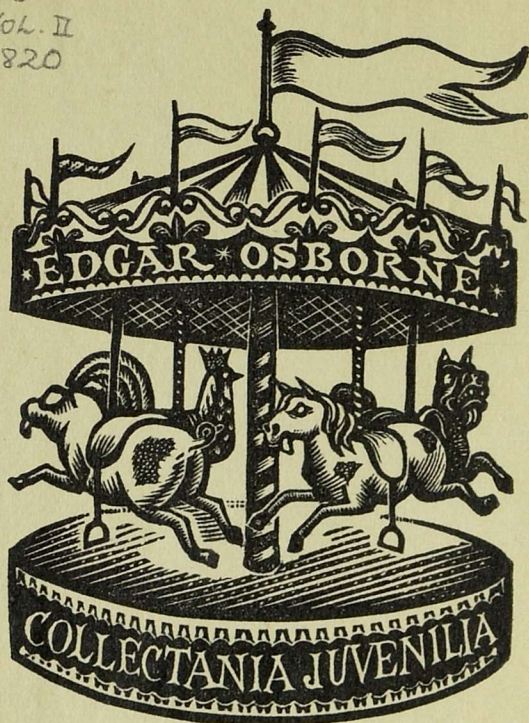


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Vol. II
1820



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C. M. A. Tillard
with her
Aunt Alman's
kind love

Sept. 5th 1820



*M^{rs} Smith. I have gone to the four
quarters of the globe for them; and
have selected both birds and beasts.* *pa. 134.*

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CONVERSATIONS

ON

NATURAL HISTORY.



“He who is so happy as to have acquired a relish for knowledge, has always at hand an innocent and irreproachable amusement for his leisure hours.”---*Blair*.

“Every faculty, every object of every faculty, demonstrates a Deity.”---*Balguy*.



By E. SANDHAM,

Author of “The Twin Sisters,” &c. &c.



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PREFACE.

TO THE SECOND EDITION.



THE Book of Nature speaks of Him “in whom we live, and move, and have our being;” but we have lost the power of using our faculties alike: therefore, though it is continually before us, our eyes are not always open to behold it.

For those who have been accustomed to seek innocent amusement in all they see, and trace the goodness of the divine Creator in his works, I have endeavoured to point out that glorious Power which

“Lives through all life, extends through all extent,
Spreads undivided, operates unspent,
Breathes in our soul, informs our mortal part
As full, as perfect in a hair as heart.”

For this purpose I have consulted the works of the best authors on Natural History. Though I

have faintly imitated their descriptive powers, it has been my emulation accurately to copy from their writings, and by adding such reflections as naturally arise from their subjects, lead my readers to a closer investigation of their works, which require only to be read, that they may be more admired. The stock from whence they derive their knowledge is exhaustible; and those who turn from them, to contemplate with humility and minute attention the wonders of creation, are certain of their reward. They will find new proofs of an Almighty Author in every thing they examine.

April, 1820.

CONVERSATIONS
ON
NATURAL HISTORY.



CONVERSATION I.

Bees.

MRS. SMITH. I am told Dame Ward has brought us a fresh supply of honey. The poor bees are now destroyed, after all their labours during the summer, and we are to enjoy the fruits of them.

Maria. I wish we could do that without killing the bees, mamma. I have sometimes wished to keep a hive or two, just to observe the manner of their working; but the recollection of the cruel death they must suffer before I should satisfy all my curiosity has prevented me.

Mrs. Smith. A glass hive would enable you to gratify it fully, without having recourse to the death of the bees. But see, here is a piece of their comb, which Kitty has brought us to look at: it is very curiously formed!

Maria. And how regularly, mamma! it is wonderful, when considered as the work of so small and insignificant an insect: no art of man could form any thing like it.

Mrs. Smith. No, indeed; but I do not think you are acquainted with half the wonders there are in a hive of bees: they are well worthy observation. In my younger days I examined their nature and qualities, as well as those of wasps and hornets, very minutely, and have often thought of giving you an account of them; but other subjects have engrossed our attention.

Maria. Now then, mamma, let me hear it: there cannot be a more proper time than while we have a part of their comb before our eyes, and are partaking of the delicious food they procure for us.

Mrs. Smith. Indeed, my dear, it will

afford us a long dissertation, but I will endeavour to give you a clear idea of these wonderful little creatures, in as concise a manner as I can. But first let me observe, that the more you hear of them, the more will your attention and admiration be excited: for they are distinguished for their economy, their policy, and care of the general welfare, as well as their industry, which is, you know, quite proverbial. There are three kinds of bees in every hive, and the largest number are the common bees, who are constantly employed in work, and are neither male nor female; these have a trunk to labour with, and a sting to defend themselves. The second sort are the drones, who are of a darker colour, and larger than the common bees; these have no sting, and one remarkable difference between them is, that they have no passage or conveyance from the bag of honey (which is in their bellies like other bees) to their throats, through which the labouring bees discharge the honey contained therein into the common stock, reserving only a very little for their own nourishment, while the drones keep all,

and add nothing to the magazine. But then they people the hive; for these are the male bees, and never go from home, except to take the air when the weather and their inclination suits just about the block: their laziness is as proverbial as the others industry, who often fly several miles in quest of food. The third sort are the queens or females, longer and more vigorous than any of the rest, and of whom, it is said, there is but one in each tribe, or at least in each swarm, these being detachments sent out from the old hive, to settle somewhere else, and may properly be called colonies from their mother country. As soon as another queen bee is produced from the eggs deposited by the mother bee, she, with all the young bees produced about the same time, is obliged to leave the hive; and if they refuse to go, it has been observed that the old ones will use violence to expel them.

Maria. The drones too, mamma, are expelled when they have answered their end, and peopled the hives, are they not?

Mrs. Smith. Yes, towards the end of

autumn; for as the winter approaches, the bees do not wish to have any more young ones, nor are they inclined to keep the idle, who have done no work all the summer: they therefore thrust them out, and the poor things are seen dying on the ground, round the hive, in great numbers.

Maria. Not very kind treatment, I think, to the *gentlemen* of their nation; but do they not remember that they may want their services again, to form new colonies in the next year?

Mrs. Smith. They are aware of this, and therefore reserve a small number, such as are less rapacious, and of a size nearer their own.

Maria. How many drones do you think there are in a hive, mamma?

Mrs. Smith. Not more than one hundred, to seven or eight thousand bees: but the fecundity of the queen is such, that she will give birth to six or seven thousand young ones; and in the course of a summer can see her children's children, and, by the help of one or two females like herself, of whom there are scarcely ever more than that num-

ber produced in one hive in the course of the year, (this as I said before being the occasion of their swarming, and for a hive to swarm more than twice is thought very extraordinary,) she becomes the progenitor of eighteen thousand descendants.

Maria. But these ladies are thought much of indeed, that only one can live in a hive: it certainly is the proper way to keep up her consequence.

Mrs. Smith. I assure you she finds it so; nor does she at any time make too free with her subjects, but keeps herself very retired in the upper part of the comb, and when she does make her appearance there is a great stir in the hive: it is a general holiday, and the whole community seems to rejoice at her approach. She is attended by several drones, and walks with a most majestic and stately air to the entrance of the hive, while the common bees hang together by their paws, and form a curtain around her, that they may, if possible, hide her from the view of vulgar spectators, (such as you and I.) And on her return to the comb, it is always observed that

she visits ten or twelve cells, such as you see in this piece of honeycomb, and there deposits an egg in each, while the drones who accompany her, stand around, fluttering their wings, as if to celebrate the birth of their new progeny. The queen afterwards visits these cells very often, and with the warmth of her body facilitates the birth, till from each egg is produced a small worm, which, for about ten or twelve days, the mother constantly supplies with honey, and when it has had its fill, it ceases to eat, and an old bee comes and closes up the cell with wax, as you see some of these are; and in this retirement the worm becomes a nymph or chrysalis, and from thence changes into a bee. It is about a fortnight undergoing these transmigrations, and then bursts the door of its inclosure, and comes out perfectly acquainted with the business it has to pursue; and after it has dried its wings, flies out of the hive, and begins to work among the flowers.

Maria. How wonderful, that it should want no one to teach it the necessary arts belonging to its work! How much more stupid

are we, who are called rational creatures! *We* require a great deal of teaching, to do what will make us useful members of society, and are very slow proficient with the best instructors.

Mrs. Smith. The bees are taught by instinct, to do what is necessary for their preservation: but you never observe any alteration, or improvement in their work; and, indeed, having so excellent an instructress as nature, or, in other words, the ordination of divine Providence, no improvement can be made. As for mankind, when we fell from our obedience to our Creator, we chose another director, and daily and severely do we feel the evil of our choice. But to return to the bees: in the course of one summer the same cell serves for several successive worms; and each worm, before it becomes a chrysalis, fastens its skin to the walls of its apartment, but so regularly and closely, as for it never to lose its original form, which is, as you see, hexagonal, or having six sides. And these repeated hangings adhering to the walls, help to strengthen the building; and it is said, by

some who have accurately examined their proceedings, that when, by these successive coverings, the cells get too small to receive their young, they change over, and deposit their food in these contracted cells, and their eggs in what before contained their honey. But with all this wise precaution, if such they have, it is generally known that a hive gets too small, and begins to decay in six or seven years, if it is suffered to stand so long, so that if we did not destroy the inhabitants before that time, they would probably seek another habitation, although the natural life of a bee, as I have understood, is seldom extended beyond eight years.

Maria. And in that time how much work they do! It would shame many of our species, who live ten times as long, and never work at all.

Mrs. Smith. Before I begin to tell you of their work, I must give you an account of their implements. Have you ever observed the formation of a bee?

Maria. I cannot say that I have, mamma,

for I have been too much afraid of their stings, to examine them minutely.

Mrs. Smith. There are three parts in a bee, which are joined together by small ligaments or bands ; the head, the breast, and the belly. The head is furnished with a trunk, which is long and taper, and so pliable, that the insect can probe with it to the bottom of flowers, how thick soever they may be covered with leaves, without at all injuring the beauty of their foliage ; and it is with this instrument it extracts the honey from the various kinds which it daily visits : and when they are not at work, this trunk is folded up and enclosed within four scales, which sheath it from every injury, and may be clearly seen with a good microscope.

Maria. How I wish I had one ! I should make a good use of it, mamma. It would be always in requisition ; and I would then observe all that is curious in the make of a bee, and every other insect.

Mrs. Smith. And believe me, my dear, there are as many wonders in the formation of these little creatures as in that of the hu-

man body; and the Deity is as conspicuous in their structure, as in the bright luminary the sun. Not only the heavenly bodies, but all *His* works, whether great or small, proclaim to the observing eye, “the hand that made us is divine.” The jaws of the bee play like two saws, moving from right to left, and not up and down, as those of most other animals. They have each six legs and four wings, which grow in the middle part or breast of the bee: two of the wings are larger than the others, and with these the humming noise is made which you often hear, and with which they give notice of their approach, and animate each other in their work. With the microscope you can see two little hooks or claws arising out of each paw or foot, and these are placed over two small balls like sponge, which enables the bee to walk on smooth surfaces, however uprightly placed, without slipping. The belly, which is the last, and contains the tail, is composed of six rings, which slide one over the other, and can be lengthened or contracted, as the bee finds it necessary. Here is contained the intestines,

the bag of honey, and the bag of poison which the insect injects with its sting, and the sting itself : this is composed of two darts and a sheath ; the sheath tapers to a very fine point, near which is an opening through which the gall or poison is ejected into the wound which the two darts, that are placed a little higher up, has made. These have two sharp points and hooked at the end, which causes the bee some trouble to draw them out again ; and, indeed, if put into any confusion, or the person stung endeavours to beat it off, it never does, and the sting is left behind, which makes the wound much worse, that it is best to have patience and let the bee disengage itself. The intestines, as in all other creatures, digest the food ; and the bag of honey contains that sweet treasure which is, as I have told you before, conveyed by a narrow channel in the working bees to the neck or throat, and from thence discharged through the mouth into the common stock, which is kept in cells, except a small quantity which they swallow for their own support. The whole body is covered with hair,

particularly their legs and thighs, and this helps them to retain the small particles or grains of wax, which fall from the petals of the flowers; and they always come home laden with this, as well as their portion of honey.

Maria. Pray, mamma, what is wax? Is it not strange that both that and honey should come from the same source, when they are so different in their taste and smell?

Mrs. Smith. There are two sorts of wax, coarse and fine: the former is a natural fat or vegetable oil, which the bees find on the chives and petals of flowers; and it is with this they close up every crack or flaw in their habitation, and build their combs with it, beginning at the top, and building downwards, forming as many rows as the hive will hold, each row having cells on each side, and formed into three stories or departments: in one they lay their eggs and rear their young, in another store their wax, and in the third their honey. The wax is as necessary to them as the honey, and they have always some in store, to which they have recourse when any accident happens to their building,

or there is any opening made in their hive : and they stop up the cells where the nymphs are with it, and those in which the honey is deposited, as fast as they are filled. It is found on all flowers, but chiefly on the rocket and single poppy, where, with the help of a microscope, it is often seen hanging on the flowers. The bees are very careful of the wax, and suffer none to be wasted : for when they are obliged to open one of their store-houses for honey, the wax with which it was closed is carefully carried to the magazine for that commodity ; and when a young bee breaks its prison, in which it was confined as a nymph, two older ones immediately repair the edges of the partition with some of the wax, and then take the remainder to the general repository.

Maria. Well, mamma, I am bound to believe what you say, because I have never found you deceived me in other accounts ; but I wonder much at what you tell me. Have you ever seen it?

Mrs. Smith. Yes ; and you might see it also, had you the advantage of a glass hive,

as I had once. It is pleasant to see them gather the wax, which they sometimes do, by rolling on their backs in the yellow dust which falls to the bottom of those flowers that are shaped like a bell; but their usual way is to gather all the little particles of it with their feet and mouth, and then carry it to where they can fix themselves in some steady place, where they press it with their feet into small round balls, which they put into a cavity which opens in their hinder feet; and when these are full they wind it round their legs and thighs till they can take no more. They then fly with it to their hive, where, as soon as they arrive at the opening, some of their companions come and assist them in unloading, brushing their back and feet, and pressing out the two balls of wax. As soon as this is done, the labourer returns to gather a fresh load, and the others convey it to the magazine. It is afterwards taken out again by another set of bees, who work and knead it with their feet till it is whitened and purified, and separate from the coarser sort.

Maria. And what is honey supposed to

be, mamma? The bees gather that in a different manner.

Mrs. Smith. Honey is the effuse or perspiration of the finest particles of sap in plants, which evaporates through the pores, and condenses or hardens on the flowers. The sun's rays contribute greatly to its increase, and the bees are never so busy as when the sun shines warm. They suck it up with their trunks, and it is not supposed that in passing through their bodies, it receives any other alterations, than a little more consistency, and may be, perhaps, a little more purified. When their bags are full, they empty them into the cells appointed to receive it. Some of these are left open for the food of the queen, the drones, and the young worms, while the rest are closed up with wax against the wants of winter.

Maria. Or rather say, mamma, only to tempt us to destroy them and their work together; but it is certain we could never get such sweet food any other way: how clear and transparent this is! The poor little creatures must have taken many a journey for

what we have been eating this morning for our breakfast!

Mrs. Smith. At least, my dear, it may be said of them, that they fulfilled the purposes for which they were created. But of how few of mankind, if any, can this be said with truth, if we consider what was the pursuit and pleasure of man on their creation. The bees are useful in their generation not only to themselves but to us also; and let us not lament their death, since it is in the service and benefit of those for whose use they were originally formed. There is scarcely any one uses a bee ill, and so sensible are we of their usefulness, that, while they do live, the utmost care is taken to make them comfortable, and to protect them from their numerous enemies; and when we cause their death, it is in as easy a manner as we can devise.

Maria. You make all the excuses you can, mamma, for our rapacious cruelty; but this I will acknowledge, it is better to destroy them at once, than take away the means by which they live, at the very time when they have no chance of getting any other food; and

if pity and commiseration will do them any good, they have plenty of it, for almost every one is sorry for their tragical end, and even poets have not scorned to lament it in their writings. Thompson has for one: you must give me leave to read to you what he says upon the subject;* and to-morrow, if you please, now we are upon winged insects, I will trouble you to give me some account of wasps.

* See Thompson's Seasons,—Autumn.

CONVERSATION II.

Wasps and Hornets.

MARIA. Now, mamma, let me hear what you know of wasps. They are much more worthy of death, in my opinion, than the bees; and are, I think, great enemies to them.

Mrs. Smith. Yes, they often enter the hive and rob the bees; and will waylay and murder them, as they are returning from work, for the sake of their honey. They have none of the public economy and industry which the bees are so famous for: on the contrary, they can only be called public robbers and pirates, finding their food wherever they can get it. The finest fruits give proof of their rapacity; nor are our kitchens or the butchers' shops free from them, where nothing comes amiss to their taste.

Maria. I think I have heard that the butchers prefer their depredations to those of

the flies, mamma ; and that where a quantity of wasps are, the flies never come.

Mrs. Smith. I am told they do not, and that therefore the butchers are rather pleased with their visits than not, and often put a bit of liver, which they are fond of, to attract them, that, while some are devouring this, there are others employed as sentinels, to drive the flies away. They are much more cleanly than flies, for the female never lays her eggs any where but in the nest, while the fly will deposit hers in every bit of meat she can settle on ; and this is the reason the butcher favours the wasp rather than the fly.

Maria. What, mamma, have wasps a nest as well as the bees ? I did not know that.

Mrs. Smith. Certainly they have, and quite as curious, if not more so, in its construction ; since they have no hive provided for them to build in, the outside case and all is made by themselves. I had once an opportunity of seeing one which was taken in our garden, and dug out of the earth, where they in general build their nest, though there are those of a larger sort than what we commonly see, which

form theirs under the roofs of old buildings, or in unfrequented timber yards, and some hang them to the branch of a tree.

Maria. What are they formed of, mamma?

Mrs. Smith. Wood and glue : the former they procure in very small quantities from old window frames, and decayed pieces of timber ; they saw it with their teeth, (which are formed as the bees are, to work backwards and forwards, from right to left,) and carry it off at different times, to the spot they mean to build in, which is generally a cavity in the earth, which they enlarge to the size they want it, with the same implements they cut the wood with. The glue is what they emit from their bodies, and may be called their perspiration, occasioned by the excessive labour which they employ till their building is formed, and which is often completed in a few days. As they cast out the earth and clear it away, they cement the roof of their building, and which is fixed to the top of their subterraneous abode, with this glue and the wood they have before procured.

Maria. But the wood must undergo a great change, mamma, to enable them to build with it in the manner the bees do with their wax?

Mrs. Smith. When they have hacked it sufficiently with their jaws, they make it up into little round balls, by the help of the glue I have before mentioned, and then place one on that part of the building which they wish to strengthen and enlarge, and there spread it out with their trunks and paws, working backwards all the way: and from repeating this operation two or three times, the composition becomes so thin, that our finest paper is not to be compared with it, and of a grey colour; and they continue to place layers of these one over the other, till the walls or building is thick enough.

Maria. Do they form their cells of the same shape as the bees, mamma?

Mrs. Smith. Yes, but instead of being perpendicularly placed, these are horizontally, one above another, and supported by columns from one story to the other, like so many galleries, so that by breaking down one

side of the nest you see all that is passing within. There are in a large nest, such as will hold eight or nine thousand wasps, as many as ten or eleven of these galleries; but some of their cells are larger than the others, for like the bees there are in every community three different kinds of wasps: the females, who are the largest, and but few in number, though they do not confine themselves to but one in a nest, as the bees do; secondly, the males, almost as large but more numerous; and lastly, the mule wasps, who are employed in building and other work: these are the smallest in size, but their numbers considerably exceed the former ones. These different sizes of the wasps occasion the variety in the cells, and the mothers are very careful in which they deposit their eggs, for knowing, by instinct, which they are to produce, they always lay those which belong to a mule in the smallest, and those which are to produce males or females in the largest cells, and are never mistaken in their progeny. These eggs produce worms, the same as the bees, and the mothers are charged with providing for them, and are

sometimes assisted by the mules in this office. And these worms, after they cease to eat, spin a fine silk or thread out of their mouths, which they fasten to the entrance of their cells, and working their heads backwards and forwards they close up the opening, and then the worm within changes its skin, and is formed into a chrysalis, who, at the end of twelve or fifteen days, becomes a young wasp, and enters upon the practice of marauding, with the rest of its fraternity.

Maria. So far they are like the bees, but not in their careful provision for the wants of winter; I hear of no cells of that kind.

Mrs. Smith. No, indeed; they literally take no thought for the morrow. But as soon as the cold weather comes on, the females, who appeared to take so much care of their offspring, now totally neglects them; and, as the winter approaches, one or two of these unnatural mothers, turn males and mules, with all the young ones, out of the nest, leaving them to perish with the cold, unless they can provide a place of refuge for themselves. They

tear down the cells, and cause the nest to exhibit every appearance of devastation.

Maria. One would think the whole species would be destroyed, mamma, and that we should have no wasps the next summer.

Mrs. Smith. A few females, who are by far the most vigorous, survive the winter, without either seeking or having any food, but remain in a torpid state, till the return of fine weather; and then one of these is sufficient to produce a whole swarm. She first builds two or three cells that are fastened to the top of another cavity, which she has found in the ground, or sometimes to that which they formerly evacuated; and in these she lays a couple of mule eggs, which she nourishes with great care till they become nymphs: and while they are undergoing their transformation, she lays two other mule eggs. These, in time, all assist her in her work; and while the cells are daily increasing, she lays first a male, and then a female egg. These soon add to the number of wasps; and if in July there are only two mothers, there will be fifty within three weeks afterwards, and these will

produce ten thousand wasps before October. Their stings are formed in the same manner as the bees, but they are much more ready to use them; as a bee seldom uses its sting but when provoked, and does not get in the way to provoke *us*, so often as the wasp, who is for ever entering our houses, and eating all our rarities before we have tasted them ourselves.

Maria. I think it the goodness of Providence, mamma, that these do not live so long as the bees: multiplying as they do, what a pest would they be to us, if they were not destroyed by the winter.

Mrs. Smith. Indeed they would; but it is a general remark, that whatever is pernicious to us, the goodness of God has ordained that either they shall be short lived, or slow in their increase.

Maria. But the hornets, mamma; let me hear something of them also. Do they partake most of the nature of the bee, or the wasp?

Mrs. Smith. Of the bee, without doubt; and indeed they are a species of wild bees, larger in size, and not so curious and exact

in their manner of building as the common ones : yet their nest is not without its beauty, and its wonders also. It is composed of dried leaves mixed with wax, which they gather as the more domestic bees do ; and this, like the wasps, they generally build under the earth in some cave or hole formed by the field mouse, or other animals. Each hornet builds its own cell, about the size of a large pea, and open, like the half of an egg shell. The females, who, among these also, are but few in number, lay their eggs in some of these cells, and then some other bees close them up with wax, and afterwards standing upon them appear in continual motion, as if to give warmth to the egg within, which, when the worms leave, and endeavour to break through their waxen covering, others assist them from without, and the partition is removed : a larger bee then comes and swallows all the wax, which, after being melted in its stomach, is employed for some other purpose. The worms which are thus hatched, fall into a convulsive motion, which covers them with perspiration, and this forms a glue which gradually hardens, and enwraps

them in a fine white skin: this is their state of nymphs or chrysalis, from which in time issues a young bee, but not like those we talked of yesterday, inclined to work as soon as it comes forth; on the contrary, it is suffered to play about for two or three days, till it interrupts some of the older ones in their work, on which it is severely chastised and beat to the ground, from whence, after it has laid a little while and turned round a few times, as if to recover itself from the blow, it rises up and proceeds to labour, as if it knew what the reprimand it had received was for. The business of these younger ones is to bring earth to the nest, by which is sustained the sheets of wax the older ones spread over it to form the vault.

Maria. Have not these a queen bee, mamma, as well as the others?

Mrs. Smith. Yes; and she is larger and different from the rest, having neither wings nor hair, and of a black colour. When she appears there are similar rejoicings made, and she visits all the cells in the same manner as the more domestic ones. Those who have

paid attention to the wild bees, (and I had my information from a gentleman who was induced to keep them for curiosity,) have observed that they want much of the industry of the others, and are obliged to be called every morning to their labour, by one of the largest of the band, who stands and claps his wings till they are all in motion. There is also another of these large bees, kept as a sentinel or a watch, at the entrance of the nest, who lets no stranger nor any thing injurious enter. The gentleman I speak of, once put a common bee just within the entrance, to see how they would proceed with it, and the sentinel seized and killed it on the spot.

Maria. Do they make honey, mamma?

Mrs. Smith. Yes, and store it up as the other bees do; but it is not of so delicate a nature, as they are not so particular from what flowers they gather it, which makes it often have a bitter taste. This they put into the cells from which the young bees proceeded, and close up with wax against the winter; but it is well known, that if these, or the common bees, have the misfortune to lose their

queen, they forsake their nest immediately, exhibiting every sign of grief, and move away to another settlement, let their store of honey be ever so great in the one they leave.

Maria. Poor things! I admire their attachment to their sovereign; but, mamma, I see company coming: have you any more to tell me of these wonderful little creatures?

Mrs. Smith. No, I have exhausted my stock of knowledge. Let us go and meet our visitors.

CONVERSATION III.

The common Fly; Reflections on Insects.

MARIA. I think, mamma, in all we have discoursed upon, we have never noticed the common fly, and yet that is continually before our eyes. There is one now upon the table: what a curious little thing it is! and what very fine legs, hardly visible; and, small as the body is, I could scarcely think it could be supported by them, did it not give ample proof to the contrary, by the quickness with which it moves along.

Mrs. Smith. Could you see it in a microscope, the formation of a fly would appear far more wonderful; and those little legs, (of which there are six,) are furnished with seven or eight joints in each leg, and two bending claws at the extremity of each, between which are two small balls like sponge, from which she presses a gluey matter, which enables her

to walk on glass, or other slippery substances, without falling; and also serves as a soft cushion for these claws to rest on, without being injured. Besides these balls, there is plenty of hair on each foot, which she uses as brushes, to clean her wings and her head.

Maria. Look, mamma, the little thing is doing it now, as if to exhibit what you are saying. She first cleans her brushes, I see, by rubbing one paw against another, and then draws them over her wings and head repeatedly. How graceful her motions are!

Mrs. Smith. As contemptible as this little creature is generally considered, it has several wonders about it to excite our attention, and its infinite number of eyes is not the least; they are fixed in two little caps, which, in a microscope, you may see on the head of the insect, and which is immoveable, and are ranged in lines crossing each other, each of which has a set of optic nerves under them, and many curious observers will tell you there are an incredible number. Leuwenhoek, a famous Dutch physician, who studied nature very accurately by the help of glasses, has

reckoned eight thousand; but it appears hardly possible that in so small a compass as the head of a fly, there was room for so many.

Maria. I am apt to think, mamma, that he must have had a multiplying glass, as well as a microscope, to see so many; and what can be the use of such a number? other animals are content with two.

Mrs. Smith. One thing is, that they are quite immoveable; so that if there were not so many in every direction, the fly could not guard itself from its numerous enemies; but these eyes being placed on a round surface, it sees every thing before, behind, and on each side of it, as you may easily percieve by the least motion you make towards it: though ever so gentle, it flies off directly. Its wings are also very curious, and edged all round with a fine fringe; and, was it not to use the little brushes on its feet very often, these would be inconvenienced, as well as its numerous eyes beclouded by the dust and smoke, which settles on them, and would encumber its delicate body.

Maria. Have beetles and all other flies such a number of eyes, mamma?

Mrs. Smith. Yes, so all naturalists will tell you. But to proceed with our subject: on the head are two horns and a trunk; the latter is composed of two parts, one of which folds over the other as a sheath, and this is kept in the fly's mouth, except when it extends it, to procure its food. It can be used several ways, as a knife to cut what it eats, and as two lips to take it up in proper quantities; and when the fly sucks up the air which it contains, it can be employed as a pump for drawing up liquors. There are several kinds of flies, some of which are furnished with a pincer, instead of a sting, with which they penetrate into very hard bodies. This pincer is furnished with two saws enclosed within a sheath, and pointed at the end, with which they make a small cavity; and near the bottom of the sheath is a small bag of corroding poison, which eats into the hole made by the pincer. It can be extended or drawn in at the pleasure of the fly; and it is these sort which penetrate the leaves of the oak, and, with the cor-

roding liquor it ejects from its body, forms that swelling which is called the gall nut, which grows white, and is nourished by the tree. The worm that is hatched in this spacious apartment feeds on the tender substance of the ball, till its transformation into a nymph, and from a nymph to a fly: it then bursts its confinement and flies away. Gall nuts, you know, are of great use in making ink. These flies are by some called the ichneumon fly; but your uncle, in his account, which he gave you in the summer, of that fly, did not mention this circumstance.

Maria. No, mamma; but if what he told me of that insect, and this of the formation of the gall nuts belong to the same, it will increase the high opinion I have already formed of that fly: I remember I thought it a very useful little insect when I heard my uncle's description of it.*

Mrs. Smith. I believe they are the same which he mentioned, though he forgot to give this proof of its utility. There are others that pierce the bark of the rose trees, and make

* See page 72 of vol. i.

several cells there in regular lines. Here the fly deposits her eggs, and when the worms which they contain are hatched, they quit their mansions, to gnaw the leaves of the tree; and as they increase in size they become like a small caterpillar. These little insects often change their skins, and at the end of six weeks spin themselves a covering, and after remaining as an aurelia or nymph sometimes all the winter, at others but a short space, according as the heat of the weather facilitates their second birth, they become flies.

Maria. I wonder whether those little worms or maggots which we often find in filberts and nuts, proceed from flies, mamma?

Mrs. Smith. Undoubtedly; they come from an egg laid there by one of these flies which are furnished with a piercer, while the nut shell was yet tender, and you may always observe the hole that was made for the purpose: the worm when it was hatched fed upon the kernel of the nut, which makes them, as you may commonly observe, very fat; and it lives there in peace and plenty, till, having undergone the common change into a nymph,

from whence it becomes a fly, it makes the opening larger, and comes out to enjoy its liberty, supposing the nut is not cracked before: if so, it generally dies in its first state. But the common fly, with whom we began our remarks, is not provided with such a piercer: theirs is only a tube, with which she deposits her eggs in meat that has been softened by heat, and in all substances which are soft and juicy; and this is what we call the meat's being fly-blown. From these eggs proceed a brood of worms or maggots, who afterwards change into aurelias, and then into flies; and these multiply in such abundance, that not the lion or the wolf are half so pernicious to mankind as this little tube, which nature has bestowed on the common fly. At the time of the year in which they are most numerous, our houses are infested with them, and every thing we eat or drink is contaminated by their eggs.

Maria. I admired their great care and graceful motions in cleansing themselves, but I find they are not so careful to keep every thing else clean, and I often hear people say

they occasion much illness when we are so pestered with them. But how surprising it is, mamma, that every insect should know so well where to deposit her young, that, as soon as they receive life, they are where they can meet with the nourishment that is best suited to their natures.

Mrs. Smith. Exactly so: that fly which pierces the oak, and causes the gall nut, is never known to lay her eggs on the rose tree; though it flies and settles every where, while it is enjoying its liberty: and those which taint the meat and live upon it, always lay theirs where their young may live upon the same nutriment, till it is become a fly, and capable of seeking food further off. The wonderful instruments with which they are furnished, are also fresh proofs of their divine Maker; so exactly suited to their wants, and so exquisitely formed, that the microscope, which presents all our works rugged and uneven, only shews them more beautiful, smooth, and polished. Add to this, that in the smallest insects, even those which are imperceptible without the aid of glasses, that in these should

be all the organs of life, digestion, and generation, whereby their species is continued on the earth, and the contemplative mind is filled with wonder and admiration of their great Creator, who originally made every creature, and implanted in them the seeds of future generations for thousands and thousands of years, and still preserves them; providing for them their proper support with the same care as for man himself, who was his first and noblest work, till sin produced his deformity.

Maria. I have heard that even in a grain of pepper, when dissolved in water, there are numerous small worms to be found in it, only visible by glasses.

Mrs. Smith. Yes, and in the smallest drop of vinegar also, are these animalcula to be found; for such is the name given by naturalists to these small insects only to be discovered by the microscope. But each of these insects are different from the other, and are never in the same liquid: that is, those bred in vinegar will not live in the water pepper has been dissolved in, nor will those which

inhabit that water breed any where else, so that there is no confusion in their breed, but each keeps to its own place. And here let me remark, that we ought to be thankful that we have not microscopic eyes, for as all creation teems with life, and even the air we breathe is full of insects, we should be afraid to eat or drink anything, lest we should swallow them, if they were perceptible to the naked eye; but now, while they are so small as not to be perceived, they cannot hurt us, and our taste is not disgusted with them. On the other hand, our sight is sufficient to prevent our taking anything that would be pernicious, and we are spared the unnecessary view of what would be disagreeable, without being hurtful.

Maria. O, mamma, the goodness of God is conspicuous in every thing, and we complain without reason of what he has appointed.

CONVERSATION IV.

Silkworms.

MRS. SMITH. I have two subjects of consideration, to offer you this morning, Maria: very different from each other I own, but both worthy your notice—silkworms and snails: which shall our conversation be on?

Maria. I shall be glad to hear of either, mamma; nor do I mind which is the first, as I shall be sure to remind you of the other when I have an opportunity.

Mrs. Smith. It shall be silkworms then, as I have just had six brought me as a present from Mrs. Meek's, who, you know, has kept them a long while, and thinks that if they were propagated with the same care here, as in France and Italy, they would thrive equally as well.

Maria. Here is another wonder! that all

the silks we wear should come from so insignificant a creature. I just know as much as that; and that the silk is wound off in balls, and many threads are put together, to make one large enough to answer the purpose of weaving; but as for the worms themselves, I am but little acquainted with them, though I doubt not that they have as many curiosities belonging to them as other insects.

Mrs. Smith. More than many, as they undergo more changes. In countries where they are kept in large quantities, and where the climate is not mild enough to admit of their being out of doors, a large room is provided for their habitation, in which is free admission for the sun and air; but it must be defended from cold winds, birds, and all kinds of vermin. In the middle of the room is raised a square stand, as high as you can reach, and large enough only to admit your walking round the worm. In this hurdles, made of osier twigs, are placed one over the other, at equal distances, so as to form several stories; and under each hurdle is a sliding floor, which can be taken in and out, to catch

all the dirt and impurities which fall from the insects. They are supplied every morning with fresh mulberry leaves, the food they are most partial to; but if these cannot be had, lettuce leaves, and those of the hollyhock, will supply their place; though the worms give evident proof that it does not agree with them so well, and their silk is not so fine. In China and other warm countries, they live in the open air, and take all the trouble of providing for themselves; but are never found on any other but the mulberry tree, where the butterflies, which spring from silkworms, always lay their eggs, fastening them to the branches with that kind of glue which almost all insects are furnished with. Here they continue all the winter; and Providence has so ordained, that the young worm never quits the egg till its sustenance is ready for it: but as soon as the leaves are expanded, the worms come forth and begin to feed on them, and greatly increase in size, till, in a few months, the trees are all covered with small yellow balls of silk, which are beautifully contrasted with the dark green leaves; and care is then

taken to wind off the silk in proper time, and before the insect undergoes another change.

Maria. But then the insect is killed, is it not, mamma?

Mrs. Smith. You shall hear: one female silkworm will sometimes lay above five hundred eggs, so that a very few left to make a way out for themselves, will stock the magazine for the ensuing year. They come out from this silken cone a butterfly; but this is their last change: they have many to go through before they come to this.

Maria. Do let me hear them, mamma.

Mrs. Smith. When the worm leaves the egg, it is very small, and quite black; but in a few days it assumes a greyish colour: after this its coat gets rugged and sullied, and the insect casts it off and appears in a new habit, which is white bordering on green. Its continuance in this form is long or short, according to the state of the weather, and the quantity of food it takes. When it ceases to eat, it sleeps for two or three days, and then appears much agitated, and grows quite red with the continual motion it is in, till

at length its skin wrinkles, and shrinks into folds, and the worm again disengages itself from it, and throws it aside with its feet, becoming now quite another creature: its head, shape, and colour, are quite different from what they were before, and much prettier to the eye. It now eats again for some days, till it once more relapses into its sleepy state, and again changes its skin, which is three times since it came from the egg. In this third state it begins to spin itself a covering, under which it becomes an aurelia or nymph, and from which, in the course of three weeks, or sometimes longer, it comes forth a butterfly; not very beautiful in its appearance, it is true; nor does it fly far from home. The female butterflies are larger than the males, and begin to lay their eggs within a few days after they quit the cone.

Maria. Wonderful changes, indeed, mamma; but I think they are similar to what my uncle once told me, of the common caterpillars and butterflies.* But now, if you please, I should like to know the difference of the silkworm from the caterpillar; and

* See vol. i. page 74.

from whence arises that fine silk which has made this little worm so valuable. I know it is spun out of its bowels; but how strange, that the nourishment it receives from the mulberry leaves should be so changed!

Mrs. Smith. You must not suppose, that the food it eats occasions the silk, though its having proper nourishment contributes greatly to the strength and beauty of it; but this is digested, and passes through the insect, as in all other creatures. I will now proceed to the anatomy of a silkworm, as it has been described to me. It is composed of several elastic rings, like other caterpillars, and has a number of little feet and claws by which to fix itself: and it has two rows of teeth, which move from right to left, in the same manner as the bee's, with which it lacerates the leaves it feeds on, as if they were cut with a saw or a pair of scissors. That part of the skull which covers the brain is continued by a small vertebra from one extremity of the body to the other. The heart, lungs, and spinal marrow, which flows through this vertebra, may be clearly seen with a microscope, as

well as the heart's palpitation, and the circulation of a fluid through the whole body. The lungs extend on each side of the body, and receive air through the several orifices we see distributed on the exterior of the rings which compose the worm. It has been proved by experience, that if the sides of the worm has been rubbed with butter or oil, so as to stop these holes, the creature dies immediately: but this is not the case, if only the back and belly are rubbed. Between the heart and lungs are the intestines, where the service of digestion is performed, and which are covered with a sort of bag, which has infinite foldings and windings, and contains a gum, of a yellow colour, of which the silk is made. Under its mouth there are two small holes, through which the worm emits two drops of this gum, which are continued like a thread, when she has fastened them to some secure place, and with a motion of her head begins to spin, and lets herself down as low as the strength of the silk will permit, and which she makes coarser or finer in proportion to the length she has to go. She unites the two threads by twisting

them one over the other with her fore paws ; and when the time comes for her to make her cone, or ball of silk, she employs all the claws her feet are furnished with, in twisting her threads together : here are some of these cones, and we will cut one of them open, to satisfy our curiosity.

Maria. Ah ! there is the chrysalis within it ! It looks like a bean, except that it seems composed of several rings, which get smaller and smaller towards the bottom.

Mrs. Smith. In this is contained the head, wings, and body of a butterfly, which, in about fifteen days hence, would have disengaged itself, had not our premature discovery of it, in all probability, prevented its coming to life. Look at the silk that is on the outside : it is coarse, or rather more like down or flue, and cannot be wound off to any advantage ; but the next is the fine silk, which is close together, and arranged with the utmost nicety ; and last of all is the shell or crust which enwraps the chrysalis, and is a mixture of silk and glue, intended as a strong wall, to fortify her retreat. The first covering is spun

without any care or regularity, and seems intended by nature to keep off the rain or sun from the silk within. It is also a great addition to the warmth of the insect, who, as it never acts contrary to nature, spins the same whether it is bred in the house or on the mulberry tree; though when the experiment has been tried, of repeatedly taking away this outward covering, which is the first the insect spins, it has been tired of beginning so often, and proceeded to the second, or finer silk, which it spun in a more regular manner, and confining itself to a smaller space, was in a very short time surrounded with it, and hid from the view of its troublesome observer: and when it has completely formed a secure retreat, it divests itself of its skin, the fourth time, and undergoes its last and great change into a butterfly. When the cones are left for them to disengage themselves, the skin is found at the bottom of their cell. When silkworms are bred in the house, care is taken to provide them small rolls of paper, into which they retire, and begin their work, by fastening their threads to the sides of it.

Maria. But is it not wonderful that the fly should ever be able to extricate itself from so close a covering? How can it pierce through it?

Mrs. Smith. The same Being which taught the worm thus to provide itself a place in which to undergo the change, also instructs her how to make a passage from it when that change is completed, and therefore one end of the cone (which, as you see, is shaped like a small egg) is left more free, and the silk not so strongly cemented, or wound so close, as in the other parts: and this point the worm has the precaution not to place against any substance which might obstruct it in its coming forth, and it never fails to fix its head opposite this point; so wonderfully has Providence ordered even the minutest circumstance for the preservation of his creatures. When the butterfly is complete, it extends its horns, and head, and feet, towards this opening, and at last forces its way through it; (but this, as I have mentioned before, renders the silk useless, because it breaks and injures it;) and the head

and skin of the worm is found at the bottom of the cone, like so much cast-off clothes, which is of no further use when the owner has got a new suit. To preserve the silk, the cones are exposed to the hot sun, which presently kills the aurelia, before it has done any harm to its covering: the outward down or flue is then cleared away, and the balls thrown into hot water, and stirred about till the ends of the silk are discovered; and these being drawn through little rings, to prevent the cones entangling, or rising too high out of the water, are wound off on reals, and prepared for the manufacturers, by adding as many threads together as will make it the size they want. Some of it is dyed in grain, and some after it is woven. Eight ends are sufficient for ribbon weaving; but for velvets and satins, and for thick silks, fourteen are not too many. The calculation of the quantity of silk on each cone, and its weight, has often been very accurately made; sometimes they are nearly two thousand feet in length, and yet do not weigh more than two grains and a half.

Maria. How fine it must be! the ex-

pertest spinner could not make a thread half so fine.

Mrs. Smith. No; there would be as much difference, comparatively speaking, as between the finest thread and a ship's cable.

Maria. But, mamma, I find we are obliged to destroy the worms, to get at their silk; it seems we use them no better than we do the bees. I am afraid *we* are the most destructive creatures, after all.

Mrs. Smith. I have only the same charter to plead, Maria, which I mentioned when speaking of the bees: all these creatures were originally formed for our use, and we are absolute lords over them; and while we provide for them we have a right to their services, and their lives also, if their service can be obtained no other way. It is no more than our killing those animals which are appointed for our food; and if we did not, they would soon overpower us by their numbers, and destroy the fruits of the earth, which are only allowed *them*, that they might be *serviceable* to us; not to render them our superiors.

Maria. And yet, mamma, many animals are our superiors, both in strength and every thing else.

Mrs. Smith. Originally it was not so, *Maria*: every thing was good and beautiful in its kind, and man reigned a benefactor, not a tyrant, over his subjects; but sin has made a great change, and man has sadly perverted his ways. But our conversation grows serious, and will lead to enquiries which are above your comprehension. Let us take a walk, and be thankful that we are permitted to enjoy so many blessings which are bestowed upon us.

CONVERSATION V.

Snails, Shellfish, and Crabs.

MARIA. Now, my dear mamma, for your account of the snail. I have been searching for one this morning, and greatly excited the curiosity of Thomas, who wondered what I could want with such a nasty creature, who did so much harm among the vegetables and flowers, that for his part he wished there was no such thing.

Mrs. Smith. Thomas is like other people, actuated by a selfish motive. Whatever we feel inconvenient to ourselves, we wish out of the way; and if all the insects and animals were to be destroyed, which either one part or the other of mankind are inclined to think pernicious, half the creation would be annihilated: though, depend upon it, if we

could have our wishes accomplished in this respect, we should soon find our mistake, and be worse off without them, than we are with them. I have often said God has made nothing in vain, and by the infinite wisdom visible in their formation and preservation, evidently shews He does not think them useless: why, then, should we?

Maria. From your argument, mamma, we might almost conclude, that we ought not to destroy them when they are in our way, had you not before told me, that they were put in subjection to man, to do as he thinks proper with them.

Mrs. Smith. Yes: and as he has a right to kill and eat those which are appointed for his food, so he has a right also to destroy those which would devour that food, or the fruits of the earth, by which they are nourished for our use; but not to torment them: and this I need not again repeat to you. Let us proceed to the poor snail, of which Providence has not been unmindful, though it appears so contemptible, and at first sight but an half-formed thing, as it has no legs or trunk by

which it can move; yet it is perfect in its kind, and can perform all the functions of life. It carries its house upon its back, and thus is always at home wherever it goes: and it finds its food on nearly every leaf it comes to. The shell is hard, and yet of no weight; and at the approach of winter the snail distils from its body a sort of glue towards the opening of it, which hardens and thus closes up the entrance: and in this retreat it passes the winter without feeling any pain or want. When the spring produces leaves and flowers, it opens its door again, and sallies forth to seek its fortune: its appetite returns, and it finds its food on the green verdure with which the earth is covered. You have noticed the horns, or antenna, which proceed from its head, I dare say?

Maria. Yes, mamma: there are four; two long, and two short.

Mrs. Smith. The long ones answer the purpose of telescopes to the snail; and are formed exactly like these instruments, extending and contracting at pleasure, having the eyes at the ends, which by a microscope

may be clearly perceived. Thus, low as her body is on the ground, she can raise her eyes above her head, and turn them about, whichever way she sees the danger approaching.

Maria. And very useful she finds them, no doubt. I can but admire the goodness of our Creator, who has thus provided her with these organs of sight, that she can avoid every danger, except when her *mighty master* man comes, and crushes her under his foot : this she can no otherwise avoid, than by keeping as much as she can out of his sight.

Mrs. Smith. This is too sudden and powerful an evil for her to escape, any more than we can from the effects of a violent storm or earthquake which comes unexpectedly upon us ; and which is neither in our power to foresee nor prevent. The two smaller horns which are below the others some naturalists have described as the organs of smelling, and others, as two more eyes ; but I am more inclined to think with the former, as she has so free a use of the larger ones, and can, when she pleases, extend them before her, to see her way. The want of feet is supplied to the

snail by two large muscular skins, that are lengthened to let them out, after which the hinder parts are contracted; and thus she moves slowly along, but sure and steady, drawing her mansion on her back. One would think this insect must unavoidably be fixed to the ground, having neither wings to mount with, nor threads to prevent her falling, should she venture to crawl to any height: and yet the snail is often seen creeping up the highest walls, where she is enabled to stick, and prevented from falling while getting there, by the viscous humour or glue with which I before told you she closes up her *door* in the winter, and also renders her house impenetrable to the rain, as she stops up every pore with it. She is very careful of this precious fluid, never using it but when absolutely necessary, and avoiding the sun, which would evaporate or dry it up: and this is the reason that you generally find snails in moist, damp places; and in the winter the holes in old walls are full of them, where perhaps you may find ten or twenty all hanging by each other. But what is the most

remarkable in these creatures is, that the same snail is both male and female, and can give to each other the same fecundity which it receives. They are, as you know from the devastations they generally make in our gardens, very prolific, and lay their eggs ten or twelve times in a summer, hiding them very carefully in the earth.

Maria. Is the shell of the snail hatched in the egg, mamma? or does it grow afterwards? Can you tell?

Mrs. Smith. I have been informed that the shell is on the snail when it comes out of the egg, and proportionably small; and this little shell is always in the centre, which the snail enlarges as it advances in its growth, by adding new circles to the first shell and which is made by the glue, which it emits from its body, and increases in size, according as the insect has the benefit of good food and air. The shell is also rendered thicker by these repeated evacuations. I once read of the experiment's being tried, of breaking off part of the shell without injuring the snail, which was kept in confinement, and provided

with food, in order to observe what it would do, and the shell soon became repaired by a thin froth which came from the snail, and was, in the course of time, gradually raised and hardened by a second evacuation which flowed under it, and became of the same consistency, and on a level with the other part of the shell, and completely joined in with it.

Maria. This convinces me, mamma, that the snail cannot live out of its shell; and contradicts the opinion which some people have, that the slugs which we often see crawling on the ground are only snails deprived of their habitations.

Mrs. Smith. Those who think so, must be very little acquainted with natural history, as they are of quite a different species. But the formation of a snail's shell will give us an idea how shellfish procure theirs, and there is no doubt but that it is in the same way, by an evacuation from their bodies. As for the various marks which are seen in a snail's shell, as well as those of fish, they may be accounted for, when you consider the variety of food it eats, all of which in some degree contributes

to the humour of which the shell is formed ; and as the insect increases in growth it ascends higher, and must consequently add to its house : and these additions are the cause of those lines or rings with which the shell seems to be joined together.

Maria. But, mamma, in sea-shells and in some of those which we have seen polished and brought from abroad, there are many irregular protuberances ; some like so many horns sticking all round it, others like teeth. Do you think that the fish which inhabited them filled all these spaces ?

Mrs. Smith. At one time or another, I doubt not but it did, because if the fish had any tumour or protuberance in its body, the shell must be formed to cover that as well as every other part : and when it increases in size, and it is obliged to remove its body and enlarge its shell, another cavity must be made to fit that swelling, be it either little or great, and thus another inequality be made in the shell, and so on, in proportion to the life of the fish within, and according to the shape of it. But when I talk of swellings and tumours

in the fish, I do not mean that they are accidental or diseases, but that as nature works in a thousand various ways, so the fish are made in different shapes, yet each corresponding to another of the same kind.

Maria. But the shells of crabs, mamma, are perfectly smooth: you cannot see that they have made any addition to them, though they must grow as well as other fish.

Mrs. Smith. Very true; but do not you know that these cast their shells every year, as well as lobsters, crawfish, and others of the same species; and then by the help of a liquor, which emits from their body, form a new one, which, doubtless, is of the size they want it. As the time of the crab's casting its shell draws on, you may find in their bodies small stones, which, by the common people, are called eyes, though without any reason; and some naturalists suppose these stones are the stock, or matter, with which the crab forms its new shell: but I am not sufficiently acquainted with their natures, to ascertain that. What is most extraordinary in a crab is, that it has the power of dispossessing

itself of a wounded limb, and forming a new one. The experiment has been tried, by laying the crab on its back, and breaking the shell of one of the legs with a pair of pincers, so as to bruise the flesh: you will see the wound bleed, and the creature seems to suffer much pain.

Maria. Poor thing! I dare say it does: I had rather hear of the experiment, than try it myself. But how does it get rid of its broken limb, mamma?

Mrs. Smith. After a little while it lies quite still, and in its natural posture, without touching the wounded part with any of its other legs, or its body; and presently, on a sudden, with a gentle crack, the wounded limb drops off at the first joint from the body. It is the same if the great claw is pierced, and the flesh lacerated, only that the animal appears to suffer more pain, and the limb is thrown off with greater violence. A thin skin soon overspreads the wound, and stops the bleeding; and by degrees a small leg is formed, which afterwards grows to the same size as the former. It seems as if nature had

furnished the creature with this singular power, in order to preserve its life among the many enemies it is continually surrounded with. Among its own species it is not without its foes, and one crab will lay hold of the claws of another, and crush them with such violence, that, could it not cast it off, and heal the wound, the poor crab would bleed to death.

Maria. I never heard of such being the nature of crabs before; but as I said just now, I should not like to try it. Did you ever see it done, mamma?

Mrs. Smith. No, the account in which I read of it, was taken from the "Philosophical Transactions," and I should not doubt of the authenticity of it. There are many different species of crabs, which all have their distinct tribes, and herd together, having their separate haunts, both for breeding and feeding. The fishermen have been known to mark the shell of a crab, and carry it two or three miles distant from where they found it: they have then put it into the water, among other crabs, but very soon afterwards,

it has been caught again in the place where they first found it, having made its way back to its own home and old companions, which nothing can induce them to leave: but their sociability consists only with their own party, for they are continually at war with all others.

Maria. No doubt they have their family and friends, to whom they are attached, and I admire their not liking to be separated from them.

Mrs. Smith. However fancifully you may applaud their family affection, my dear Maria, I think it is far more probable, that the frequent battles they have with every other, makes them desirous of remaining where they can be at peace. But it is time to walk; let us put on our bonnets.

CONVERSATION VI.

Birds ; their Flight, Nests, and Eggs.

MARIA. How astonishing is the flight of birds, mamma, when attentively considered. I was observing them very particularly the last time I walked alone. Each seems to have wings and a tail alike, yet how different are their motions ! some soar on high, while others only skim the earth ; and others in a moment vary their direction, wheel about with the utmost velocity, and dart through the clouds, while the lark flies far above our sight, and in a moment descends to the earth with the rapidity of a falling stone : can this be accounted for ?

Mrs. Smith. In no other way but that our all-wise Creator has fitted their bodies for these various movements : and though to common observers there appears no difference

in the make of several small birds, yet each are different in their kind, and their shape and wings calculated to regulate their flight. Those that mount highest have the lightest bodies, and their tails are always of such a length as to be an exact counterpoise to their heads and necks. Their bones, though sufficiently solid to support their bodies, are extremely small and hollow, which renders them so light, as hardly to add any thing to the weight of the bird. Some birds, you know, migrate from one country to another; and these also are eminently qualified for their journey or flight, which is over the seas, and of several days' length: these are furnished with crops, in which they reserve their food, which serves them for a supply when they can get no other: and indeed there are no birds without a crop, in which their food is kept some time, and where it swims in a liquid, which helps the digestion; from thence it passes, in small quantities, through the gizzard, into the body, frequently by the aid of very small stones, which instinct teaches the bird to take, in order to keep

the passages open. Their feathers also are wonderfully formed. Each quill, however small, is both firm and hollow, and filled with a lighter air and more dilated than that in which they fly; and it is this air within its feathers which enables the bird to keep its equilibrium when mounted. Each feather also serves as a covering for the other; and the whole plumage is so artfully disposed as to exclude the outer air from every part, by which means the impulse of the feathers on that element, becomes as strong as is necessary: and to keep these in proper order, and repair any damages that the rain may occasion, each bird is furnished with an oil bag at the extremity of its body, from which it presses with its bill an oily liquid, to dress its feathers with; and this gives them their smooth and shining appearance, and also fills up any vacancy the wet may have occasioned. Those birds which are amphibious, or live entirely on the water, have more of this oil than others, which is the reason you may see ducks, geese, and swans, almost always employed in this manner.

Maria. And the formation of the birds' nests, mamma, is as various as the birds themselves; is it not? though to a common observer these might also seem all alike.

Mrs. Smith. But nothing can be more different. In the aviary you and I visited some time ago, I had an opportunity of observing all their nests, and was surprised at the difference of each.

Maria. For my part, I was so struck with the beauty of the place, and the pretty little girl which accompanied us took up so much of my attention, that I did not take particular notice of any thing, except that the birds seemed to be all very busy. But I wonder how they can get the various materials for their buildings, when they have not liberty to go out and search for it; or the different food which is appropriated to each.

Mrs. Smith. I was told that the lady to whom they belonged employed people who were thoroughly acquainted with the nature of birds and all their wants, to provide food for them, and every material for their nests; such as spider's webs, dry wood, shivers from

the bark of trees, down, wool, moss, hay, and a number of other little necessaries, which were brought and thrown into them, from time to time, and which each bird came and took as they wanted; though sometimes their each choosing the same article, produced great quarrels, and often a battle.

Maria. I should think, notwithstanding all these accommodations, and the largeness of the place they live in, they would rather have their liberty, and search for their own materials wherever they can find them.

Mrs. Smith. I do not doubt it; yet Mrs. Martin is but using the prerogative nature gives her; and while she does not use her little prisoners ill, but procures them a place of safety, and every thing they can want, she cannot be said to abuse the power she has over them: but let us not depart from our subject. Some birds build on the tops of high trees, others on the lower branches, some in the hedges, and some on the ground: the lark, for instance, never builds any where else; and the swallow, the sparrow, and the martin, always fix their residence on

the chimneys, or under the roofs of our houses. And each kind builds the same every succeeding year; never altering the form of their nests, or the situation in which they place them: though you must understand I do not mean that they have the same nest, or always build in the same place, only as to the situation of it; a lark still keeps to the ground, and a swallow to the outside of a house, and all take care to have a covering, either of leaves or grass, for their nest; while those birds which frequent our houses, find one in the roof, the thatch, or a projecting brick, and they choose precisely that which has a slope, on which the rain, however pouring, may run off without entering their abode. The nest itself is raised on more solid materials towards the bottom or foundation of it, this being composed of thick hay or moss, placed over thorns and reeds: and on this first layer, which appears nearly shapeless, they spread their more delicate materials, which, being closely interwoven and pressed together, excludes every insect that might enter and molest them, as well as

keeps out the air. But each kind of bird has a particular lining for its habitation : some choosing wool ; some down or cotton, which they gather from those plants which produce it ; and others will pluck the short feathers from their own breasts, to make it soft and warm for the young inhabitants they are expecting. A titmouse weaves her nest with hair and rushes, with as much exactness as a basket-maker weaves his baskets.

Maria. And yet all this is done with their bills; how wonderful! they have nothing else to gather their materials with, or to fasten them together with when they *have* got them.

Mrs. Smith. And the bill, which in one bird assists her to weave her nest, in another, as in the swallow for instance, answers the purpose of a mason's trowel. This little creature forms her nest very different from all others, making it almost round, with only a small hole at the top for an entrance: and she uses neither hay, wood, or straw in her building; but as she skims over a pool of water she dips her breast on its surface, passing

and repassing continually, and then dropping the moisture her feathers has contracted on the dry dust, she works it up to a consistency with her bill; and with this cement she builds her nest, so wonderfully, that man, with all his implements, could never equal her. There are other birds, such as the blackbird and lapwing, who, after they have formed the outside of their nest, roughcast the inside with a little mortar, which they either steal from some which is just made, or pick out of old walls, and when they have properly softened it, they temper it with down or moss, to make the inside soft. They always know the exact time to build their nests, not *before* they shall want them, nor too late, so as not to have them ready when they lay their eggs, which each mother does as soon as this receptacle for them is complete. Some birds lay only two at a time, some four or five, and others sixteen or eighteen; but those birds which are most detrimental to us, and with whom we can most easily dispense, multiply least: such is the wise disposal of Providence, while those more necessary, and whose eggs afford

us nourishment, are fruitful to a prodigy. And now begins the care and assiduity of the mother, whose very nature seems changed: she no longer flies abroad, but is content to sit at home, under every restraint, for nearly twenty days, hardly giving herself time to eat her food, which, if she leaves her nest to go and seek, the male takes her place, and sits upon the eggs while she is gone. He watches by her all the time she is sitting, sometimes bringing her food, and at others singing her a song, and shews as much pleasure at the expectation of their approaching offspring as herself. When they are hatched, he also takes equal care in their feeding and rearing, and attends on them till they are old enough to provide for themselves, and can use their wings to fly where they like. Your favourite poet, Thompson, has beautifully described “the passion of the groves,” the formation of a bird’s nest, and their tender care of their young,—till,

“light in air,

“Th’ acquitted parents see their soaring race,

“And, once rejoicing, never know them more.”

THOMPSON’S SEASONS,—SPRING.

Maria. I remember it, mamma, and “the strain of winding woe,” with which the poet feigns “the nightingale laments her ruined case;” but let us hope it is not always on so melancholy an account, that we hear the sweet music of this charming bird.

Mrs. Smith. Some birds feed themselves immediately on their coming out of the egg, such as quails, pheasants, partridges, and fowls; while others of a smaller kind need their parents to bring them food for some time, and which is done with the utmost regularity, and without partiality; each little one receiving its food in turn. The fields are full of provision for them; and the air swarms with insects, most of which are imperceptible to our sight, and when the air is thick and obliges these to descend, the birds descend in proportion. The wisdom of Providence is also conspicuous in this, that, while those birds who have the care of feeding their young produce smaller broods, those whose young ones feed themselves have always the greater number, as the mother can march at

their head, and take care for their safety with the same ease as if there were fewer ; but the others, having to bring it to their young ones, would find it a greater trouble.

Maria. Thus they are all nourished by one common Father, without whose knowledge and permission not one, even the most insignificant, can fall to the ground ! What an incentive is this, mamma, for our trusting in him.

Mrs. Smith. The Saviour has condescended to remind his people of this consideration : and Thompson has written a very pretty paraphrase on that part of the sixth chapter of St. Matthew, in which this is recorded.

Maria. I have a great many birds to enquire about, mamma, but this must be deferred to another opportunity : but cannot you, before we quit our present subject, give me some account of the formation of an egg ?

Mrs. Smith. Very little, indeed, Maria : it is a curiosity in itself, and formed in the body of the bird ; but it is supposed by na-

turalists, that the shell is the last formed, which fixes and consolidates round the egg so as to prevent its being bruised when it is laid, and to preserve the young within it from all accidents, till it is formed, and in a condition to extricate itself. We may judge of all other eggs by that of a hen, which is large enough for us to perceive all its parts. There is the yolk in the heart of the egg, and the first white substance which surrounds it; then a second white, in which the middle part seems to swim. There are also several thin skins or membranes which enfold each of these separations; and the ligaments with which the yolk is held in the centre, so as always to preserve its station, let the egg lay, or be turned, whichever way it may. Under the thin skin which involves the yolk, is found a little cicatrice, or white spot, which is the seed, and contains the chicken in miniature. It has all its organs in that state, but so small as to be reduced quite to a point. If the smallest portion of the vital spirit which is hereafter to animate the whole is infused into it, (but

by what process this is done, neither you nor I can form any idea,) the chicken receives life; at the same instant its whole substance is in motion, and a gradual warmth is conveyed to the heart, which expands, and the little animal lives and grows in its confinement, till it gets sufficient strength to burst the shell, (in which it is often assisted by its mother,) and come out; but if that vital spirit which I mentioned before, and which I call by that name, after other naturalists, for want of a better term, is not communicated, the mother may lay the egg, (or sit on it, till it becomes addled, and quite rotten,) but it will only contain an unprolific nourishment, and will never be a living chick. This little speck is always kept in the same place by a ligament which holds it to the yolk: and the chicken within it is at first nourished by the white, which is more delicate, and suited to its tender condition: and as it grows stronger the yolk serves it for food, till its bill hardens, and it gets tired of its confinement. It then breaks the shell, and comes forth almost co-

vered with the yolk, which nourishes it yet a little longer, till it is able to stand on its feet, and seek for other food.

Maria. Thank you, mamma. I think I have a clearer idea of the process than I had before: and to-morrow I shall trouble you again with further enquiries.

CONVERSATION VII.

*Hen, Curlew, Snipe, Woodcock, Heron,
Woodpecker, and Nuthatch.*

MRS. SMITH. Well, Maria, have you fixed upon the subject of our conversation for this morning? You will, in time, make me quite a natural philosopher, and we may, by and by, form an academy, and receive students; shall we not? Will you appoint me the lecturer? or do you mean to gain knowledge enough to take that office yourself?

Maria. Oh, mamma, you are laughing at me now! but have you not encouraged my enquiries before? and have I not heard you often say that such conversation was far better than descanting on the faults or follies of our neighbours, or amusing ourselves with cards, or books of mere entertainment, from which no instruction could be gained?

Mrs. Smith. I acknowledge it, my dear,

and still think the same; and when I proposed such a plan, which neither you nor I are fit to undertake, I only launched into the regions of entertainment without utility; I must, therefore, beg your pardon, and will proceed to answer your questions as far as I am capable. But I forgot to tell you yesterday, when speaking of eggs, that the hen is careful to turn them a little every day while she is sitting, and thus promotes the growth of the chick by affording it a regular warmth in every part. The hen may be considered as a treasure in herself, as she is constantly furnishing us with eggs for our table; or if she fails a little in her customary supply, it is that, by sitting on them and hatching them, she may afford us a still greater variety by the chicken she brings up with so much care and attention, that she has always been produced as a pattern of motherly affection. She watches over the whole, nestles them under her wing several times a day, and only lets them out, to procure their food, till their limbs are sufficiently strong to support a longer walk. She almost starves herself to

supply them with food ; and teaches them to eat by taking it up in her bill, and breaking it in smaller pieces for them. And though so timid and fearful at all other times, that she will run from the least appearance of danger, it is not so when she has her young brood to protect. She will then fly at the stoutest dog, or even at a man, if they offer to touch one of her little ones. There is another instance of her sagacity and tender concern for her young, which I have read in “ Nature Displayed,”* and have myself been an eye-witness of ; which is, when she has seen a bird of prey hovering in the air, but at such a distance as not to be at first perceived by us, she has uttered a dismal shriek, and presently all the little ones, which were then too large to be concealed under her wings, crept under the first shelter they could meet with ; and those who were not so lucky as to find one, for it was in a large open field I saw this happen, stretched themselves on the ground as if they were dead, and in this posture they continued for some time ; the mother all the while re-

* A work translated from the French of Abbé la Pluche.

peating her cries. I then saw the bird, which was a kite, hovering in the air, and the poor hen eyed it with the greatest concern.

Maria. Poor thing! how surprising, that she should know it at such a distance as it was when first she saw it, and that the little ones, who had most probably never experienced such a fright before, should so readily know what they were to do when they heard her scream! But what happened after the alarm was over, mamma?

Mrs. Smith. The kite passed over, which no doubt it would not have done, had it seen the chicken moving about, at least not without taking one away with him; and then the mother altered her tone, and uttered a note which seemed to put fresh life and vigour into her brood: they all got upon their feet, and came running to their mother, and there was such a chirping and cackling among them, that I could not help fancying she was telling them what a danger they had escaped, and commending their ready obedience to her directions, which no doubt preserved their lives. And this, Maria, ought to be a lesson

to children and young folk, to attend to the warnings given them by their older friends, although they may not understand, or see, the danger they would guard them against.

Maria. Yes, mamma ; and I hope I always shall attend to your advice, for I have had so many proofs of your care and attention to me, that I should be infinitely more to blame than the chicken, if I neglected it. And now will you be kind enough to tell me why some birds have such short legs and beaks, and others such long ones ? No doubt you can give me a good reason for it.

Mrs. Smith. I should think your own observation would furnish you with it, without its being told you. Do you not know that some birds seek deep in the earth, and in marshy places for their food, while others find it on its surface and about our houses, where a few grains of corn or crumbs of bread will satisfy them ? a small bill and short legs are therefore sufficient for them ; but the curlew, woodcock, and snipe, dig for theirs in the earth, and on the banks of rivers, and are

furnished with long bills and legs for that purpose.

Maria. What is a curlew, mamma?

Mrs. Smith. I am not very well acquainted with it, but have heard that it lives both on land and water, and frequents the sea-side during the winter, where it feeds on the small shell fish and worms which it digs out of the sand. At the approach of spring it retires to the mountainous parts of the country, to breed. It is a tall, awkward bird, of an ash colour, diversified with black. Some people admire its flesh for eating, while others think it rank and fishy. Its legs are long and bare, and its wings and tail short; it has a long bill, the upper part wider and longer than the lower part. The snipe, and the woodcock, which is the smallest of these three, have this difference, that their beaks are not so long and bent as the curlew's; and they are seldom or ever seen by the sea-side, but find their food on the banks of ponds or rivers. The flesh of both these birds are esteemed for eating far above the curlew's. The heron is a different bird from either of these, though of

the same nature ; its neck is long and arched like the swan's, but not so elegantly formed as that much-admired bird's, nor is its bill, though enormous in size, so long as the curlew's, but then its legs make up for this deficiency, as they are long and slender, (but without any feathers,) so that when it stands upright it is nearly as high as a man. It is remarkably light in proportion to its size, and a very voracious bird, as it will destroy more fish in a week than other birds of the same kind will in a month ; which generally makes it a proscribed bird by those gentlemen who have large fish ponds, and a price is set upon their heads. Yet there was a time when this bird was also much esteemed for the sake of its flesh, and in France it is still admired, and heronies* are encouraged for the sake of the young ones, which are eaten. Their bills are wonderfully adapted for detaining the fish when they have caught them, being sharp and jagged, which prevents their sliding away, and these hooks or sharp points in their bills can be turned whichever way

* Heronies are the same as rookeries in England.

the heron pleases. The male has a crest of black feathers, long and waving; but the female is without this, and is in many other respects so different, as often to be taken for a different species. There are many kinds, and one which, from its flying in the night and making a hoarse croaking noise, has been called the night raven. They have also very long wings, which at first sight you would think only an incumbrance to them; but these enable them to carry a prodigious quantity of fish to their nest, which they generally build near a pond or lake, where they can find a plentiful supply for their young. And sometimes they are a mile or more from the place they fish in. One of these birds has been seen flying to its nest with a large eel in its beak, and which he kept secure, notwithstanding all the twistings and windings of the fish to oppose its flight.

Maria. Oh, the poor eel! it certainly was very much “*out of its element,*” mamma, to be taken out of the water, and carried so high in the air; no wonder it did not like the change. But now let me hear something of

the woodpecker, if you please : this is an extraordinary bird, and being once the subject of a fashionable song, I am willing to become better acquainted with it.

Mrs. Smith. The woodpecker would be worth your notice, even if it had not been celebrated in song, for "tapping the hollow beech tree," as its manner of living and providing for itself is different from those we have been speaking of ; so also is its form and make admirably suited for the purpose of obtaining its food. Its bill is long, and of great strength and solidity ; and its tongue long and sharp, armed with little points, and covered at the tip with a kind of glue. It has short legs, two talons before and two behind on its feet, each very crooked, and capable of holding it steady, while with its sharp pointed bill it pierces the bark of its favourite trees, which are those which are old and hollow. The woodpecker darts its bill up and down the bark till he has found a hollow place in it, and these places contain a number of little worms and insects which breed in that situation, and are the peculiar food of

the woodpecker; who, when he has found their nest, soon shatters the bark and makes an opening, and as he thrusts in his bill into the orifice he utters a shrill kind of noise, which alarms the quiet inhabitants within, and sets them all in motion. He then puts out his tongue, and by the assistance of the small points with which it is furnished, and the glue which rolls over it, he draws out all the insects, and regales upon them by hundreds, eating up a whole colony before he leaves the place.

Maria. I should pity the poor insects, to be so surprised and taken; but the woodpecker must have food, and these were made for him to eat: and besides, I should think the owners of the trees would thank him for thus preserving their timber from the injury these worms would occasion it, were they not stopped.

Mrs. Smith. No doubt the woodpecker is of use sometimes in this way, though it may be but in a certain degree. Those we have in this country build their nests in the cavities of old trees, near which they are sure

to get support for their young. They form them with great neatness, but do not give them so warm a lining as the habitations of most other birds. The female lays about five or six eggs at a time. It is said there are four or five kinds of this bird, distinguished from each other by their colour and size, and some for having but three talons or toes on their feet; but they all live in the same manner, and are to be found in every part of the globe. Those in Guinea and the Brazils, build their nests in a different manner, hanging them to the extremity of the branches of trees, with wonderful art and contrivance, to avoid the depredations of monkeys and serpents on their young.

Maria. But have we not another bird in this country, mamma, that feeds in the same manner? and is it not called the nuthatch?

Mrs. Smith. Yes, I was going to mention it. This is rather a pretty bird, being grey on the back, with an orange coloured breast. It runs up and down the trees like the woodpecker, and by inserting its long straight bill into the bark, where it is any

ways cracked, utters a noise which may be heard at some distance, and sounds as if the wood was splitting. The nuthatch lives both upon insects and nuts, and lays up a store of the latter against the winter. It is a native of England; but is known in various parts of Europe. Before I quit the subject of the woodpecker, I should tell you Goldsmith describes their nest as only a round hole scooped out with their bill in decayed trees, or those whose wood is soft and tender, as the elm and poplar. This is made with the utmost exactness, and perfectly round; and here, he says, the female deposits her eggs, without any thing to keep them warm, except the heat of her body: but other writers of natural history give a different description of them, such as I have related to you. It is probable, as there are a variety in the species, each has its own peculiar mode of building. This bird is also a great enemy to the ants, and will often turn up their nest, and destroy the inhabitants with the same facility as it does those insects it finds in the bark of trees.

CONVERSATION VIII.

*Crows, Rooks, Raven, Jackdaw, Jay,
Chough, Grouse.*

MARIA. Will you be kind enough to describe to me the difference between a rook and a crow, mamma? I think I have often mistaken one for the other.

Mrs. Smith. And so does many other people, Maria, which often makes the rook suffer as a depredator; but in reality it is more the farmer's friend, by destroying the insects which feed on corn, while the crow will eat the seeds and make great havoc among the chicken, and is at best, a useless bird to us, and disgusting in its habits. It is therefore necessary that the distinction between them should be better known than it is, as the services of the rook, in destroying caterpillars, earthworms, and other insects, are

often missed, when they have been taken for crows and destroyed. Their size and colour are very nearly alike; but the principal difference is in their bills, that of the rook's being longer than the crow's, and bare of feathers, quite as far as the eyes, and of a whitish colour: with this they dig into the earth for grubs and worms, while the crow feeds upon carrion, horse-dung, or any thing which comes in its way, and often turns up the earth to get at the seed which has been newly sown. There are two or three species of crows: that which is common with us, is generally called the carrion crow, and with which our fields abound; the Royston, or hooded crow, that visits us about the beginning of winter, but breeds and herds in Scotland. It is of a finer black than the common crow, the upper part of their body being tinged with blue, and their breast is of a pale ash colour; whereas the common crow is black all over, and greatly resembles the raven. There is also the saddle-back crow, which is seldom seen here, and but few in number, neither are

they generally known. I have seen them in places near the sea-side ; but never more than six or seven at a time, and their appearance is thought a great wonder, as they come from a great distance. They are of a grey ash colour across their backs, in the form of a saddle, and black every where else ; and it is only in one month of the year that they are known to visit England, and then appearing only as strangers, and not to continue with us. The common crow builds her nest, indifferently, in all kind of trees ; while the rooks choose a residence near the haunts of men, sometimes in populous cities, if they can meet with a grove of trees sufficiently large to hold their community.

Maria I remember reading a very pretty description of a rookery in "The Landscape," a poem, by Knight. He made it quite interesting, and described their laws and regulations very agreeably.

Mrs. Smith. They have all those particularities which he mentions belonging to them, and continue stationary for several years : by choosing to live near us, they seem

to claim our protection, and it is very entertaining to observe their motions when they are building or repairing their nests for the reception of their young: all seems hurry and confusion; but on the contrary, every thing is done with the utmost deliberation. The formation of their nest is also worthy of observation; the outside being only small sticks curiously laid to cross each other, and lined within with fibrous roots and dry grass. They all belong to one fraternity, and carefully exclude all strangers from building in the same grove. Sometimes, if a young couple begins to build too near an old one, (for these continue mates two or three years together,) a violent quarrel ensues, and the elders of the community are obliged to appear, and decide the dispute by equal numbers from each side.

Maria. I wish we had a rookery near us, and yet I think the incessant noise they make is very melancholy.

Mrs. Smith. Use would soon reconcile us to that, as it does others who live near a mill, or by the sea-side, till they think nothing of

the noise, and after a time forget whether they hear it or not. But it would be a source of entertainment to you and me, could we get on some eminence or high window, from whence we could have a full view of their various pursuits and employments.

Maria. I must now hear of the raven, mamma, if you please.

Mrs. Smith. The colour of the raven is nearly the same as that of the Royston or hooded crow; but its size is larger, and its bill more hooked. It can live in any climate, and appears to feel no change of weather. In its natural state it is very voracious, and a great plunderer. He has an excellent scent, and can discover carrion at a great distance, and feeds equally on the dead and the living, of which, after he has taken sufficient to gorge himself, he flies off to call his companions to partake of the remainder.

Maria. But he is sometimes tamed; is not he, mamma?

Mrs. Smith. Yes, and made sufficiently docile to be taught a variety of tricks, and the art of fowling, like the hawk, or to fetch

and carry as the spaniel; and Dr. Goldsmith, in his account of this bird, affirms it may be taught to speak, and even to sing a tune with great exactness as to time; but although he may be entertaining with his tricks and active curiosity, (for he seems determined to pry into every thing,) yet he is by nature such a thief, that he purloins every thing he can lay hold of, notwithstanding he is properly fed, and never fails to pay proper court to the cook, from whom he knows he can get many of his favourite morsels. When in its wild state, the raven shuns the vicinity of a town, and prefers an uncultivated place to build in, and the female lays five or six eggs at a time. It is a very long lived bird: some of them have been known to have attained their hundredth year.

Maria. But it seems no care or kindness can alter the thievish disposition of either the raven or the magpie, mamma. They therefore shall not have a place in my affections, or my house, when I have one. But has a jackdaw, or a jay, any better qualities?

Can you give me any account of either of these birds, mamma?

Mrs. Smith. You would not mend yourself at all with the former, for it is generally described as a very voracious bird, and such a thief, that it generally carries off much more than it consumes. It is about the size of a common pigeon, with a head much larger in proportion to its body: and round its neck it has a cravat of fine light grey feathers; the breast and belly of a dull ash colour, and the back of a glossy black. It builds its nest in ruined towers, steeples of churches, and high cliffs; and feeds on insects, seeds, and grain, and is in general so injurious to farmers and gardeners, that it is frequently killed, by various devices. When tamed, it has been taught to utter a few words, and its tricks are equally amusing and singular as the raven's; but it will steal not only articles of food, but silver spoons, thimbles, or any thing small enough to be carried away to its hiding place, which it still contrives to have somewhere about the house, when it becomes an inmate with the family.

Maria. This bird, then, will not do for me. But what of the jay, mamma? Has that such a thievish disposition?

Mrs. Smith. No; the jay is only a little mischievous, when he gets into a garden, as its chief support is fruit in the summer, and acorns in the winter, when, if pressed by hunger, it has been known to kill small birds, to satisfy the cravings of its appetite; but I never heard that it took anything except when that was the case. It is a native of England, and one of the most elegant birds our island produces, being beautifully marked on its back, neck, and breast, with a faint purple dashed with grey. Its forehead is white, streaked with black; and the back of its head is covered with long black feathers, which are capable of being erected into a crest at the pleasure of the bird. The wings are barred with blue, black, and white; and the tail quite black. It is easily tamed, and taught to repeat several sounds, and to imitate the human voice. There are various species of jays; but all are remarkable for the beautiful tints of their plumage.

Maria. This, then, I think, shall be my favourite bird of these kind ; but is there not another, called the chough, mamma ? What is that ?

Mrs. Smith. O you mean what is generally called the Cornish bird ; it being more frequently found in Cornwall than in any other part of our island, though it is also seen in the Alps, the island of Crete, and in Ireland and Wales. This bird is about the size and shape of a crow ; but the bill, legs, and feet, are red, while every other part of it is black. When wild, it is very timid, and seeks the most lonely spot, to build its nest in ; yet it may be easily tamed : and it is equally remarkable for the softness of its voice, when it applies for food to those who caress it, and for its frightful cry when it is alarmed.

Maria. Is it good to eat, mamma ?

Mrs. Smith. I believe not. You are, I dare say, confounding it with the grouse, which are so much admired by our modern sportsmen, that in the winter or spring months several gentlemen make a party, into the unfrequented heaths of Cumberland and Westmore-

land, on purpose to shoot them, and will continue there for five or six weeks, undergoing many deprivations of their usual comforts for the sake of the sport.

Maria. What are these birds like, mamma?

Mrs. Smith. There are several varieties: that which is peculiar to our islands, is called the moorfowl, or redgame; but both the black cock and white game are also found here at certain times; but chiefly on the highest hills in the Scotch Highlands, the Hebrides, and the Orkney Isles, whither the sportsman will often follow, and seek them out: but in England they are scarcely ever seen except on the mountains of Wales, and in Cumberland. The white game is remarkably tame, and may be kept like domestic poultry; and if provoked to rise, takes but a very short circuit in the air. It is also called the ptarmigan, and its flesh is very little different in taste from that of the grouse.

Maria. But what are properly called grouse, mamma?

Mrs. Smith. The cock of the wood, and

the black cock or black grouse; and the flesh of the former is the most esteemed. When full grown, the black cock weighs about four pounds. It is fond of a mountainous, woody country, and sometimes, like the cock of the wood, (of whose nature it greatly partakes,) will make depredations on the farmer's corn; but retires on the least alarm. The chief support of both these birds are berries, ants' eggs, and the cones of the fir trees, under whose boughs they find a shelter. The black cock never pairs; but in spring the male bird ascends some eminence, and there crows, and claps his wings, till the female resorts to him. The hen seldom lays more than six or seven eggs, and, like the female cock of the woods, carefully covers up her eggs (which they both lay in dry mossy ground) when she leaves them in search of food. As soon as the young of both are out of the shell, they are able to run after their mothers, and quickly learn to eat as they do.

Maria. What is the difference between the cock of the wood and the black cock, mamma?

Mrs. Smith. The cock of the wood is nearly four times as large as the black cock, though in their nature and habits they greatly resemble each other. The cock of the wood is common in Scandinavia, Germany, France, and the Alps, and sometimes is found in the Highlands of Scotland, though but very rarely. They brood together till the approach of spring, when there is always a contest among the males respecting the females, which generally ends in a battle, and the victor carries off as many as he likes.

Maria. Is the moorfowl as large as either of these, mamma?

Mrs. Smith. No, they are much smaller; the males seldom weighing so much as a pound and a half, the females not quite a pound: they pair early in the spring, and the latter lays eight or ten eggs. The young ones follow their mother in summer, and in winter they are seen in flocks of forty or fifty, on the tops of sequestered hills, or lonely heaths: their food is the mountain berries, and the tops of young heath. The white game, or ptarmigan, is about their size.

Maria. Thank you, mamma. I hope I have not tired you. What shall I now do in my turn, to entertain you?

Mrs. Smith. You may take a book, if you please, and read to me while I finish this piece of work, which I have been so long about.

CONVERSATION IX.

*Bat, Owl, Butcher-bird, Bittern, Snipe,
Water and Land Rail, Woodcock.*

MRS. SMITH. Who do you think this letter is from, Maria?

Maria. From my uncle, mamma. I think it is *his* hand. How does he do?

Mrs. Smith. Very well: and what is better, he talks of paying us a visit.

Maria. Does he! I shall be glad to see him; he is so entertaining, and always kind to me.

Mrs. Smith. You will say so when you hear the valuable present he is going to bring you.

Maria. To me! What is it, mamma?

Mrs. Smith. You shall hear that part of the letter which concerns you: the rest is chiefly on business, which must be settled when he comes. (*She reads.*) "I was much

pleased to observe, during our dear Maria's visit to London, that she has not given up her search for natural curiosities; and having purchased a microscope, like that I once had the pleasure of exhibiting to her, I intend to bring it with me, and beg her acceptance of it. She will then have the whole *arcana* of nature before her, and be able to see things which she never saw before." Oh, mamma! how pleased I am! Every insect shall undergo a thorough examination. I will read all my books of Natural History over again, to find if they are accurately described. It will be a never-failing source of amusement: how much obliged I am to my uncle for obtaining it for me! When will he be here?

Mrs. Smith. It is rather uncertain, as you know his profession is such, that he cannot often leave it at the time appointed; but he mentions the day after to-morrow, or the following day.

Maria. I will work very hard, to finish the purse I intend for him. I shall have a double stimulus now.

Mrs. Smith We must now give up our conversations, I suppose, till the microscope comes, to assist us in our observations?

Maria. O no, mamma! not unless you desire it. I have many questions to ask respecting the bat and the owl, in which the microscope will not be wanting at all, as they are large enough to be seen with the naked eye: and also out of our power to obtain at present.

Mrs. Smith. For the latter reason your remark may be just; or else there are minute parts of each bird which might be very entertaining to examine with the microscope, such as their feathers and bills, if, indeed, the bat can be said to have any of the former. Collins, you know, in his charming "Ode to Evening," thus expresses himself:

"Now air is hush'd, save where the weak-ey'd bat
With short shrill shriek flits by on *leathern* wing."

Maria. But that is only what may be called a poetical licence; is it, mamma? They are not really composed of such materials as that?

Mrs. Smith. Not what we call by that

name, or prepared as the tanner prepares it ; yet they have more the appearance of leather than any thing else : and altogether a bat is but an ugly creature. Some naturalists place it in the rank of quadrupeds, others of birds ; but it appears to be between both, and is about the size and colour of the mouse, and that which is usually called their wings, is described by some writers on the subject, as the four interior toes of the fore feet extended to an enormous length, and connected together by a skin that reaches also to the hind legs, and from them to the tail. With these they fly very rapidly, but with an irregular motion. Its body is covered with a soft fur, of the same colour as a mouse, but tinged with red. It is frequently seen in summer evenings flying in quest of those insects which belong to the night ; skimming along the side of woods and hedges, and sometimes on the surface of the water. But at other times it remains in its retreat, which is usually the chinks of some old building, or hollow tree ; never coming abroad in rainy weather, or when the sun shines.

Maria. Poor thing! What a miserable life it must have. I think I have heard that the owl preys on it.

Mrs. Smith. Yes; and many animals also seek it as their food: but during winter it finds some subterraneous abode, such as cellars, old arches, and ruins, where, hooking itself to the wall by its claws, it remains suspended in a torpid state, and regardless of damps or any change of weather; though sometimes, when it has not been careful to remove far enough from the air, the warmth of the sun's rays, in a fine day, revives it too prematurely, and it is then in danger of starving for want of food. The female brings forth three or four at a time, and suckles them like quadrupeds, not laying an egg like birds: it is therefore most proper they should rank in the former species; and Dr. Goldsmith has decidedly placed them there. He mentions that there are but few varieties in England, and the only one worth noticing, which is different from that which I have been describing to you, is the long-eared bat, which is only remarkable on that account.

Maria. Then bats do not do any harm, mamma? only disgust us with their frightful appearance, and their short, shrill shriek.

Mrs. Smith. Not in this quarter of the globe; but on the coast of Africa, and in the Island of Madagascar, is the great bat of that name, which are of a much larger size, and assemble in such quantities, as quite to obscure the day-light: and these devour fruits, animals, and whatever they can seize on. And in South America, is another species of the bat, still more terrific and pernicious, and is the common pest of men and animals. It is called the vampyre, or spectre bat. Towards the evening these leave their retreat, and cover the towns and cities in countless multitudes, like a lofty and extensive canopy. This animal will destroy any thing that it finds asleep: it is therefore very dangerous to sleep in the open air, in this country, or in any place where the vampyre can enter; for it will fasten itself even on the human species, when it finds them in that situation, and, insinuating its sharp pointed tongue into a vein, it will suck their

blood till it has quite satiated itself : fanning the air all the time with their prodigious wings, the effect of which keeps their prey in a profound sleep, from which they seldom or ever awake again, unless something happens to alarm the bat before it has sucked its fill. I have lately read that these creatures have hitherto devoured all the cattle in the unfrequented parts of South America, and which had been sent thither by our missionaries, in the hope of forming a settlement there.

Maria. I must repeat what I have so often said before, that I am very thankful I do not live in those countries where so many noxious animals are to be met with. But now for the owl, mamma ; be so good as to describe that to me. This comes under the appellation of a bird, does it not ?

Mrs. Smith. Certainly ; this is called a night bird, as it seldom comes out but at that time, and can see much better by twilight than in the day. They are often seen flying over the hedges in pursuit of their prey, and their scream is so hideous, that it is often

considered by the common people, as an omen of calamity. All other birds seem to have a particular antipathy to them, so that if by chance any one is seen in the day, there is a general association of all the rest of the feathered race against it. The small and the great birds surround the owl with a loud noise, and soon drive it to its retreat again. The fowler often finds his advantage in this general animosity, when he spreads his net, to catch singing and other small birds.

Maria. How is this done, mamma?

Mrs. Smith. He builds a kind of hut near a wood, and covers it with limed twigs, on which, when he imitates the noise of one of these night birds, all those of the day that are within hearing fly to the place and fix on the twigs, in order to insult their adversary, which they suppose to be within; and here they get so entangled with the bird lime, that they are not able to extricate themselves, and thus fall an easy prey into the hands of the fowler: and this is one sort of decoy.

Maria. Poor things! I did not think it

was to meet with their enemies, but their friends, that they so easily fell into this snare which I have heard of before; but if they are so ready to insult their foe, they must take the consequences, I believe. Let us return to the owl, mamma: are there many different species?

Mrs. Smith. Twenty-two I have read of; but the barn-owl, which is most common, instead of being disliked, ought to be regarded as a friend to the farmers, as it will not let a mouse remain on his premises, and consequently is the means of preserving the corn, which this little animal would otherwise devour. This kind of owl is white, and may be almost considered as domesticated, living in barns, and out-houses, except at the time of her sitting on her eggs. She resorts to the woods for this purpose, and is seldom heard to hoot, but snores and hisses, and will sometimes scream tremendously. The horned-owl is the handsomest of the kind, being very full of plumage, varied with deep brown and yellow. Its horns are composed of six feathers, each variegated with the same

colours, and which it can raise or depress at pleasure. It is common in the north of England, and in Wales; and usually breeds in caverns, hollow trees, or among old ruins. There is also the eagle-owl, often seen in Scotland, which is almost equal to the eagle in size, and its plumage is finely varied. It inhabits the inaccessible rocks of that country, and preys on hares and feathered game. The ivy-owl, which is commonly called the screech-owl, and regarded by the superstitious as ominous, has blue eyes, and an iron grey plumage, and it frequents ruined towers and old castles. All these are very little different from the horned-owl. Each kind has very fine large eyes, which by some people are accounted handsome, and by others very ugly.

Maria. That is often the case, mamma, that what one does not admire, another does. People differ in their tastes: for my part, when I have seen an owl, I have thought it handsome, and far from such a dismal bird as many describe it. To my thinking, their

eyes look lively, and there is an air of agreeable solemnity about them.

Mrs. Smith. You shall be the owl's advocate, then: and I will now describe the butcher-bird to you, in whom I think you will not find any thing to admire. But first let me inform you that the female owl is remarkable for her attachment to her young, feeding them with small birds, even after they have been taken from her and kept in confinement, which she has found a way to put through the bars of their prison.

Maria. A very good trait in their character, mamma, which I will not forget when pleading for them. But now for the butcher-bird. I do not like its name at all: I fancy it must be cruel.

Mrs. Smith. Beware of prejudice, Maria, or of affixing the character of anything from general ideas.—This bird is not larger than a blackbird, but very fierce and voracious, and it has a hooked bill, about an inch long. The toes are differently formed from other birds of prey, and its habits correspond with its form. It feeds indiscriminately on insects,

and the flesh of other birds : but it prefers the latter to all other food ; and will often attack those which are larger than itself, and with good success. But when it has killed its prey, it is obliged to fix it on some neighbouring thorn, or tree, and there tear it to pieces with its bill ; its claws not being strong enough for the purpose : and it is this operation, which gains it the appellation of the butcher. In summer it lives among the hills, and in winter it descends to the plains ; and is very affectionate to its young, not discarding them when they are able to provide for themselves, but the whole brood continue to live as one family, in proper subordination and peace, till the ensuing spring, when they separate, each to raise a family of their own.

Maria. Are there not some birds that build their nest on the water, mamma, besides the swan ?

Mrs. Smith. Yes, the coot and the water-rail, and sometimes the snipe and the bittern. All these birds live and conceal themselves by the side of ponds or rivers, and some by the sea-side, as the latter, which is of

the same kind as the heron, and known by its dismal hollow noise in the summer evenings, (called its booming,) and its short crest of black feathers; while the rest of its plumage is of a dull yellow, spotted with black. The superstitious peasant shuns this bird as much as the fowler seeks it, its flesh being esteemed a great rarity by our modern epicures.

Maria. And so is that of the snipe; is it not, mamma? I have heard several gentlemen talk with great pleasure of shooting them.

Mrs. Smith. That may be from the sport they occasion, as snipe-shooting is a very favourite amusement, when the partridges and pheasants are all killed. Snipes build their nests in the north of Scotland, among reeds and rushes, and often migrate to this country, where it sometimes remains the whole year, notwithstanding it is a bird of passage. It has a beak nearly two inches and a half in length, and its back is covered with long feathers of black and brown. Whenever it is alarmed, it rises to a considerable height, and from thence descends with incredible rapidity. While the hen is sitting,

the male poizes itself on its wings over her head, and with a whistling noise seems to cheer her confinement. The flesh of the water-rail is also much admired. Its body is long and slender, and its wings hollow; and in this respect it is different from all other birds. Its colour is iron brown, and its legs are placed quite under its body, and its toes long and divided: but it can swim on occasion, without being web-footed, and can skim on the surface of the water, and run along its banks with uncommon rapidity; but seldom mounts high in the air. There is the land-rail also, which is common in Scotland and the Isle of Anglesea; but it is migratory, and leaves this country before winter. This has a short thick bill, long legs, and a singular note, resembling the word *crex*, often repeated. It conceals itself among the growing corn, in which it runs along without rising above it, and is much oftener seen than heard.

Maria. You mentioned the woodcock, mamma, the other day: this is a favourite

bird with dainty palates. Are they not birds of passage also?

Mrs. Smith. Yes; and afford particular amusement to the sportsman, as well as a dainty dish at his table. It has a long beak, with which it probes soft marshy grounds, and feeds on the insects it finds under it. During the summer they inhabit the Alps, and the northern parts of Europe; but as soon as the frost sets in they wing their flight, and visit us and more temperate climates; remaining here till early in March, when they flock to the sea-side, (except a small number who stay and breed here,) and if the wind is favourable they take their flight, but if not, they are known to wait for a more prosperous gale.

Maria. Who can tell them at what time to go or direct their flight, mamma, but that same divine Providence, who guards and sustains all his creatures?

Mrs. Smith. No one else, Maria: and with such a guide as the natural instinct he has given them, they do not fail to arrive at the place of their destination, where they

find food and a secure habitation, and immediately settle themselves there till the time of their returning, which perhaps is not many times in their lives; but those who were never here before, need no map or chart, to discover the way : nature teaches them, and they prefer a moderate cold to a warmer climate.

Maria. Had you not a deal of patience, mamma, I am sure I must have tired you before now; but I have still a few more questions to ask, respecting the delicious fare of our modern epicures.

Mrs. Smith. You must defer them till to-morrow, as I have promised to visit the garden at this time, and give some directions about the plants I wish to preserve through the winter; and I think you had better accompany me.

CONVERSATION X.

Turtle, Tortoise, Frogs, Toads, Worms.

MRS. SMITH. Well, Maria, what is to be the subject of our discourse to-day?

Maria. It was the turtle, mamma, that I meant to ask you about yesterday, which you know is a favourite dish with those who are fond of eating. And as we took our walk in the garden, I saw those great worms which Thomas dug up; they excited my curiosity, and I must also hear something about them.

Mrs. Smith, (laughing.) You certainly think my knowledge as great as my patience, which you were complimenting me on yesterday, Maria; for you expect me to give you an account of every thing, whether on the earth or under it, flying in the air or swimming in the sea. I shall one day retaliate upon you: and after the increase of know-

ledge you will gain from your microscope, and the reperusal of your books, I shall expect you to give me an account of your researches, and refresh my memory; not always ransacking it as you do now.

Maria. I only wish, mamma, I may be enabled to reply to your enquiries as accurately as you do to mine: but, till the microscope comes, you will be my instructress, will you not? I know the turtle comes from the West Indies; but are they the same that are sometimes called tortoises, and of whose shells so many pretty boxes and combs are made?

Mrs. Smith. They are of the same species; but the tortoise is smaller than the turtle, and only valued on account of its shell; while the turtle, notwithstanding its shell is mean, is much more coveted for the nourishment of its eggs, and the deliciousness of its flesh: and it lives more in the water than the tortoise does. There are various kinds of these creatures; but the green turtles suit the taste of our modern epicures the best, and the West India ships have generally a

convenience to bring them home alive, though to eat them in their full perfection it is necessary to be in their native country. Its head is very small in proportion to its body, and can be drawn in under the shell when the turtle is at rest. The shell is of such strength that a child may sit upon it, without impeding the animal's course. A single turtle, when it is fat and well fed, will yield an hundred pounds of flesh; and nearly three hundred eggs has been found within the female at one time: these are large and will keep a long time. It is supposed the turtle is long lived, as an instance has been recorded of one's being kept for a hundred and twenty years: and it is very difficult to deprive them of life, though they appear to have but few means of defending themselves, for they will move when their heads are taken off. It has four legs and a tail, and its shell is composed of several pieces united in the firmest manner. It is of a peaceable disposition, and seldom quits the sea, but to deposit its eggs in the sand, which it does three times a year; and produces generally eighty or ninety at a time.

These are twenty-five days in hatching, which is done by the heat of the sun; for the mother does not take the trouble of sitting on them; but is careful to place them in safety, and cover them lightly over with sand: and as soon as the young turtles come forth, they are seen marching by instinct down to the water, where they immediately plunge in, and find their food without any instruction. But sometimes they are unfortunately driven back by the waves, perhaps several times; and then they are seized by the birds, before they have sufficient strength to overcome the surges and dive to the bottom; so that sometimes out of three hundred eggs, not more than ten or twelve escape.

Maria. It is well they breed so often, or they would be still more scarce than they are; and our epicures would be at a loss for their favourite repast: but perhaps something is done now to facilitate their approach to the sea, or to guard them from the depredations of the birds. It would not be much expense to appoint some one to drive them off.

Mrs. Smith. Much less, I believe, than what has been paid for one of these fish, when it has been wanted for a Lord Mayor's feast.

Maria. How much, mamma?

Mrs. Smith. I am afraid to say, least I should be thought to exaggerate, but when your uncle comes we will ask him: he having been often invited to a city feast, may be perhaps more certain in his account. The tortoise, or land-turtle, is of two kinds: the larger sort is called a carret, and the beauty of its shell far exceeds that of the common tortoise; and when softened in water and a little warmed, may be fashioned to any shape the workman pleases, who puts it into a mould, and presses it in an iron press: it is afterwards polished, and adorned with chasings of gold, and other ornaments. This sort of turtle feeds on grass and weeds, as well on the land as on the water, and where it is not deep, and the sea calm, they are often seen in great multitudes walking at the bottom. Sometimes they float with their heads above the water, till alarmed by the appear-

ance of birds of prey, or the hunters who are in search of them, and they then plunge to their former situation ; but are as often found on the land, where they are easily taken, and being once turned on their backs they can by no means recover their former situation.

Maria. Is it really true, mamma, that the French eat frogs? Perhaps in France these little animals (which we call reptiles) may rival the turtle in the taste of the epicures.

Mrs. Smith. Not the common frog, as is generally supposed by the common people in our country ; but what is called the edible frog. Some authors inform us they are seen in the markets of Paris by hampers full, which those who sell them prepare for the table, by taking off the skin and fore parts ; the loins and legs being only eaten : and I don't know why these little creatures should not be as good as many that we eat, as its food is chiefly insects, which it finds in marshy places, or in the water, and many of the birds we spoke of yesterday have no other.

Maria. Is the edible frog larger than

those we have here, mamma? If not, there must be a great many killed to make a dish.

Mrs. Smith. It is larger, and its colours more vivid; but the most remarkable difference is, that the edible has a hump in the middle of its back which forms a sharp angle. But both kinds are known in this country as well as the bull-frog; and are still more numerous in Holland and other marshy countries. The bull-frog has a very powerful spring or leap, and is considered the best swimmer of any quadruped. It is very difficult to kill, and it will leap after its head has been amputated. If the weather has been hot or dry, and a refreshing shower falls, the ground is immediately covered with these little animals: and this has given rise to a vulgar opinion that it sometimes rains frogs: but when we consider that one female will produce a thousand eggs at a time, their numbers are not to be wondered at. These eggs are laid in the water, and when first hatched the little ones are quite shapeless and unformed, and are called tadpoles; but as soon as it arrives at its proper shape it takes to the land, and there

meets with a number of enemies; as they are the food of several animals, as well as men, though the latter, I should suppose, eat them as dainties, rather than for nourishment. The bull-frog is very large, and can leap three yards with one spring, by which means it can keep pace with a horse at full speed. They make a horrid noise, like the roaring of a bull; and when hurt cry like a child.

Maria. Do not all these remain in a torpid state during the winter, mamma?

Mrs. Smith. Yes: and so does the toad, which, in its habits and appearance, much resembles the frog, except that it is more ugly, and has a brighter eye. Its young undergo the same changes as the tad-pole: and like the frog it is amphibious, and feeds on worms and insects, which it seizes by darting out its tongue. Both these reptiles are thought useful in clearing the water in which they reside: and the common notion of a toad's darting poison from its mouth when it hisses, I think I can confute; for I once took some water from a fountain with a cup I had in my hand, and on my stooping down to re-

plenish it a second time, one of these animals started up, and, seating itself on the brink, appeared very angry at my intrusion: and with loud hissing seemed to ask me why I violated its retirement? I admired the little creature's bright eyes, though every other part seemed full of deformity; nor would it leave its station, but continued its hissing till I pushed it into the water again with a stick.

Maria. And did you venture to take another cup after this? I think I should have left it in quiet possession of the place.

Mrs. Smith. But I was very thirsty, and the water very good; for I had given the first cup to a companion who was with me: I therefore took another, after the toad was gone down, notwithstanding its anger, and found no ill effect from that, or the manner it had vented its displeasure. The pipal, or toad of Surinam, is still more hideous in its shape, and larger than the common toad; the head is flat and broad, and the back is covered with what, at first sight, you would take for eyes, but are really its eggs in differ-

ent stages of maturity : some are just peeping from their shells, others in a tadpole state, and others without life ; and thus the mother literally carries her whole progeny on her back.

Maria. It may well be said, that there are wonders of every kind, in the study of nature, but maternal tenderness seems the characteristic of all, whether beasts, birds, or insects. But don't let us forget the poor worms, mamma. I want to hear a little of them before we conclude for this morning ; and to-morrow, if my uncle is not come, I have other subjects in store.

Mrs. Smith. I can say but little of worms, except that they are destined, one day or other, to make as delicious a meal upon our flesh, as the turtle, and other rarities afford to man. They are represented by naturalists, as having only one ventricle to the heart, and a cold, colourless, thin matter, instead of blood : they are mostly destitute of eyes, and almost every other organ of sense. They move but very slowly ; and if cut asunder, are capable of reproducing their amputated parts ; and,

if cut into various pieces, each piece will become a worm. They unite both sexes in themselves, and lay their eggs in the earth, which are hatched in twelve or fourteen days by the warmth of their situation. There are twenty-one of this genus, or species, but what I speak of, is the common earth-worm, which is sufficient to convey an idea of the rest. This creature has a spiral muscle, running round its whole body, from the head to the tail, with which it moves, alternately contracting and enlarging itself, something in the manner of a snail, and keeping the ground it gains by these movements, by the help of a slime which it emits from the fore part of its body. It is armed with fine sharp spines or prickles, which it can erect when necessary, and has holes along its back, through which it breathes. It has a passage from its mouth, through which its food passes, and which is generally full of fine earth. During winter, they bury themselves deep in the earth, and are often found twisted round each other in great numbers, as if to keep each other warm in their torpid state. But as spring advance,

they revive, and often appear aboveground. But now, my dear Maria, we must conclude, for you remember we promised to visit the garden again this morning.

Maria. O yes, mamma; and I am impatient to see the evergreens Thomas said he would procure us. Let us go.

CONVERSATION XI.

Kangaroo, Leming, Flamingo, Pintado or Guinea-Fowl.

MRS. SMITH. Your uncle is not come, Maria, and I am afraid this wet morning will prevent his setting off to-day. You must restrain your impatience for the microscope a little longer yet.

Maria That I can well do, mamma, if you will continue your descriptions to me: but I have been thinking what ugly things my uncle will bring with him to exhibit. I dare say two of them will be the earwig and the chafer; for he knows I have a particular aversion to both these creatures, and he does not like I should show any dislike to what, he says, was made by the same hand which formed myself.

Mrs. Smith. And I don't know why you should have any to a chafer: they are very harmless creatures; neither do I remem-

ber, that you have ever experienced any very great harm from an earwig, the other object of your aversion : therefore you can give no good reason for your antipathies. But I have been searching for your entertainment this morning, with the hope, that when the microscope arrives, you will take that employment off my hands ; and only allow me to assist you in the pursuit, as I shall think fit.

Maria. Ah, mamma ! that will be very often, I know ; for you will want to see every thing as well as myself. But what have you been kind enough to provide for me to-day ?

Mrs. Smith. I have gone to the four quarters of the globe for them ; and have selected both birds and beasts, some of the handsomest, and some of the ugliest, of their kind ; nor have I been obliged to bring all the beauty from abroad, having found two in our own island, as beautiful as any foreigner.

Maria. The very thing, mamma ; pray begin your exhibition.

Mrs. Smith In the first place is the kangaroo, an animal of the opposum kind ; so

called, from this species being distinguished from all others by the females having a pouch under their belly, in which their young are nursed and suckled after they are born : and they seldom come out of this retreat, till they are able to shift for themselves. The first, and most remarkable of this tribe, is the opossum itself. It uses its fore feet, as hands : and each of these species have long tails, almost destitute of hair. The kangaroo, of which there are three kinds, is a native of New South Wales, which is the eastern part of the large island of New Holland, in North America ; and it is as yet unknown in any part of the world, except where it has been brought as a curiosity. Its hind legs are considerably longer than its fore ones, which are furnished with hands, having five toes or fingers on each, with long crooked nails. It feeds entirely on vegetables, and walks on its hind feet, using its fore feet only for the purpose of digging up its food, and carrying it to its mouth.

Maria. It is nearly like a monkey then, mamma ?

Mrs. Smith. Only in this particular ; as its shape is very different. The head is somewhat like a fawn's, and tapering, from the eyes downward ; its upper lip is divided like a hare's, and its mouth small, having whiskers on its upper jaw : its nostrils are very open, and its ears large and erect, and it has very full eyes. When pursued, it bounds away, on all fours, with astonishing swiftness, leaping sixteen or eighteen feet at a time. This is owing to the difference of length in its hind and fore legs. In a state of rest, it is in a sitting posture ; and its tail seems the only weapon it has, to defend itself, which usually measures about thirty inches, and is so strong, as to break a man's leg at a single blow. The animal itself is about three feet in length, and covered with hair, and its flesh is accounted wholesome. They lurk among the long grass : and in their wild state, are said to herd together, about thirty or forty in number ; and one of these is always appointed to watch the approach of danger while the rest feed.

Maria. I hope they change their centi-

nels sometimes, or the poor guard would be but badly off. But joking apart, mamma, they must be very ugly creatures. I think I have heard that there is one in this country; have you ever seen it?

Mrs. Smith. Yes, some time ago, at Exeter 'Change; and I believe there are more brought over since I saw that.

Maria. How many are there of the kangaroo kind, mamma?

Mrs. Smith. Three already known: the one I have endeavoured to describe to you; and the silver-haired kangaroo, much smaller, and more delicate, with finer hair; and the rat kangaroo, which is not so pretty as either of the others: for though you think them ugly, there are people who admire all this species, particularly the silver-haired one. But now let me transport you into the northern part of Europe, or as Shakespear says in his chorus to Henry the Fifth, "play with your fancy," and bring you, in imagination, there, where I will introduce the leming, or lemman, to your notice, a native of the Scandinavian mountains, and a great enemy

to the Laplanders, on whose country they pour down from these neighbouring hills, in such prodigious numbers that the simple Laplanders imagine that they fall from the skies: and though not larger than a mouse they do an incredible deal of mischief, and devour every vegetable which they meet with, leaving nothing but desolation behind them. They always move in a body, and in regular lines, sometimes several millions in a troop; and cover the ground for a mile in breadth. Nothing impedes their course, for they will literally go through fire and water, if it is in their way; climb over houses; eat through stacks of corn or hay; but devour only that which is growing on the ground; and in a very short time they give a meadow, over which they have passed, the appearance of being burned up, and strewed with ashes: so completely do they destroy every appearance of vegetation.

Maria. These are ten thousand times worse than the kangaroo, mamma: but is there no way of destroying them?

Mrs. Smith. Not till they destroy them-

selves; for if a man ventures to attack them, they are not frightened, but will fly at him, barking like a puppy: and wherever they take an hold it is not easy to make them relinquish it. The inhabitants therefore very wisely shut themselves into their houses, and give way to their rapacity, as we are obliged to do to a heavy torrent of overflowing rain, which carries all before it. And were these little creatures to visit their country often, it would soon be depopulated; but, fortunately for the Laplanders, their migrations are not more than once or twice in twenty years, and as they move from the mountains towards the the sea. Their extreme voraciousness induces them often to kill and destroy each other before they arrive there: and this they do when they can find no more to eat. And it is supposed they subsist on each other when they have devoured every thing else. They form themselves into two armies, and fight with such fury that one party entirely destroys the other. But they are themselves pursued by so many larger animals of prey, that in the course of their progress they are destroyed by thou-

sands; and such numbers have been found dead as sometimes to infect the air with their putrid stench. These animals are more prolific than any; for though millions are extirpated, and millions more destroyed in their native mountains, by animals of various kinds, and by the Laplanders, who search for them there, and revenge themselves by eating their flesh in large quantities, there is no deficiency in their numbers. They are covered with thin hair, their heads black, and their bodies red, covered with black spots. They have small eyes, and a round bushy tail like a rabbit's.

Maria. A pernicious little animal! The poor Laplanders need not such an enemy; their country has not many advantages to overbalance it.

Mrs. Smith. You need not think it so very despicable: the inhabitants deem it an earthly paradise; and it is described by geographers as abounding in a variety of fine prospects, and roses blow on the borders of their lakes and rivers, quite as beautiful as ours.

Maria. But their long days and nights,

of three months each, mamma, I should not like, and their extreme cold.

Mrs. Smith. You would bear that, if you were used to it, as well as the heat of their summer, which is equally intolerable.

Maria. Indeed, mamma? I find I know nothing yet. I shall begin to wish to know more of my fellow creatures in that part of the world.

Mrs. Smith. And be assured it would afford you equal amusement with what you are now studying: and indeed it is considered as one part of natural history. But I shall return to my former subject. The rest of my groupe are birds from Europe, Asia, Africa, and America. The first of these shall be the beautiful flamingo, as most naturalists call it, though its neck and legs are of such an extraordinary length as for it to measure six feet high when it stands erect. The body is about the size of a swan, and of a bright scarlet colour. It is found both on the coasts of Africa and America; and has a small round head, with a long bill of a black and red colour. The legs are very slender; and it is

web-footed, like a goose, though it has never been known to swim. They are of the ostrich kind, and when first the Europeans visited the shores on which they are found, they shewed no sign of alarm ; but since they have found themselves pursued, and some of them destroyed, they are very shy of being seen, and seldom frequent the sea-side ; where, if they ever are within sight of a ship, they are drawn up in a line of thirty or forty together, so as to have the appearance of a long brick wall, and when they break their ranks, in order to procure their food, one of these also, like the kangaroo, is appointed as a centinel who screams at the least appearance of danger, however distant, and the whole flock are instantly on the wing.

Maria. Instinct has taught them to be afraid of man, and to take care of themselves. But what do they live on, mamma ?

Mrs. Smith. Their food is insects and weeds, which they find on the borders of lakes and pools of water ; and it is here the female builds her nest, which is formed of mud scraped together and hardened in the sun.

It is raised about eighteen inches above the surface of the lake, much in the shape of a chimney-pot, and the upper part is hollowed out to the size of the bird. Here she lays her eggs, seldom more than two at a time; and when hatched, the young ones are incapable of flying for some time, but run amazingly quick. In the wild and uncultivated parts of America they appear to live quite in a state of society, and under a government which would excite both your wonder and admiration. They may be easily tamed, but pine away for want of proper food, which is peculiar to the country in which they live.

Maria. They are pretty creatures, I dare say, though their legs and neck may be rather too long to be in due proportion to the other parts of their body. But what is the next curiosity?

Mrs. Smith. The pintado, or the Guinea-hen, a native of Africa, on the coast of Guinea. It was transported into America in 1508, where it is as common as in its own country; and has also been propagated

almost all over Europe, and kept in a domestic state.

Maria. I have seen them, mamma : but what are its peculiarities ?

Mrs. Smith. It seems to unite the character of the pheasant and turkey, having the shape of one and the head of the other. It is about the size of a common hen, except its neck and legs are much larger. Its colour is dark grey, spotted with white, and a black ring round its neck. Its head rather large, and crowned with a horny protuberance, somewhat resembling an helmet ; and from the upper part of their bill or beak hangs a red fleshy appendage, somewhat resembling the gills or wattles of a common cock ; these in a Guinea hen being red, and in the cock inclining to blue, the only difference between the male and female of these birds. They are naturally active and restless, and can never be so entirely domesticated as the common poultry, with whom they agree in habits of breeding and feeding.

Maria. I suppose they are very numerous in their native country, mamma ?

Mrs. Smith. I have heard that they are seen in large flocks in many parts of Africa, feeding their young, who run very swiftly, in the manner of a partridge; but their wings being short, are ill adapted to flight. It has a sharp, disagreeable note, and there seems an evident propensity to quarrel in their nature. In our climate the hen lays but five or six eggs in a season; but in her native country she is much more prolific.

Maria. I suppose their flesh is good to eat, mamma; for it cannot be for their beauty that they are kept.

Mrs. Smith. Those who are fond of eating, are glad of any thing to make a variety in their food; but for my own part, I do not think it extremely good. It is considered as a greater rarity than a barn-door fowl, and to be more like game, so that it is often admitted to the tables of the voluptuous; but you and I should be as well pleased with some of our own poultry.

Maria. I do not doubt it, mamma; and was going to propose a visit to them this morning, that we might see if they wanted

any addition to their comforts against the approaching winter.

Mrs. Smith. You are quite right to think of this, and I will reserve the rest of my collection for to-morrow morning, if your uncle should not be here. I have a bird much more ugly than the guinea-hen to speak of, as well as many more handsome than the flamingo. But the clouds are cleared off. Let us put on our thick shoes, and take a walk. We should lose no opportunity, now that the weather is so rapidly changing.

CONVERSATION XII.

Dodo, Pheasant, Peacock, Bird of Paradise and their king, Moroc or Honey-bird, and Ratel.

MARIA. We must have recourse to your promised entertainment this morning, mamma, my uncle not being yet come; but I am glad he has written. We shall now have every reason to expect him this evening. But I must positively know what the ugly creature is, whom you promised to give me an account of, as well as the beautiful ones you have to boast of.

Mrs. Smith. It is the dodo bird: a native of the Isle of France, or Mauritius, an island, and situated in the Indian Ocean, between Africa and Asia. It is very large and unwieldy, and one of the most inactive in nature: in short, it seems, among the birds, what the sloth, which I described to

you some time ago,* is among the quadrupeds, equally inactive, and incapable of defence or flight. Its round and massive body is supported by two short thick legs, which look like pillars, and it is said that no idea can be formed of its singular make and figure, without actually seeing the bird itself. The bill is very long, and resembles two pointed spoons inverted; this is of a blue colour, and a border of feathers is round the beak, which looks like a kind of hood, and completes its deformity. The body is covered with greyish feathers; and the tail, which is formed of two or three white curled feathers, is displaced and disproportionate, and its wings seem too short to assist it in flight, as its legs are to help it to run; so that it is a poor helpless creature, as well as a disgusting one.

Maria. Poor thing! Yet no doubt it has some method of defending itself, for even the sloth is not without that; though it is only in the noise it makes.

Mrs. Smith. I have never read that it even had its cry to defend it; though I

* See Conversation vi. vol. i.

should think it very probable. It is represented as very harmless in its nature, and feeding on grain. By the Dutch, who inhabit the island, it is called the nauseous bird, from the bad taste of its flesh, as well as its awkward figure. This is Goldsmith's account; but other authors affirm it wholesome and good to eat. It is also said that they do not pair like other birds. To make amends for the shortness of this account, I will now speak of the pheasant, originally of Asia, and where still the greatest variety are to be seen; all beautiful in their kind, yet none more admired than that which has been propagated in this country. They are very difficult to be tamed; and in a wild state the female lays eighteen or twenty eggs in a season, which she hatches with uncommon perseverance and patience: but when in captivity, she seems to dislike the office, scarcely ever laying more than ten eggs, which are often obliged to be put under a common hen, to be hatched and reared, their own mother appearing to disdain the protection of man. The plumage of the pheasant is much more beautiful when

left to range its native woods, as well as its flesh much better flavoured.

Maria. I have admired them very much when I could get a sight of them; but they are so shy and scarce in our woods, that we do not often meet with them. It was the fine plumage of this bird, which Solon, the Greek philosopher, preferred to all the finery and magnificence of the Lydian king; was it not, mamma?

Mrs. Smith. Yes: and he certainly was right in the preference; but it was not acting a courtier's part to give his opinion so freely, and risk offending the king by it.

Maria. That was a character I think he did not wish to obtain, mamma, by all I have heard of him. But you have not finished your description of the pheasant: pray continue it.

Mrs. Smith. It is too well known to require a very particular account; but it has the richest colours, and the greatest variation of them in its neck; and, except the peacock, far excels every other bird in beauty, though the plumage of the female is rather

inferior to that of the cock pheasant. Its eye is very fine, and the length of their tail-feathers is generally sixteen or eighteen inches from the middle feathers to their root.

Maria. And is not the peacock originally of Asia, too, mamma?

Mrs. Smith. Yes: and this also I had selected for one of the beauties to entertain you with. Do you not remember when you were a very little girl, there was one kept near us; and how often you walked that way, to find it with its tail spread, but generally returned disappointed?

Maria. Yes, mamma; but in hearing its screams I was more fortunate, for so I thought myself at that time, imagining, I suppose, that every thing belonging to a peacock must be beautiful; and as, I could but seldom see it, I was content to listen to its note, though, in reality, there is nothing melodious in it.

Mrs. Smith. Very far from it: but nothing can vie with the beauty of its tail when spread, and which you have since seen too often to need a description from me; and

what I could say would give you but an imperfect idea of it, were it unknown. But its horrid squall, and extreme gluttony, together with its thievish disposition, greatly depreciates it in our opinion. They were first brought from the East Indies, and are still to be seen in large flocks in the isles of Java and Ceylon. They are mentioned in Scripture, and made part of the traffic of the Jews in the days of Solomon. You remember reading, that Alexander the Great was so struck with their beauty, when he first entered India, that he forbade their being killed, on pain of a great penalty. And at the first appearance of this bird in Greece, the inhabitants did not think it too far to travel from Lacedamon to Athens, to see one which was exhibited there.

Maria. I need not be ashamed of my walks then, mamma, to the distance of half a mile, to see it, when I have such a precedent as the wise and illustrious Greeks taking so considerable a journey for the purpose.

Mrs. Smith. Certainly not; but I do not read that they admired its *scream*:

though even here you are not without a support ; for I have lately read in a newspaper, of the screams of a much-admired actress being called *eloquent*, and extravagantly admired. Why then might not you approve of the peacock's? But let me return to my account of this famous bird. It feeds on corn and barley, like other poultry ; but lets nothing escape it, as herbs, insects, and the choicest buds of flowers, (if it can make its way into the garden,) are all devoured by it, as well as the new-sown seeds, which it easily scratches up. Indeed, it is equally an enemy to the house, the farm, and the garden, and therefore obliged to be kept in a very confined situation. The pea-hen has none of the beauty of the male, and lays about five or six eggs in this country, but in their original climate she produces more. *Here* she hides her nest from every one, and even from her mate, lest he should disturb her while sitting.

Maria. To see them in vast numbers, and in their wild state, must be very desirable. I dare say they are like the pheasants,

more beautiful when at liberty, than in their domestic state. But what is your next beautiful bird, mamma?

Mrs. Smith. The bird of Paradise, of which so many fabulous stories have been invented, as almost to lead us to think that the bird itself was only an imaginary thing; such as its having no legs, and living on the dews of heaven, and never touching the earth: but all these tales are, as you may suppose, without foundation.

Maria. I am glad you have mentioned this bird, mamma. I remember reading an account of them, which interested me greatly, from their attachment to their king. Do tell me all you know of it.

Mrs. Smith. There are two kinds of these birds, inhabiting the remotest regions of the east; one about the size of a pigeon, and the other not larger than a lark. But both are distinguished from all others by the beauty of their plumage, and the feathers in their tail, in which are two long and slender filaments, which are feathered at the extremity, and reach from the upper part of the rump far

beyond the tail itself. These are of a changeable colour, like the neck of a mallard, while the tail is a pale yellow above, and white beneath. The neck and head are of the colour of gold, except that the back of the latter is shaded with green. The rest of its plumage is diversified with brown, gold, and purple.

Maria. These are handsome birds, indeed, mamma. But what is it particularly distinguishes their king?

Mrs. Smith. He is described as the most singular and worthy of notice of any of their tribe. His size is nearly that of a blackbird, and the greater part of his plumage is of a beautiful carmine. All his feathers have a soft and silky appearance, with a remarkable fine gloss on them, and the two filaments or shafts, which proceed from his rump, are black, where they are without beards; but towards the end, where they are feathered, they form a circle of an emerald colour, bright and varying: and these are above nine inches in length. These beautiful birds are seen fluttering through the spicy groves of the Ori-

ental Islands, in large numbers, and are continually on the wing. But when these countries are visited by their periodical storms, they are supposed to migrate, being seldom seen, and according to the account of the inhabitants of the Molucca Isles, follow their king, to whom they pay a voluntary homage, to a less tempestuous climate. In the evening they are seen perched on the highest trees, and particularly on one that bears a red berry, of which they appear to be very fond. As to the nest they make, or the number of eggs which the female lays, they are not yet sufficiently known for these particulars to be ascertained. But it is said that the inhabitants (who make a great profit by killing them, and selling them to the Europeans) cut off their legs as soon as they are dead, being aware that these do not correspond in beauty with the other parts of the bird.

Maria. And this, I suppose, gave rise to the fanciful invention of their having no legs. But how are they taken, mamma?

Mrs. Smith. I believe never alive. Those who make it their business to pursue

them, conceal themselves in the trees to which they resort, and being furnished with arrows made of reeds, their first aim is to kill their king; and this being done, the rest become an easy prey, as they do not leave the place where they think he is. Their legs are then taken off, their bodies embowelled, and filled with spices, in order to be sold to the curious in all parts of the world.

Maria. And I think I should be one of the first to buy one, if I were there, for so beautiful a bird I should be anxious to have in my possession; though, if they could be taken alive, it would be still better.

Mrs. Smith. I do not remember reading that they are ever seen in a state of captivity: and, from their being so little known, it does not appear that they ever were. But I have still one more bird to add to my collection: and then adieu to our researches till your uncle comes with the microscope, when we will attend to minuter objects. Did you ever hear of the moroc, or honey-bird?

Maria. No, mamma; where is that found?

Mrs. Smith. In the interior of Africa,

and much regarded by the Hottentots for pointing out the nests of the wild bees, which it does in the morning and evening, these being the times of its feeding, by the singular cry of *cherr, cherr*, and which is answered by a soft whistle from the honey hunters: this introduces them to each other, and the bird gradually flutters to the place where the nest is to be found, followed by its new associates, and continually repeating its cry of *cherr, cherr*; and if it happens to fly too fast for the men, it will return to them, and redouble its note.

Maria. How very curious! And in what various ways does that instinct appear, which Providence has given to his irrational creatures, to supply the want of reason.

Mrs. Smith. Very true, dear Maria, and this is the only way in which this little creature obtains its food; for as no nest can be taken without some of the honey falling to the ground, it gets a share of it: and indeed, so sensible are its followers of the services of this singular bird, that they never fail to reward it with an ample portion.

Maria. And it is but fair they should do so, mamma. But tell me how it proceeds when it comes to the nest.

Mrs. Smith. It hovers over the spot in which it is hid, till the men has found it out: and then retires to a neighbouring tree or bush, to wait the event, watching the plunder of the bees, and evidently expecting some of it will fall to its lot. I do not read that there is any thing remarkable either in its form or plumage. But there is also a quadruped, called a ratel, who is equally fond of honey with the moroc. And when this sagacious bird can find no men who are hunting for this food, he makes himself known to this animal, by the same means, and having conducted him to the place, expects his share of the honey, when the ratel has rifled the nest, and no doubt obtains it.

Maria. This is an extraordinary little creature indeed, mamma; but no friend to the bees, though he is fond of their honey. I find, then, that we are not the only enemies these industrious little creatures meet with. Though, as in this country we have no moroc

to find them out for us, we are obliged to take them under our own protection, and then rifle them afterwards.

Mrs. Smith. I see, Maria, you cannot be reconciled to this proof of our dominion over the bees: but yet you willingly partake of their spoils when they are taken. And in this instance you are acting like many of our fellow-creatures, who are not willing to give up any advantage they possess; though they are often obliged to condemn the means by which it has been obtained.

Maria. My case is something like that mentioned by Cowper, mamma, in his fable of the boys robbing the poor man's orchard, entitled "Pity for the poor Africans." So I may say, if I do not eat the honey, others will, and the bees will still be taken. But I believe I must leave off condemning the practice till I have determined to eat no more; then I can declaim against it with more confidence.—But see, I have finished the purse I intend for my uncle. I hope he will like it.

Mrs. Smith. There is no doubt of it, my

dear; for a desire to oblige, which he so eminently possesses himself, cannot fail to meet with his approbation. And I hope he will now very soon be here to receive it.

Maria. Suppose, mamma, we walk on the road a little way, and see if we can meet him. You know he can lead his horse, and walk with us back.

Mrs. Smith. A very good thought, Maria: let us get our bonnets, and put it in execution. I hope we shall not be disappointed, and from his letter of this morning, I think there is no chance of it.

FINIS.

not; for a desire to oblige, which he so readily possesses himself, cannot fail to meet with his approbation. And I hope he will now very soon be here to receive it.

My dear Sir, I am now he can find his horse, and walk with us back.

A very good thought, Mr. Let us get our horses, and put it in execution. I hope we shall not be disappointed, and from his letter of this morning, I think there is no chance of it.

1771.

