps, as we have already related in our little volume on Mont Blanc, are extremely dangerous from their steepness and narrowness. Avalanches frequently fall and overwhelm the traveller, or thick driving snow-storms come on which hide the path and bewilder his senses, so that he soon loses himself in those dreary solitudes, and benumbed with cold, as the darkness of night overtakes him, sinks into drowsiness which becomes the sleep of death, whilst the falling, drifting snow piles its icy covering above him. Numbers of people must have so perished on the most dangerous of these passes, that of Mount St. Bernard, were it not for the services of a number of dogs trained for the purpose of human preservation, and kept at the Monastery of St. Bernard, which was built in the ninth century, before the invasion of William the Conqueror in England, at the height of many thousand feet among the mountains. These dogs, which may be seen by the traveller loitering about the entrances and passages of the monastery, are sent out at night, or during tempestuous weather, with a little cask of spirits fastened to their necks, to traverse every path of the mountains in search of forlorn or frozen travellers, and their scent is so keen and their labour so unflinching that they never fail to discover any who may stand in need of their help, rescuing them even when many feet below the snow. Our frontispiece represents two of these servants of mercy having found a perishing boy; the one is caressing him and will finally arouse

him from the slumber of death and induce him to wrap himself in the cloak which is bound around his body, while the other utters a deep and peculiar bark, which, echoing from rock to rock, carries to the listening monks the anxious intelligence that human life is in peril. The most celebrated of these noble dogs was named Barry, and is said to have rescued no less than forty lives, but sad to say he at length perished in the performance of his duty; having been sent, in company with another dog, to attend two guides and a Piedmontese courier, who, against the advice of the monks, persisted in descending the mountain, when two avalanches falling, not only dogs and men perished beneath the snow, but the very family of the courier himself, who had set out with the anxious hope of obtaining some tidings of him.

Every kind of Sheep-dog is remarkable for the same intelligence, fidelity, and conscientious fulfilment of duty which we have described in the two former species, and anecdotes of their fine qualities are innumerable. We will, however, satisfy ourselves with merely one out of many, and which we give from Youatt's work on the Dog:—"A shepherd, in one of his excursions over the Grampians to collect his scattered flock, took with him one of his children, about four years old. After traversing his pastures for awhile, attended by his dog, he was compelled to ascend a summit at some distance. As the ascent was too great for the child he left him at the bottom, with strict injunctions not to move from the place. Scarcely, however, had he gained the height, when a thick Scotch mist came on, and almost changed the day to night. He returned to seek the child, but was unable to find him, and concluded a long and fruitless search by coming home distracted to his cottage. The poor dog was also missing in the general confusion. As soon as it was light the next morning, he again set out in search of the child; but again came back without him. He found, however, that during his absence his dog had been home, and on receiving his allowance of food, instantly departed. For four days the shepherd searched for his child with the same ill success; and the dog for the same time as regularly came back for his food, and then departed. Struck by this singular circumstance, he determined to follow the dog, which departed as usual with his piece of oaten bread. The animal led the way to a waterfall, at some distance from where the child had been left. It was a steep and rugged descent which he took, and he disappeared in a cave, the mouth of which was almost on a level with the torrent. The shepherd with difficulty followed, but on entering the cavern, what were his emotions when he beheld the child eating the cake which the dog had brought, while the faithful animal stood by looking on with great satisfaction. From the situation in which the child was found, it appeared that he had wandered to the brink of the precipice, and then either fallen or scrambled down, the torrent preventing his return. The dog, by means of his scent, had traced him to the spot and afterwards prevented him from starving by giving



DOGS AND GAME.

up a part—or, perhaps, the whole—of his daily allowance. He appeared never to have quitted the child night or day, except for food, as he was seen running at full speed to and from the cottage.”

Occasionally dogs, like men, acquire thievish and mischievous propensities. Sometimes they become devourers of sheep, and as such are hunted to death; for a dog having once this habit is rarely, if ever, known to lose it. Bewick gives an instance of this kind which is well worth relating. “In December, 1784, a dog was left by a smuggling vessel near Boomer, on the coast of Northumberland. Finding himself deserted, he began to worry sheep, and did so much damage that he became the terror of the country within a circuit of about twenty miles. We are assured that when he caught a sheep he bit a hole in its right side and, after eating the fat about the kidneys, left it. Several of them thus injured were found by the shepherds, and being taken proper care of, some of them recovered. From his delicacy in this respect, it may and will be imagined that one sheep a-day would not satisfy his hunger. The farmers were so alarmed at the mischief he did that all kinds of means were used for his destruction. They frequently pursued him with hounds, greyhounds, &c., but when the dogs came up with him, he laid himself on his back, as if supplicating for mercy, and in this position they never hurt him. He therefore lay quietly, in this pitiful manner, taking his rest until the hunters approached, when he made off without being pursued by the hounds, till they were again excited by their masters to the pursuit, which always ended unsuccessfully. It is worthy of notice that he was one day pursued from Howick upwards of thirty miles distance, but returned thither and killed several sheep the same evening. His constant residence during the day was upon a high rock near Howick, where he had a view of four roads that approached, and here he was finally shot in March, 1785.”

Equally trustworthy is the Drover's dog, which greatly resembles the sheep-dog in appearance, and however painful and difficult is the performance of his duty, he never shirks it. In illustration of this we will give an anecdote from a writer in *Chambers' Journal*, and which has reference to a female dog of this species, belonging to a shepherd named Dunning, in Perthshire. The man had bought for his master, at Falkirk, four score of sheep which he immediately despatched home under the care of his dog alone, a distance of seventeen miles, through a populous country. The poor animal when a few miles on the road dropped two whelps, but, faithful to her charge, she drove the sheep on a mile or two farther, then allowing them to stop, returned for her pups, which she then carried about two miles in advance of the sheep. Leaving her pups here she returned for the sheep, and drove them on a few miles; and this she continued to do, alternately carrying her young ones and taking charge of the flock, till she reached home. The manner of her acting on this trying occasion was after-

wards gathered by the shepherd from various individuals who had observed these extraordinary proceedings of the poor animal on the road. Although she brought every sheep of the flock safe home, yet it is painful to add that she did not succeed in bringing her offspring home alive.

The amount of intelligence, skill, and obedience shown by every kind of well-trained dog used for taking game almost surpasses belief. Nor can we even read of it without a sentiment akin to pain, from the thought that these creatures, which devote themselves with such earnest zeal to our service, are often ill-requited by man; and that while their merit is so great, their reward and enjoyment is but in this life of servitude.

One of the cleverest dogs which is not used for taking game is the Poodle, a water-dog, like the Newfoundland, and resembling him also in his general ability and strong undying attachment to his master. Many affecting anecdotes are told of this dog, and we will give one which exhibits his skill in detecting a thief. We take our narrative from the Police Records of Paris:—

There was formerly, if not now, a place of amusement in the *Champs Elysées*, called Vauxhall, which was frequented by all classes of people, and among the rest by pickpockets. The pickpockets of Paris have always been very expert, and their custom was to select as their victims such country gentlemen as they saw among the crowd. They could tell a stranger from the country in a moment; and, as they were always well dressed, and looked like gentlemen themselves, they were not suspected. They would, in the first place, fall into conversation with the stranger, and always contrived to know some of his acquaintance or friends, or at all events the town he came from; and while they were thus talking very pleasantly with him, would pick his pocket.

On one occasion a rich gentleman, just arrived from Poictou with his wife, went in the evening to Vauxhall, which was then the fashionable place of resort. He entered, took about a dozen steps, met with an agreeable gentleman, exchanged a few words, and, in the twinkling of an eye, his purse, which contained thirty-eight louis-d'or, was gone, without his knowledge; in the same way he was deprived of his splendid watch, and a gold snuff-box. He had not the least idea of his losses, and only thought how polite and agreeable the gentlemen of Paris were.

It was very hot; and, as his wife was fatigued, and wished for a refreshment, they entered a coffee-house, and called for lemonade, ices, &c. Having partaken of these, the gentleman put his hand into his pocket to pay—and there was no purse! He knew not what to do. “Sir,” says he to the master of the coffee-house, “I will leave my watch in your hands as a pledge for what I owe you.” But there was no watch! “At all events,” says he, in confusion, “my snuff-box!” But no; he had not even his snuff-box!

Here was an awkward predicament for a gentleman to find himself in! He was a stranger, and had fallen among thieves. He had, however, fortunately,

not lost his presence of mind. He ordered an officer of police, who was always on duty, to be called, gave him his name, and related his misfortune, adding that he had no doubt but that he could assist him in recovering his stolen property. The officer expressed his wish that he should do so, and immediately the gentleman went to his carriage, which was standing at the gate, and brought in with him a fine poodle dog.

The dog seemed full of intelligence and eagerness. "Search," says his master to him; "I have lost something!" The dog understood instantly, and, advancing into a group of people, made a dead stop before a fine gentleman covered with gold lace. "Sir," whispered the officer of police to him, "follow me, in the name of the King." He was taken into an adjoining apartment, searched, and, behold, three watches were found on his person, one of which exactly answered the description the Poictevin gentleman had given of that which he had lost. It was restored to him, and the pickpocket was consigned to the watch-house.

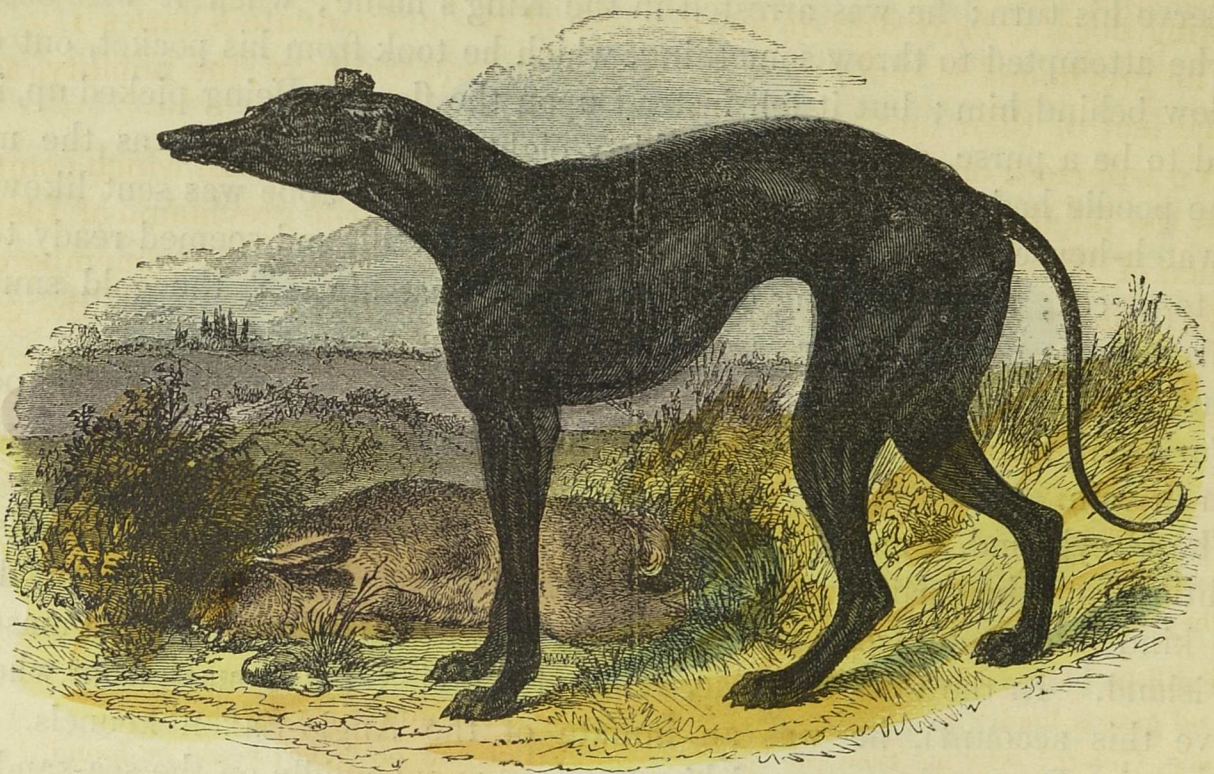
A second search was commenced. They went the round of the gardens—found nothing; into the crowded rotunda—nothing still; but as they were passing a small building in which people read the newspaper, and the door of which was closed, the poodle stopped suddenly, and appeared quite excited. The door was locked; they knocked, but received no answer; they knocked louder, and finally burst the door open, to find here a young abbé, who appeared to have been reading busily, and now complained of their rude interruption. But that would not serve his turn; he was arrested in the King's name; when it was observed that he attempted to throw something, which he took from his pocket, out of the window behind him; but it fell instead upon the floor. Being picked up, it was found to be a purse, and contained thirty-eight louis-d'or, exactly as the master of the poodle had stated. It was his own purse. The abbé was sent likewise to the watch-house. But the dog was not satisfied still, and seemed ready to tear him to pieces; and in putting out his arm to thrust him off, the gold snuff-box fell from some part of his dress, where it had been concealed.

And thus, by means of this sagacious dog, two of the most notorious pickpockets of Paris fell into the hands of the police, who had been for years in search of them in vain.

The Greyhound, a native of the British isles, has been celebrated for his good qualities from the earliest period of British history. It is supposed that dogs of this kind were sent from Britain to Rome, when the Romans were masters of this island. In the time of Elfric, King of Mercia (says Youatt, from whom we derive this account), he was an inmate of the Anglo-Saxon kennels. King Canute the Dane, who reprov'd his courtiers so splendidly on the sea-sands near Southampton, considered him the first of dogs. Henry II. was passionately fond of greyhounds; so also was King John, who frequently received finely-bred and well-trained animals of this kind instead of money. The Isle of Dogs, in the river Thames, derived its name from being the place where the greyhounds and



THE WATCH DOG.



THE GREYHOUND.

spaniels of this monarch were kept, it being near to Waltham, and other royal forests, in which he amused himself with coursing.

The old Chronicler, Froissart, relates a singular and interesting story of one of these dogs, which is, shortly, as follows:—"King Richard II. had a favourite greyhound called Mithe, which waited upon him and would become familiar with no one else. When the king rode out, the greyhound was let loose, and rushing then to him would fawn upon him and leap with his fore feet upon his shoulders. One day as the king and the Duke of Lancaster were talking together in the court, Mithe suddenly left the king and leapt about the duke, and showed to him the same friendship which he had hitherto shown to his royal master. The duke, who had no acquaintance whatever with the greyhound, asked the king what was the meaning of it; 'Cousin,' said the king, 'it is a great good token to you, but an evil one to me.' 'How do you know that?' asked the duke. 'The greyhound,' returned the king, 'acknowledges you here this day as king of England, as you shall be, and I shall be deposed. The greyhound has this knowledge by instinct; therefore take him to you, he will follow you and forsake me.' The duke understood those words perfectly, and cherished the greyhound, which would never after follow King Richard, but attached itself to the Duke of Lancaster." Edward III. was so partial to these dogs that when he went into France to carry on his wars there, he took with him sixty couples of them, besides other large hunting dogs. They were favourites also of the unfortunate Charles I.

The greyhound is sculptured on most of the old tombs of the nobility, as lying at the feet of their master.

We will close our account of these dogs by the fine old ballad, which commemorates the fidelity and tragical fate of Gelert, the favourite greyhound of Llewellyn, Prince of Wales, and son-in-law to King John. It must be remembered that at that time wolves were common in these islands. Beth-Gelert, or the grave of the greyhound, remains to this day in North Wales, and marks the scene of this event:—

The spearman heard the bugle sound,
And cheerly smiled the morn,
And many a brach, and many a hound
Obeyed Llewellyn's horn.

And still he blew a louder blast,
And gave a louder cheer;
"Come, Gelert! why art thou the last
Llewellyn's horn to hear?"

"Oh, where does faithful Gelert roam?
The flower of all his race!
So true, so brave! a lamb at home,
A lion in the chase!"

'Twas only at Llewellyn's board
The faithful Gelert fed;
He watched, he served, he cheered his lord,
And sentineled his bed.

In sooth he was a peerless hound,
The gift of royal John;
But now no Gelert could be found,
And all the chase rode on.

And now, as over rocks and dells
The gallant chidings rise,
All Snowdon's craggy chaos yells
With many mingled cries.

That day Llewellyn little loved
 The chase of hart or hare ;
 And scant and small the booty proved,
 For Gelert was not there.

Unpleased Llewellyn homeward hied,
 When near the portal seat,
 His truant Gelert he espied
 Bounding his Lord to greet.

But when he gained the castle door,
 Aghast the chieftain stood ;
 The hound was smeared with gout of gore,
 His lips and fangs ran blood.

Llewellyn gazed with wild surprise ;
 Unused such looks to meet,
 His favourite checked his joyful guise,
 And crouched and licked his feet.

Onward in haste Llewellyn passed,
 And on went Gelert too ;
 And still where'er his eyes he cast
 Fresh blood-stains met his view.

O'erturn'd his infant's bed he found,
 The blood-stained covert rent,
 And all around the walls and ground
 With recent blood besprent.

He call'd his child—no voice replied ;
 He searched—with terror wild ;
 Blood ! blood ! he found on every side,
 But nowhere found the child.

“ Hell-hound ! by thee my child's devour'd ! ”
 The frantic father cried ;
 And to the hilt his vengeful sword
 He plunged in Gelert's side !

His suppliant, as to earth he fell,
 No pity could impart ;
 But still his Gelert's dying yell
 Passed heavy o'er his heart.

Aroused by Gelert's dying yell,
 Some slumberer wakened nigh :
 What words the parent's joy can tell
 To hear his infant's cry !

Conceal'd beneath a mangled heap
 His hurried search had miss'd,
 All glowing from his rosy sleep,
 His cherub boy he kissed !

Nor scratch had he, nor harm, nor dread—
 But, the same couch beneath,
 Lay a great wolf, all torn and dead—
 Tremendous still in death.

Ah ! what was then Llewellyn's pain !
 For now the truth was clear :
 The gallant hound the wolf had slain
 To save Llewellyn's heir.

Vain, vain was all Llewellyn's woe :
 “ Best of thy kind, adieu !
 The frantic deed which laid thee low
 This heart shall ever rue.”

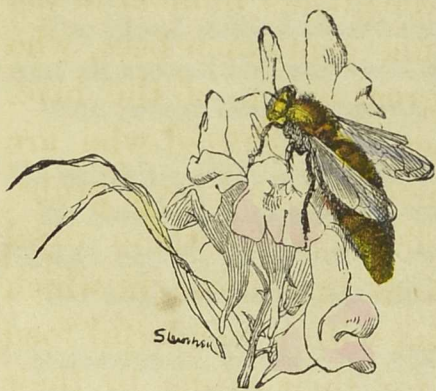
And now a gallant tomb they raise,
 With costly sculpture deck'd ;
 And marbles storied with his praise
 Poor Gelert's bones protect.

Here never would the spearman pass,
 Or forester unmoved ;
 Here oft the tear-besprinkled grass
 Llewellyn's sorrow proved.

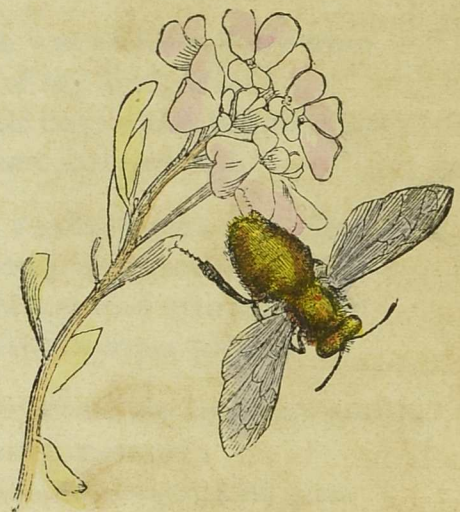
And here he hung his horn and spear ;
 And oft as evening fell,
 In fancy's piercing notes could hear
 Poor Gelert's dying yell.



MOUTH OF THE HIVE.



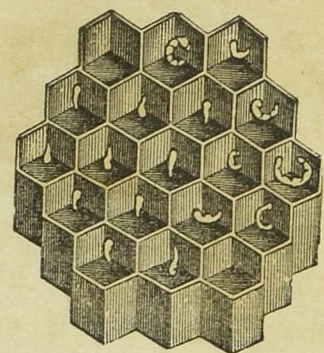
QUEEN-BEE.



ONE OF HER COURTIERS.



WORKING BEE.



CELLS.

A PEEP INTO THE INSECT WORLD.

INSECTS ! they are as numerous almost as the sands on the shore, and all wonderful. In our small space we could not even enumerate their names, if we did nothing else ; let us, therefore, waste no time in talking, but as soon as possible take a peep at a bee-hive, and we shall find interest and amusement for a whole day.

The Bee is called *apis* by naturalists, and the hive-bee in particular *apis mellifica*. Our frontispiece represents the mouth of the hive. Every hive is a perfect little kingdom, or rather queendom. The population consists of three kinds, by far the greater number being those busy working bees which you may have seen collecting the dust or pollen of flowers. This they gather up with their fore-legs, and put into a curious sort of little pouch, or basket, in their hind legs, patting it down carefully so that it may not fall out, sipping between whiles the sweet nectar of the same or other flowers, which they convey into their honey-bags, a sort of first stomach ; and thus working away from flower to flower until their honey-bags and their leg-baskets are quite full, when they fly away home. These industrious workers, as I told you, compose much the greater number in the hive population. Next come the drones, lazy fellows, fine gentlemen bees, who have nothing to do but to be civil and attentive to the great queen of the hive. From out of the working population, a certain number are selected who are employed as nurse-bees, and whose business it is to nurse and feed royal grubs, from which the future queens are to be chosen. The cells in which these royal grubs are nurtured are much larger and more commodious than those in which the common grub is left to mature itself, and they are fed with a wonderful food which has been called royal jelly, prepared expressly for their eating by their anxious nurses. What this royal jelly may be, or how prepared, or in what it differs excepting in superior quality from the common bee-bread made of the pollen of flowers which feeds common grubs, remains a mystery ; but the truth is that a queen bee always comes out of the royal cradle, though she went into it only a common grub. The busy working bee is industrious and patient as a labourer ; she is loyal to her queen, and, though never a mother herself, is a wonderfully attentive and affectionate nurse to the immense family of her queen. The bee, like every good manager, is an early riser. At four o'clock in the morning she is off and works busily, as I have told you, until, with heavily laden honey-bag and leg-baskets, home she comes at about ten o'clock, to find thousands returning like herself equally laden. What does she do now ? Lie down and

rest after all her labour in the hot sun, miles away from home? No such thing! In the first place, perhaps, she empties her honey-bag into one of the store-cells, or great larder-cupboard, where it may help to support the queen or the community at large, all the other bees doing the same, or perhaps she may give some of her honey to hungry bees who have had no breakfast, having been employed all the morning in building cells, or larder-cupboards, instead of going out as the rest have done. When her honey bag is emptied she sets to work on her leg-baskets, which are brim full of yellow pollen or flower dust, which is well packed up, and kept from falling out by a number of stout hairs which fringe the basket. Perhaps she may be seen devouring this, or other bees may be taking it out for her and devouring it too, but you must not imagine that she or they are eating it for their own pleasure. No, they are still hard at work kneading it up into bee-bread, which is the bees' staff of life, and the food with which the nurse-bees feed all the little bee-grubs, or bee-babies, in all the little bee-cradles. If more of this bee-bread is produced in a morning than the whole community of grown bees and little baby bees require, the rest is carefully put by for future use, for not a crumb is wasted in the bee-queendom.

Here you see the bee-bread and the sweet honey or bee-wine, if you choose so to call it, prepared by the bees for themselves; but they have yet more to do; they have to prepare wax, and build their cells. Wax is made from honey and pollen, prepared in some mysterious manner in the stomach of the bee, and which frequently is seen oosing out from the rings of her stomach like scales, and which is there ready to her hands, if one may so say, when she is busy building, as the rope-spinner weaves his ropes from the flax wound round his body. Nor is wax all they need; they have yet to prepare a sort of varnish with which to finish their work on the outside, so as to make it neat and smooth, to mend holes with, and to strengthen weak places. This varnish, which is of a fine pale brown, is collected from the resinous bark and buds of trees, as the buds of the horse chestnut and tacamahac in spring. Very clever is all this, and you wonder how the bee gained her knowledge; but you do not yet know all. The bee is not only an example of industry to you, but of cleanliness and order also; she will not allow anything dirty or offensive to remain on the floor of the hive; she understands sanitary laws perfectly, though men and women do not; and better than that, she acts upon them. If any intrusive insect crawls into the hive, he is stung to death, and then dragged out, and thrown away; if, however, as in the case of a snail, he should be too large to be removed, they know how to manage. If he is in a shell, they glue the edges of his shell down to the floor, with their propolis, or varnish, and thus he remains immovable; if without a shell, the whole body is covered with this air-tight glue, which soon hardens like stone, and in either case he remains a monument and warning to other intruders. The only intruder which the bees



THE CARDER BEE.



WASP'S NEST.

cannot expel seems to be the death's head moth, whose body is defended from their stings by hair, and who has the power of paralysing them with his mournful voice.

I wish I had space to tell you all the ceremony of laying the foundation of the cells by the great queen-bee, as if it were Queen Victoria herself; or how marvellously the cells are shaped by line and rule, as correctly and exactly as a mathematician would do them. But I must tell you how they divide their labour, and arrange their work. When the great queen-bee has laid the foundation of the cells, the wax-workers pile on the wax, and form the cells in the rough; then come another set of workmen, I was going to say, but workers we must call them, finish the cells accurately, point all their angles, smooth off the edges, and put the finishing strokes; and all these are attended by a third party, who come with their breakfasts and dinners of honey, which they have been out early to collect, and they may be seen standing with their honey-bags open, into which the busy wax-workers, pausing only a moment from their labours, dip their probosces, take in their refreshment, and proceed with their work.

Wonderful bees! they understand a great deal,—geometry, the economy of time, and the division of labour. How have they learned it all?—God, the great teacher, has instructed them that they may instruct us, if we will only be wise enough to learn from them.

There is a great deal more to tell you, but as we have but little space, we must hurry on. I told you of a few hundred gentlemen-bees in every hive, who do nothing at all but wait upon the queen as her courtiers; these are the drones, or lazy fellows. Though the hard-working bees labour at first for them cheerfully, yet, as they know that winter will come in time, and that he who has not worked has no right to eat; therefore the thousands of industrious bees rise up and kill the hundreds of lazy fellows, and so clear the hive of them, the queen being satisfied for the rest of the year to do without her courtiers. So far good; but now for the queens themselves.

It is May or June, the hive is full, and something has occurred which has determined the queen to take a portion of her people with her, and go out into the world for themselves, and establish a new queendom. A great commotion prevails in the hive, as at the time of a country revolution. The queen appears to make a speech, and takes leave of her people, and there are shouts and loud murmurs accordingly; and at noon the next day she and her selected subjects leave the old hive, and the old peasant woman, to whom the bees belong, rejoices because she has got a beautiful swarm, which she drives with ringing of warming-pan and keys to settle on a pear tree bough, whence they are safely housed in a new hive and set down just by the old one. When the queen and her swarm are gone out of the old hive, a strange commotion takes place. Such

a loyal people as they are would be miserable without a queen, and like a wise people they have provided for such a difficulty. There are royal cradles, six or seven of them, with young lady-queens in them, which have been fed for a long time with royal jelly, and are now just coming of age, and the one that attains her majority first, according to the law of primogeniture, will be queen. What a stir and anxiety there is! How the old nurses rush from cradle to cradle, and how all the poor people stand looking on and clamouring for their queen. And now behold, difficulty of difficulties, two young princesses spring from their cradles at once full-grown queens! There is not a pin to choose between them, one looks as gloriously royal as the other, every hair's breadth a queen, nor has one the advantage of a moment's priority of birth to the other. What must be done? "Ah," say the wise bees, "easy enough to decide; let them fight it out; we will take either of them, but not both. It is their affair, not ours. Let them fight for the queendom!" A space is cleared in the middle of the hive, and all the bee-nation looks on while the two aspirants for the vacant throne meet in mortal combat. They fight for awhile as two kings might fight, or Amazon queens rather; neither is the victor; presently they grow tired of the combat, perhaps, and are willing to give it up. But no, giving up does not suit the bee-nation; they cannot stand any shilly-shallying, their queen must go through her work when she once begins. So they rush forward themselves, not to take part, but to make their aspirant queens end the matter. Fight they must and shall, and the bees will know which is the stronger. So at it they go again, and cling together like wrestlers, and seize each other's antennæ by their teeth, till at last one gains an advantage over the other, doubles her wings under her, curls up her body, and gives the mortal blow with her bee-dagger. The question is decided. The queen is proclaimed, and rejoicing fills the hive.

Sometimes it happens that the greatest of all calamities befalls a hive; the queen dies, or emigrates, and leaves no successor behind her. Under these circumstances the bees for a while seem mad with consternation and grief, and so bereft of reason as to destroy all their labours. The steady old nurse-bees, just like mad women, tear down waxen cradle after cradle in which lie the common bee-grubs. But they are not mad after all; they only want room to set up a royal nursery, and then selecting a common bee-grub, they feed her, and watch her, and tend her, in her royal cradle, and console themselves for their great loss by the preparation of a new young queen.

Before we make an end of our bees, I must tell you that bees will not sting you unless you provoke or injure them. People who are accustomed to bees can do anything with them. A gentleman named Wildman, who kept bees and understood all their ways, had so much power over them, that when he called them out of the hive they came; they would hang round his hat like a

veil, and from his chin like a long beard; he would throw a handful of bees into the air and bid them enter the hive, which they would do obediently to his command; they would cover the whole front of his person excepting his eyes, and in this way let him gallop round his fields. His bees loved him and obeyed him; and they would love and obey you if you only knew how to treat them.

Bees work for man; and yet they never bruise
Their master's flower, but leave it, having done,
As fair as ever and as fit for use:
So both the flower doth stay and honey run.

Thus sings the old poet George Herbert, and with his sweet words we take our leave of the hive-bee.

Humble bees build nests by the united labour of the whole community. But their communities are small, sometimes as few as twenty, and their habitations, though similar to those of wasps, are ruder in construction, and the streets of their little city are irregular. There is one kind of humble bee, however, which takes so much pains with its nest that I must describe it to you. It is called the carder-bee, because it cards or heckles the moss with which it covers its little dwelling, a pretty little cut of which is given on page 5.

These nests are from six to eight inches in diameter, and are frequently found in the hedge banks of pasture fields, built in a hole, covered over with a dome-like top of carefully prepared moss, and lined inside with a thin coating of wax which keeps out the wet. The entrance is in the lower part, and approached by a covered way so as to prevent observation. If the top of the nest were removed you would not see cells arranged in geometric order, as among the hive-bees, but a number of little irregular egg-shaped cells, placed one upon another, and separated, at the same time that they are held together, by little columns of brown wax. These cells, however, are not made by the worker bees, but by the grubs themselves, which spin them when about to assume their chrysalis form. But as they would seem to have forgotten to leave any opening by which to escape, when their time of imprisonment is over, it is a curious fact that the old bees, who know by their wonderful instinct when this time is at hand, bite off the end of their covering, as is the case with ants, and the young, vigorous carder-bee of the new generation comes forth. Singular as this is, it is no less so that the little jar-like cell, vacated by the young bee, is now used for a honey pot, and serves to hold their winter stores. Besides these curious little cocoon jars, the nest contains a number of breeding cells, in which, as among the hive-bees, eggs are laid, and the grub matured; but neither are these geometric, but of an irregular egg-like form. Among the carder-bees the male as well as the female works.

I must now tell you how the moss is prepared for covering their pretty dome-

topped city. But, first, you must know, that the female alone lives through the winter. Well, then, suppose that the season has been so severe that only one old lady-carder remains alive, and solitary though she be she must construct a new nest in the early spring. She has a tedious operation before her, but a brave heart; and by pushing her little bundles of moss, or grass, if no moss is at hand, behind her, she at length gets them home. If, however, several bees have survived, or somewhat later in the season when the cocoons have sent forth their imprisoned inhabitants, the work is done easily and in a most methodical manner. A file of bees, sometimes half-a-dozen in number, is established from the nest to the moss which they intend to use. The last of these bees cuts off a quantity of moss with her mandibles or shears, and works or cards it with her forelegs into something like thick mossy cloth, after which she shoves it under her body to the next bee, and she to the next, and so on till it reaches the nest, as you may have seen a wagon-load of cheese or sugar-loaves emptied by a number of men.

You see that the bee knows, as well as men do, that it is a saving both of time and labour when several can work together systematically. But who taught the bee, and made her thus an instructor of man?

God hath made the bee a teacher,
 God hath made the flower a preacher;
 Each its separate task fulfilleth,
 Doth what the Creator willeth.
 Let us then, their law observing,
 Live for loving God and serving.

Speaking of wild bees we must not omit to mention the honey-bird, which never fails to guide the hunter to the wild bees' nest. This curious little bird, which is about the size of a chaffinch, and of a light gray colour, is described by Gordon Cumming in the account of his African adventures, as sitting, chattering and twittering in great excitement, on a branch by the road side, until it has succeeded in attracting the attention of the traveller, when it flies lightly forward in the direction of the bees' nest, alighting every now and then, and looking back to make sure that the traveller is following, and keeping up all the time an incessant twitter. When at length it arrives at the hollow tree, or deserted white-ants' hill, which contains the honey, it for a moment hovers over the nest, pointing to it with its bill, and then settles on a neighbouring bough, anxiously waiting for a share of the spoil. When the honey is taken, which is done by stupefying the bees, by burning grass at the entrance of their nest, the honey-bird will frequently still lead on the traveller to other nests, if he is disposed to follow. The true plan is for you to whistle every now and then while you are following the bird; the savages of the interior repeating various charmed sen-

tences on these occasions. Sometimes, however, the follower of the bird, whether savage, Hottentot, or white traveller, may find himself led by her into no very agreeable situation, perhaps into the den of the lion or panther, or up to the very jaws of a huge crocodile, lying basking in a river with his horrid visage above the water, and his eye fixed on you with a cruel and malicious expression. The pursuit of the bird must then cease; for though these monsters of the wilderness may not be formidable to her, they are to her human follower.

The wild bee of Africa, which is found throughout the whole extent of that country, is exactly like the hive bees of Europe, and bees-wax forms one of the articles of export from the western coasts of Africa.

Major Forbes mentions a very ancient colony of bees in Ceylon, and the anger of these singular insects on one occasion. "There is," he says, "a tree of great size, growing near the stream in the forest pass of Ballakadawe, which has had for time immemorial the name of *Loku-Bambera-gaha*, which means the Great Bee Tree. For eight months every year, from all its branches that stretch over the rivulet, a hundred or more swarms of bees may be seen depending, each having one large semicircular comb, of the thickness of the branch, so far as it is attached, and gradually diminishing towards the edge of the circle. These insects and their labours are considered to be under the protection of a spirit, and are therefore never molested; but in 1836, when the new road which passes near the tree was under repair, the community having taken offence at some pioneers who were cutting down a hollow tree in their neighbourhood, sallied out, attacked the workmen, then the pioneers who were near, and finally put the whole party to flight; many suffered severely, and a carriage-bullock was stung to death. For some days after this outbreak, the bees remained in vast excitement, flying about the road in great numbers, but they did not molest the passengers."

A little space must still be allowed for a few words on wasps, those fierce creatures which you and others think it a great merit to kill. Wasps, though savage to their fellow insects, are exceedingly well behaved to each other, and as an industrious and ingenious community will bear a comparison with our friends of the bee-hive.

The wasps choose a deserted mole or mouse hole in which to build their nest; or if none such is to be found, they dig a hole about a foot and a half under ground, which they do in a few days, for they are excellent excavators. They make also a winding underground road to their city, which soon becomes as well tracked, by their busy little feet, as any of the most frequented entrances to London. The cavern and the road to it being prepared, they then commence to lay the foundations of their city, which, strange to say, they begin at the top, and which is built of paper. Before paper was thought of for the purposes of man

it was made by the wasp, instructed by that instinct which God had given him, and which sent him to the tree of the forest for his material. Thus the wasp, by means of his jaws, scrapes small filings from wood wherever he finds it, and when he has got together a sufficient heap moistens it with a sticky fluid from his mouth and kneads it into a paste, after which he flies away with it to his underground city. Here they spread it out, layer after layer, by help of their jaws, tongue, and legs, moving backwards as they work; and so it goes on, many busy workmen being employed, until fifteen or sixteen of these thin paper layers are put on, lying loosely together, but fastened here and there with their patent glue, until a beautiful little dome is formed, under which they then begin to build their cells, all formed of the same material and in the same manner; and while the cells deepen within the walls are continued without. The cells in a large nest amount to about 16,000, and as the paper walls of the nest would not be strong enough to support the weight of so many cells, each story is most ingeniously strengthened within by a great number of little pillars or columns, which, according to proper architectural laws, are thickest at their base and capital; these pillars are also made of paper, but worked up with a much greater quantity of their patent cement or glue, so that they are strong and firm. The middle combs are supported by a regular colonnade of from forty to fifty of these pillars.

When now in the heat of summer you see the wasps flying in and out of a hole in a hedge bank, you will understand that they are carrying in their bales of paper to build their city; that they are hard at work attending to their own business, and meaning harm neither to you nor to any one else. Do not, therefore, plan their destruction with fire and brimstone! let them alone to finish their skilful labour! But mark well the spot, if you like, and when the cold of autumn comes, go then and dig carefully into the bank and bring away with you this little underground city, this work of the first of the paper makers. By that time it will have served its purpose, and you are welcome to it, for the wasp will make no farther use of it, as he builds a new city every year; and it is well worth your attention. Another kind of wasp builds its nest on the branch of a tree; of this we give a cut on page 5.

WALKING LEAVES.

Nature seems to have had her whims and oddities in creation, and to have produced that which was intended to astonish as well as delight. She has linked together her three kingdoms of animal, vegetable, and mineral, so that the one seems often to run into the other; thus here we have the walking leaf, as it is called, the *mantis*, which so exactly represents vegetation as to deceive even the eye of the botanist. The most remarkable of these strange insects are of the mantis and locust tribe. These insects, which are most generally in hot



WALKING LEAVES.



GALL-NUTS.

countries, represent the leaves of the olive, the myrtle, citron, laurel, camellia, thyme, grass, &c., so closely that they are called after them, and not only do the wing-cases look like leaves, but the first joint of each limb is like a leaflet, its whole head and antennæ having the same character. On the previous page is the *Mantis siccifolia*, which looks like a little branch of dry leaves.

But these insect freaks of nature are not alone peculiar to the East. You may find walking-sticks and walking-stalks in the form of caterpillars in any lane of England, if you only look at the right time and in the right places. If, for instance, in the month of May or June you look carefully into an elder tree, you may see a caterpillar so exactly like the brown, jagged, lesser branches of the tree, lying stretched out for hours as stiff and immovable as a branch, seldom eating or changing his position excepting at night, that nothing would lead you to suppose it were other than an elder stalk unless you chanced to touch it. This brown stick, after it has passed through its chrysalis state, becomes in July a beautiful sulphur-coloured moth. Again, if in August you look carefully into a hawthorn bush, you will find a caterpillar as closely resembling little twigs of hawthorn, stretched out stiff like the twig itself, with a brown wrinkled bark or skin, and with two little horns or forks on his back like the thorns of the tree; this caterpillar also becomes a pretty yellow moth called the brimstone moth.

GALL-NUTS.

You have heard in fairy tales of palaces furnished with everything which their inhabitants could require, springing up by magic at the stroke of a wand, or the utterance of some mysterious words. But it was not true, you said, of course. I can, however, tell you something very like it, which *is* quite true. And to do so, I must remind you of what I am sure you have seen: the pretty little red, or yellow, or greenish balls upon the leaves of the oak tree, the willow, and various other trees; of oak-apples, and the pretty green and reddish tufts, like moss, upon the wild rose. These are all little fairy palaces which have sprung up, as if by magic, on the leaves and stems of these various trees, at the touch of a tiny enchanted wand; in other words, of a needle-like instrument, finer than the finest needle, carried by a little fly called a *cynips*, and with which she pricks the leaf or stem at the moment when she lays an egg. No sooner is the prick given, and the egg laid, than the whole plant, even the gigantic oak tree, seems to feel a thrill through its whole vast structure, and the delicate sap of the leaf or stem rushes into an inclosing form, builds round the little egg, in fact, a wonderful dome, a palace which supplies not only shelter and defence but a most abundantly supplied larder.

Nothing can be more varied and beautiful than these habitations: some are round as an apple, and tinted, like it, red and gold; others are like unripe currants;

some are formed like artichokes ; and others again like lovely tufts of moss, as I have mentioned, on the wild rose, which are known in some parts of the country as Robin Goodfellow pincushions ; but the proper name of which is the rose bedeguar. The varied form of these productions is occasioned, it is supposed, by the different character of the tree or plant on which they are found. Those on the oak or willow are solid and round, though the artichoke-formed ones grow also on the oak, as if the oak-sap, in working at the command of the little enchanter cynips, shot out into little clustering leaves, while the sap of the wild rose, with its inclination to form thorns, shoots into beautiful moss-like stems, which cluster together over the group of eggs which the mother cynips has entrusted to the care of the wild rose tree. And this is wonderful, for as the little bedeguar grubs have to remain through the winter in their cells, which are usually placed on the loftiest shoots of the rose, and consequently more exposed to the cold of the season, its mossy defences may be likened to warm curtains drawn round their bed to make them snug and comfortable for the winter.

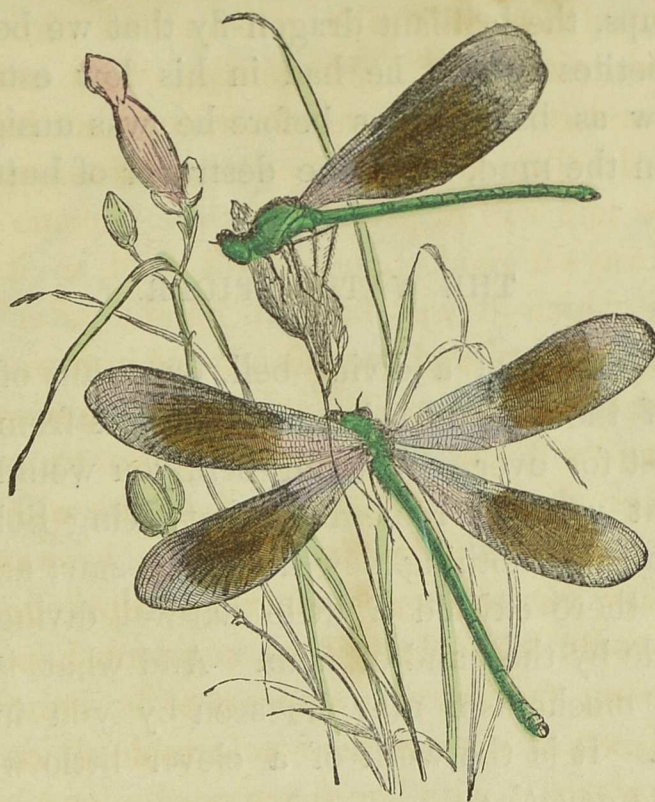
In the little cut, page 12, you see the gall-nuts on the oak-leaf, and two of the mother cynips, you may imagine, regarding with satisfaction the ample provision which they and great Mother Nature together have made for a future generation of cynips. In these little cells or palaces, supposing that no accident happens, the egg there laid will in process of time become hatched into a grub ; the grub, which has always a good appetite, will feed, to its heart's content, in the well-stored larder which it will find at hand ; after this it will become transformed for its winter sleep, and tucked in snug and warm with all the doors and windows shut ; here it will remain till spring and summer come and wake all things into life. Then will the little cynips begin to work also, though she will not come out of her chamber till July, when she will be the image of her mother, and very soon begin to follow in her steps by waving her little magic wand, and calling up fairy chambers above other cynips' eggs.

I said that all this would take place if no accident happened, and so it will, if a fly of the ichneumon family, who appears to be somewhat of a dishonest character, does not, as soon as she sees the comfortable abode of the young cynips, spring on leaf or stem, pierce it with her sharp needle, and lay her egg in it also ; in which case her child will not only have the benefit of the snug winter bed, but will eat up the young cynips, and next June or July come out in their place, a most splendid little four-winged fly, which might be mistaken for the true cynips were she not so much more splendidly attired.

DRAGON-FLIES.

When you have been in the pleasant hay-fields at Midsummer, you have seen the splendid dragon-fly flitting about the water-courses or little ponds of the fields, where water-lilies are in blossom, and meadow-sweet and loose-strife

make a beautiful flowery border. How lovely are these flowers! the water-lilies like marble cups floating on the water, meadow-sweet like a handful of foam, and as sweet as honey, and loose-strife like a sceptre of crimson gems. These, and the beautiful dragon-fly with its yellow, or metallic green and blue body, and its gauzy wings tinted with every colour of the rainbow, flitting from flower to flower, have filled you with delight. You have gathered the flowers, but the dragon-fly has always escaped you. Well, let him go, poor old fellow; he has only just awoke into that beautiful life from the bottom of the water-lily pond, and we will leave him at liberty to flit about in the sunshine, and among the flowers, while I tell you of the strange monster that he has only so lately been. You wonder at the word *monster*, but it is appropriate enough, as you will discover presently; and the dragon-fly, beautiful as he is now, would hardly know himself if he could have seen himself an hour ago.



DRAGON-FLIES.

Let us now imagine that we can look down into the sand at the bottom of the water-lily pond. Very good. Among other queer creatures, we see an ugly little reptile with a brown body and six legs. Keep him in sight; he is the fellow we want. And now, let us look him in the face, and the better to enable us to study his physiognomy, let us imagine that our eyes are microscopes, and, therefore, that we see his face considerably larger than it is. There is a

monster for you! The giant whom Jack killed in the fairy tale was nothing to compare to this. Look at him, with his goggle eyes, crawling along in search of his prey. Now he has found it, a little tadpole, which he seizes with his hairy foremost pair of legs. But what now? I will tell you what now, in the words of a clever entomologist.* Surely, a mask is falling from the face of the little monster! Yes, a real mask, which has hitherto hidden, both from us and his victim, the grimmest part of his grim visage. He has dropped his mask, but not entirely, for it hangs to his chin by a hinge. And now, do we see aright? The mask itself opens into a sort of toothed and jointed trap, which takes in the unlucky tadpole, and heaves it up to the mouth, which is ready to receive it.

Is not this a terrible monster to be down among the water-lily roots? Yet, there he is, masked and formidable, like some fantastic creature in a fairy tale. And now, the time of his transformation being come, he leaves his hideous mask and his ugly form below, and rises up into the golden sunshine, and among the marble-like lily cups, the brilliant dragon-fly that we behold.

But, the cruel appetites which he had in his low estate, have not yet left him, though he is now as beautiful as before he was unsightly; and, instead of regaling on tadpoles in the mud, he is the destroyer of butterflies in the pleasant sunshine.

THE WATER SPIDER.

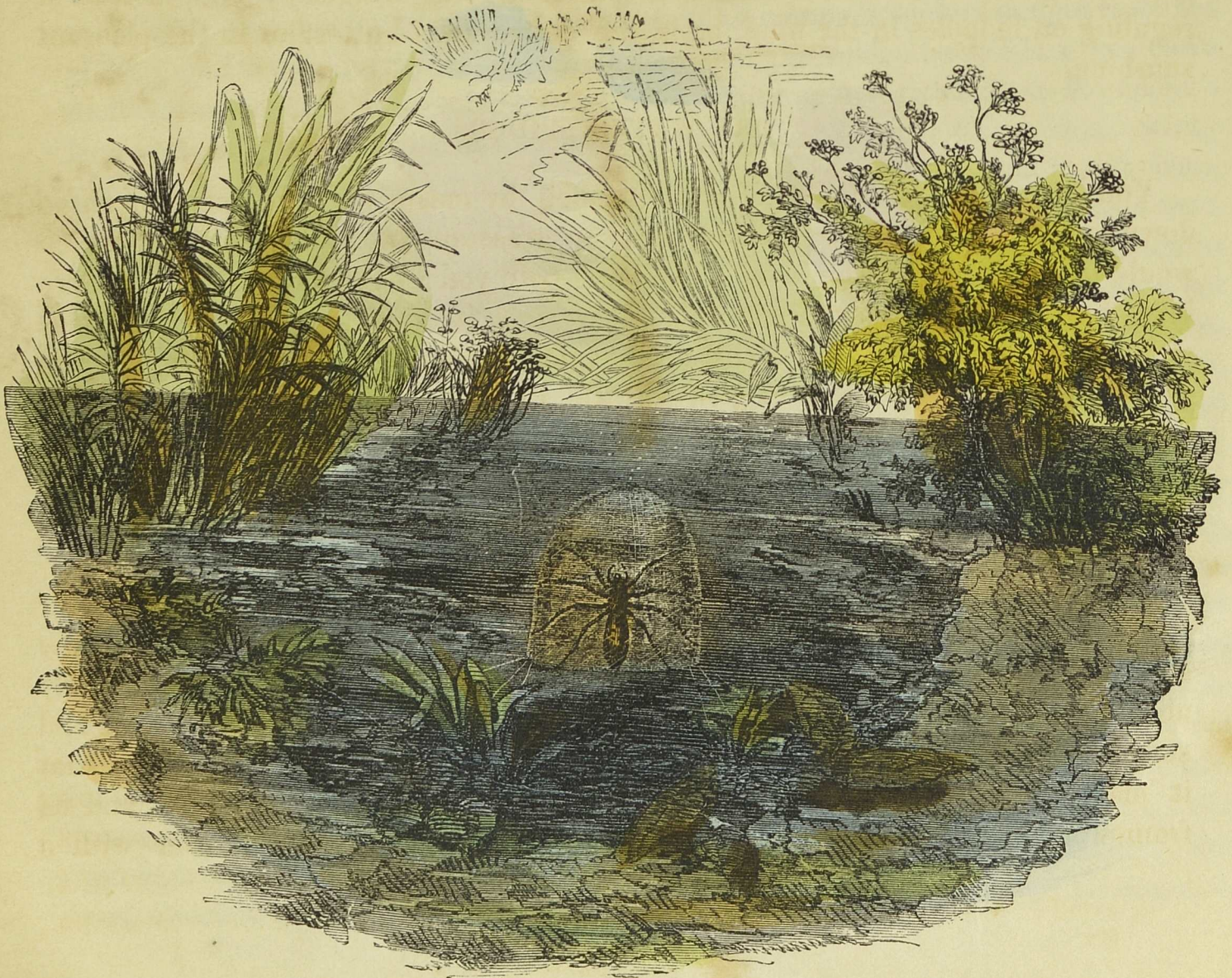
You have heard, no doubt, of a diving-bell, by means of which people can go down to the bottom of the sea and bring up treasures from sunken ships, which would otherwise be lost for ever. A diving-bell, you would suppose, was a mere invention of man's, but you may remember that King Solomon said, thousands of years ago, that there was nothing new under the sun; and long enough before King Solomon lived there existed a little natural diving-bell, constructed as cunningly as any made by the hand of man. And what is still more, this wonderful little piece of mechanism may be seen by you in almost any running water in the country. It is the work of a clever little water spider called by the learned *Argyroneta aquatica*.

These spiders, says the Baron de Geer, a Swedish naturalist, spin in the water a cell of strongly woven white silk, in the form of a diving-bell, about half the size of a pigeon's egg. Sometimes it is quite under water, and sometimes partly above it, as in our cut; but in every case it is firmly fastened to the leaves and stems of the plants near, by little threads, as a boat is moored to the shore, that it may not be carried away. It is closed all round, but open below, and its framework being formed of delicate threads, it is then covered over with a

* "Acheta Domestica."



THE WATER SPIDER.



NEST OF THE WATER SPIDER.

transparent elastic varnish which forms into something like the thinnest glass, and which the spider possesses in her own body just as she possesses the fine material out of which to spin her threads. When she has made her diving-bell she knows that a supply of air is necessary to fill and expand it, as gas expands the balloon; and as she is endowed by the great Creator with an instinct, which is as wise as the science of the natural philosopher, she knows how to manage this part of her business also. She covers her stomach with a loose bag of that same kind of liquid glass with which she covered her diving-bell, and ascending to the surface of the water fills her bag with air. If you are looking in the water you will very likely see what you might think was a little globe of quick-silver, so bright and clear does it appear. It is the little water-spider, the wonderful little chemist just about to carry down a supply of air; and thus she goes on for ten or twelve times, till her diving-bell is expanded. She is then furnished with a crystal palace, where she can live just as she likes, catching insects and spinning little bags of yellow silk to hold the eggs, from which her young ones in due time make their appearance; but before these important labours are finished, she closes up the bottom of her cell and goes to sleep.

Speaking of spiders, I must not forget to tell you, that though we consider a room dirty and neglected, in which the webs of common spiders dangle from the ceiling, or fill up the angles of the walls, yet that the spider herself is a very clean and tidy creature. If your hands and arms were covered with hair, as the spider's legs and feet are, and you had to spin fine threads all day out of a thick sticky gum, you would no doubt smear yourself all over, not only hands and arms, but your face, and a sad, dirty creature you would be. Nothing of this sort, however, ever happens to the spider, for she is as clean and tidy in her person as in her house. If, by chance, her threads break, or are falsely spun, she does not leave them dangling to her work, but carefully cuts them off with her scissor-like mandibles or jaws, which, as well as her feet, are furnished with teeth like a comb, rolls them up into a little ball, and throws them away. And, in order to keep the hairs of her legs clean, and in nice order, as soon as her spinning is finished, she sits down, and combs her legs with her mandibles, which are not only her scissors, but her comb. You may often have seen a common house-fly brushing, every now and then, one foot upon another, to clean off the dust; and, if you watched, you might see the spider also busy at her toilet, combing her hairy legs, with great care, from the very top of the thigh down to her claws. Besides this, she occasionally gives her web a good shaking, taking care, nevertheless, not to break it; and this she does, as some entomologists suppose, to shake out the dust, or, as others think, to see if it is in good condition, or needs repair. Occasionally, the geometric spider, which builds such beautiful webs in the gardens and fields, in autumn, may be seen busy repairing and cleaning her web; and it would be well worth your trouble to stand, even for an hour, to

watch her, then you might probably see her cleaning the delicate lines of her web from flakes of soot or dust which by chance had settled on them, and breaking off such others as she might think not worth the trouble of cleaning, and rolling them all up into little bundles, and throwing them away, as a house-maid would throw away the rubbish which she had swept from the parlour carpet into her dust-pan.



SPIDER CLEANING ITS WEB.

NS
HOWITT, M. B.
MARY...
1856
V. 2.



37131 013 242 771

