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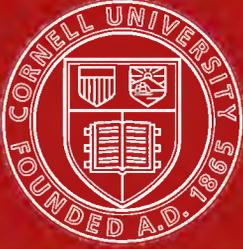
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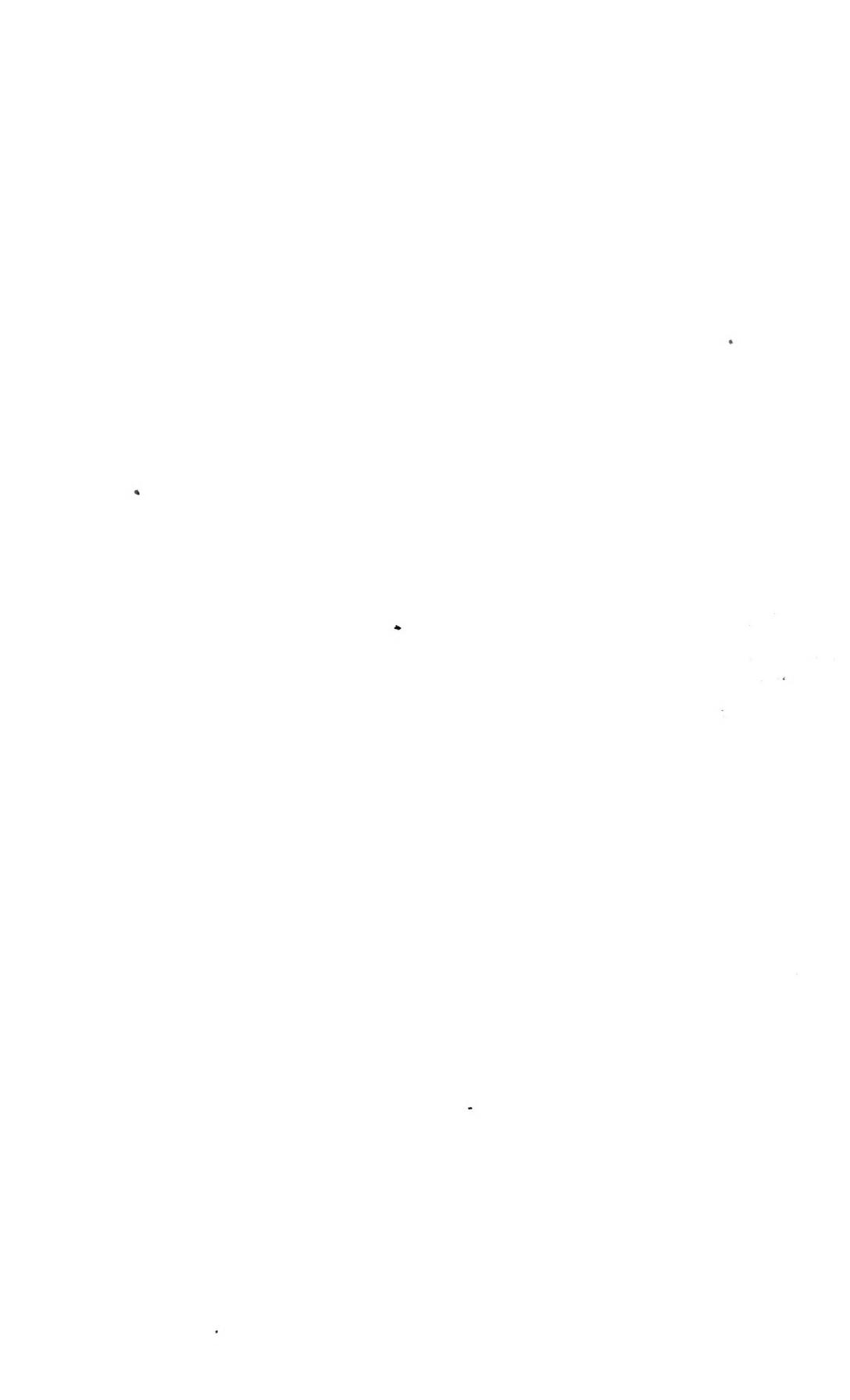


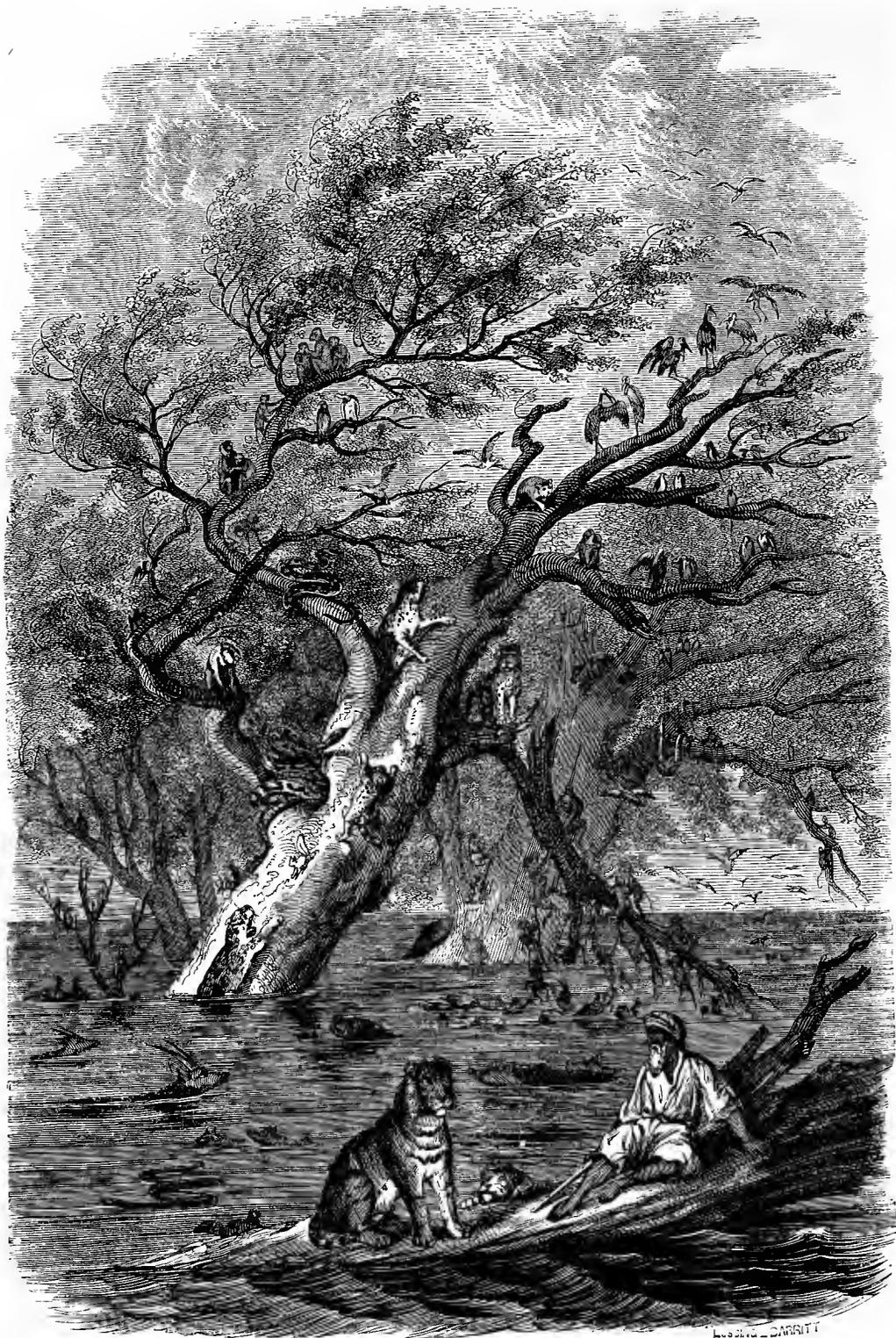
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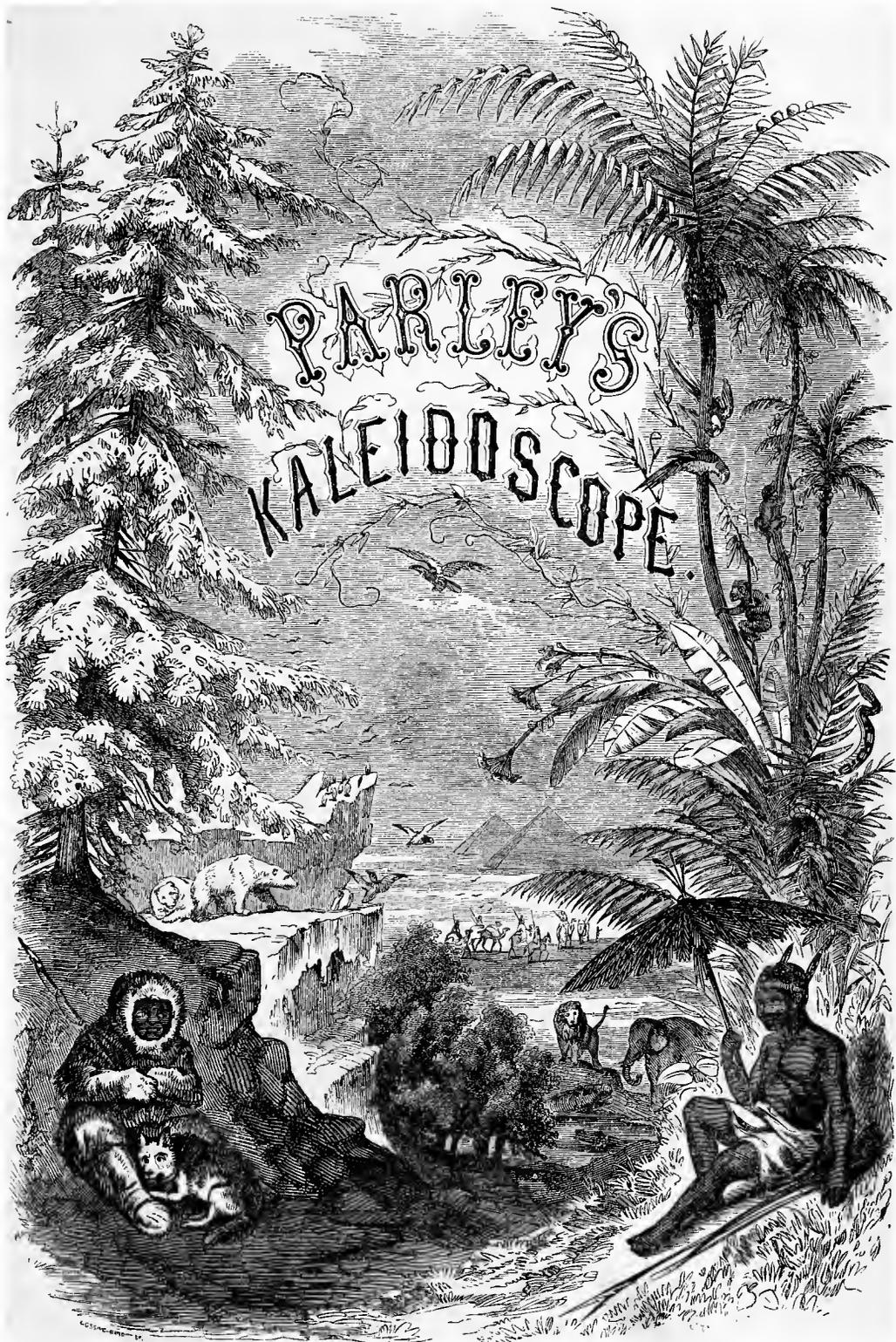
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W. H. CARSTEN

INUNDATION IN INDIA. See p. 358.



BY S. G. GOODRICH,
Author of Peter Parley's Tales, etc.

PETER PARLEY'S
KALEIDOSCOPE,
OR
PARLOR PLEASURE BOOK;

CONSISTING OF

GLEANINGS FROM MANY FIELDS OF THE CURIOUS, THE BEAUTIFUL,
AND THE WONDERFUL.

BY S. G. GOODRICH.

Illustrated by One Hundred Engravings,
FROM ORIGINAL DRAWINGS.

SOLD ONLY BY SUBSCRIPTION.

CINCINNATI:
PUBLISHED BY MACK R. BARNITZ,
38 WEST FOURTH STREET.
1859.

A763901





P R E F A C E .

AS we have given a double, nay, a treble, title to our book, a preface might seem superfluous. Nevertheless, we beg the Gentle Reader's ear for a few words of suggestion and explanation.

The giving and receiving of presents has been an honored custom from the earliest periods of history. The Queen of Sheba gave King SOLOMON "a hundred and twenty talents of gold, and of spices very great store, and precious stones." HAROUN AL RASCHID sent CHARLEMAGNE a musical clock and the keys of the Holy Sepulchre. AL MAMOUN showered a thousand princely pearls on the head of his bride. MONTEZUMA gave CORTEZ stuffs of fine cotton, pictures in feathers, gold and silver plates

representing the sun and moon, bracelets, and other costly things. SAMOSET, of the Wampanoags, and Gov. CARVER, "exchanged gifts" at their first interview. We might fill volumes in recounting amenities of this kind, which have passed between the celebrities of history.

It is not astonishing that a custom so commended by high example, should pass into general practice, and obtain special favor from the good, and the gentle, and the graceful, inasmuch as it is enforced by good, and gentle, and graceful emotions in the human heart. To give is one of the pure gratifications of all generous souls; to receive is agreeable even to souls that are not generous. And, beside this, a gift that, beyond its intrinsic value, is a token of respect, a sign of pleasant remembrance, a messenger of love or affection, comes twice blessed: blessed by him who bestows, and him who accepts.

And then again, presents are still further graced by the times, and seasons, and occasions, upon which they come. It is upon holy days and holidays; on Christmas day and New Year's day; on anniversaries; on wedding days and birth days; at times when the heart is hallowed by pious emotions, or gladdened by joyous associations, or enlarged by patriotic sympathies, that these visit us; and thus they are angels, and not in disguise. Who refuses them admission?

Kings and queens may have invented, but they could not engross a practice so genial. It has descended through every rank and grade of society. In our country, happily, there are none so poor as not to do it reverence. Even children — the black-eyed and blue-eyed readers of PETER PARLEY — wherever they may be found, in all countries, in all conditions, alike in the parlor and the kitchen, give and receive presents. Again I say it is a goodly custom. It rejoices the heart, it enlarges the circle of friendship, it increases the catalogue of good and gracious deeds, and, of course, of good and gracious remembrances.

And we have still another thing to add, which is, that of late years, books have become the great vehicle of fulfilling this kind and complimentary custom. They have taken the place, for this purpose, of gems and jewels with the sumptuous, gewgaws with the simple, toys and trinkets with the Boys and Girls. Gift Books are now among the established institutions of society. They are one of the necessities of a liberal, enlightened and refined public taste, and hence they are produced in every form and of every size, with every species of embellishment, every seduction of art, every attraction of subject. The highest genius, the great names in literature, the glories of art, the triumphs of RAPHAEL, SHAKESPEARE, BYRON, SCOTT, POPE, WORDSWORTH, and MOORE; the Bible and Prayer Book; the quaint rhymes of HERBERT, and the inspired pages of TENNYSON and LONGFELLOW; the love locks of WYLLIS, and the deep, reverberating tones of BRYANT; these, and a thousand other things, of infinitely diversified form and substance, are rendered tributary to this new requisition of the public mind.

Now, we venture to offer our KALEIDOSCOPE as a candidate for favor, as a Gift Book for all seasons and all occasions. Moderate in price, the publishers still have been liberal in endowing it with fine paper, fair print, a comely covering. They have not spared their purse in providing the engravings; and we, the author, have taken some pains to collect pleasant and striking things, from the wide circle of history, art, nature, and science, which may please and gratify its readers. It is our Present for all times and seasons, to all our friends, grave and gay, gentle and simple, black eyes and blue. We present it to the Fathers and Mothers, Boys and Girls, as such; but, desiring that it should be a gift worthy of receiving, and a book worth keeping, we have endeavored to make it a Cabinet of Curiosities, a Gallery of Wonders, a Treasury of Anecdote, alike calculated to enlighten the mind, please the imagination, and soften the feelings.

If we mistake not, many of our sketches will be new to most readers, and especially those which relate to the various endowments of the animal kingdom, which, to any reflecting mind, is an exhaustless theme of interest.



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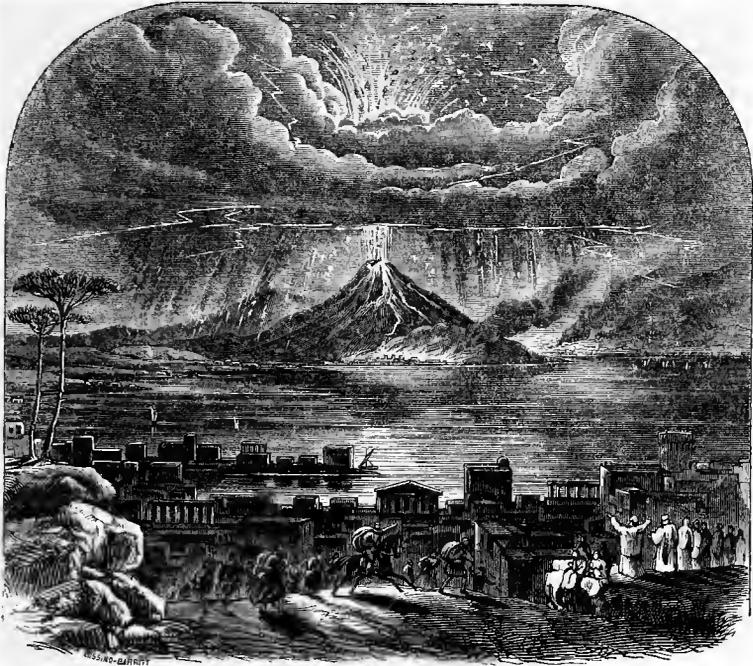
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DESTRUCTION OF POMPEII.

MOUNT VESUVIUS.

IF all the sublime phenomena of our earth, there is nothing that more impresses the imagination than a volcano. Whether in activity or at rest, whether shaking the hills and mountains with its thunders and lighting the skies with its fires, or whether sleeping amid its ghastly heaps of ruins, it affords a display of the stupendous power of the elements among which we live and breathe, calculated at once to exalt our conceptions, and to subdue and chasten our hearts before Him who stretched out the heavens and laid the foundations of the earth.

Of all the volcanoes of the earth, Vesuvius, situated in Southern Italy, and near the city of Naples, is the most celebrated, not on account of its elevation, for it is but 4,000 feet high, but because of its eruptions, and the remarkable phenomena which these have presented. It is, moreover, seated in a region which has been populous for ages, whence its explosions have been more carefully recorded than those of any other.

Destruction of Pompeii.

Although Vesuvius had no doubt been subject to periodical eruptions for many previous ages, we have no recorded instance of this kind till the year 63, A. D., when it suddenly became agitated, shaking the surrounding country, and pouring forth immense volumes of smoke, ashes, and lava. These fell upon the adjacent towns, and especially upon Pompeii, which lies near its foot and was nearly destroyed. It had but just recovered from this misfortune, when, sixteen years afterward, it was overwhelmed and finally destroyed by another eruption, and one of the most terrible upon record.

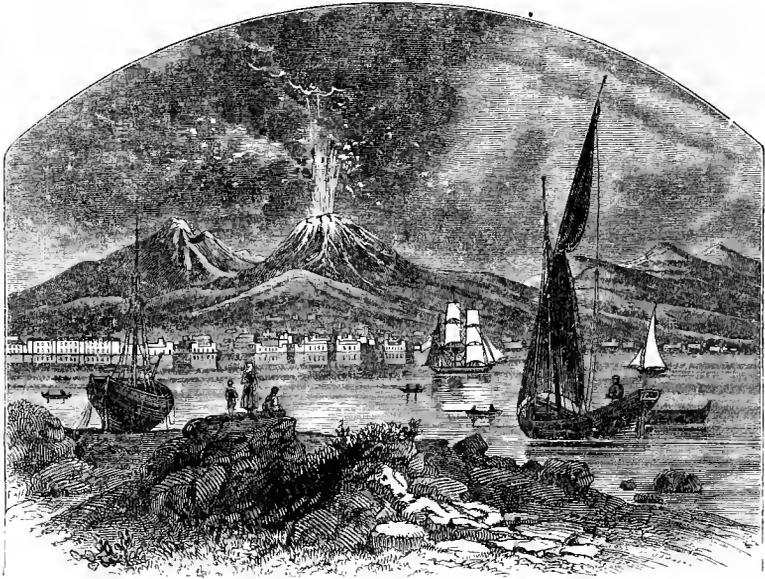
At this period, the Roman empire was in all its splendor, power, and glory. Italy was full of towns, cities, and villages, in which many of the inhabitants lived in the utmost state of luxury. Naples was then a large city, and along the shore of the bay to the east were Herculaneum, inhabited by many rich citizens, Pompeii, a place of considerable commerce, and having ample theatres, temples, fountains, baths, squares, and other public institutions, together with numerous other places of inferior note and importance.

The dreadful explosion began in the afternoon of the 24th of August, A. D. 79. At first there appeared over the crater of Vesuvius, and reaching thousands of feet into the air, a black column of smoke, taking the shape of an immense pine tree. Amid this was seen frequent jets of fire, like lightning. As night came on, the cloud spread far and wide over the country, and now

showers of cinders* began to fall on all around. The people everywhere became filled with terror; some fled into the fields, and others took to the ships in the bay. On all sides there was consternation and confusion. The sea rolled and swelled as if agitated by a tempest, and the darkness of the night was rendered terrible by flashes from the mountain like sheets of lightning. Soon the burning cinders and red-hot stones set the towns and villages on fire, while the most fearful sounds filled the air. The people, rushing hither and thither, maddened by fear, were obliged to protect their heads from the terrible storm, by pillows, blankets, and such other things as they could find. All this time the houses shook from side to side, and, though built of stone, many of them were tumbled in heaps to the earth. The groans of the wounded and the wails of the despairing, completed the general scene of terror and of woe. Thus passed the night; and even when day returned it was still so dark that torches were necessary to guide people on their way.

It appears that the greater part of the inhabitants of the towns and villages had time to escape; but in Pompeii, as well as Herculaneum, there were some still left, when a vast mass of cinders, mingled with stones, mud, and water, fell upon them and buried them completely from the sight. Every living thing in them immediately perished. The ashes and mud covered the streets, and even penetrated into many of the houses. The thickness of this mass of earth and cinders was from thirty to sixty feet. At Pompeii, it hardened by time into a compact soil; while at Herculaneum it became a solid body of rock, called tufa. Thus these cities disappeared, and were forgotten for fifteen centuries.

Vesuvius has experienced other eruptions, at intervals, from that time to the present day. Nearly a hundred are recorded. In some cases, the mountain throws out streams of lava, which runs down the sides of the mountain, and after some years hardens into rock; and in others, it only sends forth smoke, ashes, and scoria.



VESUVIUS AS IT NOW APPEARS, DURING AN ERUPTION

A Visit to the Crater of Vesuvius in 1855.

This celebrated mountain lies exactly east of Naples, and obtrudes itself upon your notice from every part of that city. As you walk about the streets, as you traverse the bay, or ride into the country, it seems to pursue you, to gaze at and frown upon you. By the road, its top is ten or twelve miles from the town; but in a direct line, it is less than six. To the stranger who is impressed with its history, it has ever an ominous look; but it is decidedly a favorite with the dwellers around it. Familiarity has shorn it of its horrors, and the romance of its convulsions seems to be a compensation for its destructiveness. Could its fires be forever quenched by a royal edict, I have no idea that the people would consent to it. For ten days after our arrival, its summit was enveloped in clouds; but it cleared at last, and at 9 o'clock of a fine April morning, we set out, six of us, to visit it.

I may as well say, that what is generally called Vesuvius, consists of a mountain with two crests—its southern slopes coming down to the bay, along the verge of which are the towns of Portici, Annunziata, and Resina, with the vestiges of Herculaneum and Pompeii. The northern crest is called Mount Somma, the southern Vesuvio. It was once a single pyramid with a single crater. Ages ago, in some mighty convulsion prior to the great eruption of 79, it seems to have broken down its top on all sides, leaving it, as it were, an irregular plain. On the southern side of this a new crater was formed, the various overflows of which, for the last eighteen centuries, have heaped up the pyramid which now bears the name of Vesuvius. The entire mountain is thirty miles in circumference: the highest elevation about 4,000 feet above the level of the bay.

It rises by a very gentle ascent to the height of 2,500 feet: here is the first plain, five miles in extent, which seems to be the proper basis of the mountain. At this point, on an isthmus of sand thrown out by some ancient convulsion, and lying between black and hideous rivers of lava, is the Hermitage, as well as the Royal Observatory, devoted to scientific investigations of the volcano. This latter is visible from Naples, and seen between the peaks of Somma and Vesuvius, seems almost as elevated as they are. Yet, when this point is attained, it is found that the crater is still 1,500 feet higher up. As far as the Hermitage, the vegetation is prolific, except upon the more recent streams of lava, these being black as forged iron, and absolutely naked. The slopes of the mountain all around are dotted with villas and villages. Vineyards and olive groves are the chief objects of culture. Huge cacti and gigantic aloes run riot in the soil.

Ascent to the Cone.

We engaged a guide and horses at Resina, still proceeding up the ascent in our carriage as far as the bleak old stone edifice

called the Hermitage, which we reached in three hours from Naples. Our road hither was a serpentine path up the sandy isthmus I have mentioned. Sometimes we traveled a mile to advance a hundred rods. All the way we were attended by a troop of volunteer boys, ragged as bears, as well as our six horses, lively little beasts that cut across our path, disdain the beaten road, and clambering over the cliffs of lava like squirrels. Each had a rider as compact and adventurous as himself. We found at the Hermitage an uncouth assemblage of wild-looking men and shaggy boys, some thirty in number, and all waiting for us, sent as a providence for their benefit.

It here became us as intelligent tourists, to inquire of our guide for some *Lacrymæ Christi*, the inestimable beverage produced on the shell of this amiable volcano. He referred us to the master of the Hermitage,—a grisly monk, standing under a tree and leaning against its trunk. I called out to him, but he was deep in his breviary and made no answer. I could see his eyes twinkle at the prospect of a transaction, but his lips mumbled away as rapidly as ever. He knew there was no competition, and let me call again and again, without in the least bestirring himself. In about five minutes, however, the saint uncoiled from his devotion, and brought forth two bottles, one of red and one of white wine—the veritable *Lacrymæ Christi* of Vesuvius, as he told us—made in Calabria, as the guide told us, aside. “How much is it?” we asked. “What you please,” was the answer, which always means double what you please. But the wine was very refreshing, and we paid willingly. We found the monk to be a very jolly fellow, and were much edified by his conversation.

Having engaged two chairs fastened to poles, and arranged our corps of assistants, consisting of fourteen pushers and pullers, a guide, and an armed policeman, we mounted on six horses. Precision compels me to mention a detail at first sight unnecessary—that our party consisted of two gentlemen, three ladies, and a little girl of nine years. Besides our regular troop, there was a loose dozen of fellows, some with straps, some with chains, and

some with wine and oranges—depending upon chance for an opportunity to be useful or obtrusive. We were at least thirty in all, without counting the four-legged members of the expedition.

We now left the plain, and with it all signs of vegetation, except here and there some spindling grass or tenacious weed that rooted itself in the iron soil. We soon came to the volcanic fragments, and over these lay our ragged bridle-path. The scene gradually became ghastly, lonesome, and wild. No one, without seeing it, can have any idea of the fearful aspect of a spreading mass of lava, lying at the foot of a volcano rising and smoking above it. By the side of our track lay the torrent which was poured out in 1850. It seemed at least half a mile in width, and several miles in length. It had the appearance of melted scoria, thrown out from a blacksmith's forge. Its complexion is black, slightly tinged with a bluish gray. The surface is undulating and broken into a thousand jagged and ragged forms—twisted, bent, contorted—displaying to the imagination the terrible means by which the dread phenomena were produced—the bowels of the earth converted into a crucible, and the mountain vomiting forth whole seas of rocks, sand, and earth, liquefied by the sulphureous and fiery agency of the elements.

The mind is absolutely humbled and oppressed in the presence of such scenes. I felt this myself, and read it visibly in the countenances of our adventurers, save only the child, who rollicked along on her pony, led by a young vandal who had seized her bridle. While we meditated and soliloquized, she abandoned herself to the delight of her first adventure on horseback. While we gazed thoughtfully upward at the frowning pyramid, or glanced with emotions of wonder and admiration at the far-spreading Bay of Naples, and the glittering cities along its border—all now at our feet—she saw only her pony, and felt only the exhilaration of his bounding motion.

After an hour's ride hither and thither, and often over bristling and dangerous points of lava, or along the narrow verges of yawning crevices, seeming to look into the depths of Inferno, we



CLIMBING UP THE CONE.

came to the plain called *Atrio del Cavallo*—the termination of our ride. This lies between the craggy elevations of Mount Somma on the north, and the cone of Vesuvius to the south. It is an irregular valley of ashes, sand, and stones, intersected by masses of lava. The cone, about 1,000 feet high, rises at an angle of forty degrees, directly from this valley. It is composed of loose ashes and scoriæ, and broken, rolling, jagged masses of lava. The ascent of this is the tug of war.

Two of the members of our party—the oldest and the youngest—being seated in chairs, were borne up the ascent, each with four men. The rest bravely set out on foot. There was nothing

really dangerous, but there was something a little scary in the operation, to say nothing of the discouraging, treadmill sensation in climbing such a mountain, half knee-deep in sand and ashes, or what was worse, over the sharp jagged points of lava. The child went first, and was speedily out of sight in easy unconsciousness, enjoying the luxury of a ride up Vesuvius. One of the elderly personages was soon nearly sea-sick, because of the walloping from side to side, either on account of the bending of the poles, the ruggedness of the way, or, perchance, a mischievous roll now and then put in gratis by the carriers, in revenge for the weight of their burden.

Some of the foot-passengers soon began to puff, and now the waiters upon providence, the men with straps, the men with extra chairs, the boys with lusty arms, fell upon them and insisted on lending a hand. It was a regular rape of the Sabines. In vain was all remonstrance, until, descending to the scene of action, I endeavored to beat them off. They still persisted, however, and it was not till the gendarme actually loaded his carbine and threatened to fire on them, that they gave way. One desperate fellow even defied him, and I expected to see him made a fatal example of, for the soldier took aim, and evidently was not a man to be trifled with. I now understood the necessity of such a guard. These fellows are savage as wolves, and but for the presence of authority armed with power to shoot them down, would render the traveler's condition anything but safe. As it was, they were rude and insulting to the ladies, seeming to consider that in such an adventure, and in such a place, the laws of civilization are at least partially repealed, or to be liberally interpreted.

The Crater.

After three fourths of an hour—during which the ascent constantly grew more difficult and more formidable—we all reached the top. The scene amply compensated us for the toil of getting there. Our first attention was absorbed by a deep yawning gulf,

out of which was issuing a thin white vapor, strongly impregnated with sulphur. This is a crater formed within the last three months, seeming to forebode a speedy convulsion. Passing beyond this, we came to the crater of 1850. It is a profound excavation, the depth of which we could not determine, as it was filled with smoke. We understood it to be 200 feet. The edges are narrow, permitting one person only to pass at a time; portions of it consist of masses of pure sulphur, several feet thick. The quantities of brimstone here amazed us, and sufficiently indicated the abundant supplies of this ingredient in kindling the fires of the volcano. All around the gas and smoke were issuing from the crevices, and in these the heat was intense. A speculator in eggs had cooked half a dozen for us in one of these fissures. We ate them, as in duty bound, though they had a sulphurous taste, either from the mode of cooking, or from their longevity.

The third crater, that of 1839, is still larger and still more active. The smoke issues in volumes, and its odor is such as almost to stop the breath. Six months ago a German gentleman, standing on its verge, was suddenly involved in a puff of exhalations, and losing his senses for the moment, fell into the crater, a distance of two hundred feet. With great difficulty he was found, still alive, but he expired a few moments afterward.

The extent of surface embraced in the present grand crater of Vesuvius, which includes the several particular vents I have mentioned, as well as some others, is about two miles in circuit. The great chimney of the mountain, however it may seem to be open in several places, is still encumbered by a huge mass of materials, which have been accumulating since the terrific eruption of 1850; and hence it is supposed another eruption, necessary to relieve the volcano of its burden, cannot be remote.

A Glimpse at the Mediterranean.

The view from the top of Vesuvius well repays one for the trouble of ascending its steep and rocky sides. The city of

Naples, and other towns circling along the northern and eastern shores of the bay; the bay itself, sparkling in the sunshine; the rocky islands of Ischia and Capri, to the south; are all objects of great beauty and interest. But I think the mind is most strongly impressed with the blue expanse of the Mediterranean. The first sight of this famous sea, must always be an era in the life of an American. To an Italian, to a Greek, to an Algerian, to a Sidonian—all accustomed to muddle in it from childhood—it is no doubt a very vulgar sheet of water. It is the penalty these people pay for being born and bred in the midst of the world's wonders, that these are to them familiar and unsuggestive scenes. It is the privilege of those only who have seen them, from infancy to maturer years, through imagination, in all the enchantment that distance lends, fully to enjoy the emotions created by their real presence. To such, this is the sea on which navigation had its birth, and commerce its first development; it was the sea of Homer, and the maritime world of the Greeks. It was along its borders that Tyre, and Sidon, and Carthage, and Rome, and Athens had arisen, flourished, and decayed. It was the sea of the Bible, and of Mythology; it washes alike the foot of Mount Olympus and Mount Ararat; Ulysses and Neptune, Jonah and St. Paul, are woven into its memories. Half the world's history is written upon its bosom and its borders. The bones of antiquity pave its depths and bleach along its shores. If Time writes no wrinkle upon the brow of Ocean, it has still graven every cape and headland, every cove and bay, every gulf and shore of this famous sea, with its ineffaceable deeds. Placed between three continents, and dividing them one from the other, it was fitted to become the cradle of humanity in its infancy, as well as its battleground when nations had increased and become mighty in their own conceit. Favored by nature, blessed above other climes by Heaven, it is now little better than a tomb of the great dead and the little living. The Sultan, squatting cross-legged in the midst of his harem, over the ashes of CONSTANTINE, the Pope, counting his beads amid the ruins of the CÆSARS, and the Bey of Tunis



THE DESCENT FROM THE MOUNTAIN.

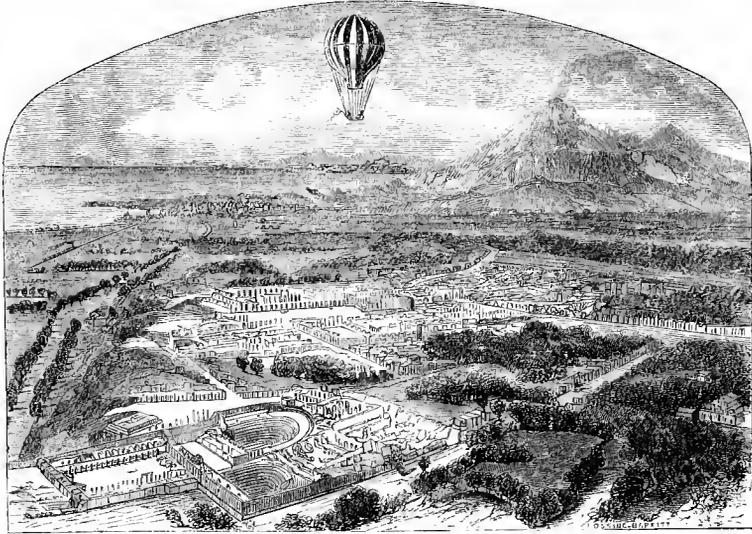
smoking opium and inflicting the bastinado, in view of the wrecks of Carthage—are happy illustrations of the Past and Present in this great Central Point of the World. Surely it is good to be here! It is suggestive and instructive, especially to an American, to look on this sea, so full of history, so leading us up to the fountains of knowledge, so enforcing every moral lesson by example. It is indeed good to be here!

The Descent.

Having long studied the summit of the mountain with wonder bordering on fear, and having taken an admiring survey of the

prospect, circling far out to sea on the south, and far over the valleys and mountains to the north, we commenced our descent. This consisted of a series of flying leaps in the sand and ashes—for now we avoided the lava—with a few incidental slumps, tumbles, sprawls and pitches, much more ludicrous than dangerous. Each downward step, or rather jump, could not measure less than twelve or fifteen feet. It is scarcely possible to describe either the scene or the sensations occasioned by this coming down from the upper to the lower regions. It is, strictly speaking, neither running, nor walking, nor flying, nor pitching; but a compound of them all, attended by a remarkable tendency to turn heels over head. It would be a break-neck business but for the soft feathery bed in which these gymnastics are performed. A fat old man, or a fat old woman, going it strong, beats the witches of Salem. For myself, I felt that gravity was gone, the centre as well as the periphery—gravity physical, moral, and social. I made this observation even more upon others than upon myself. All dignity, all perpendicularity, all putting the best foot first, all look ere you leap, were lost in the funny headlong momentum of the descent. *Facilis descensus averni*, said VIRGIL; and I thus translated the passage at the moment: It is a good deal easier to go down than up Vesuvius.

In due time we reached the bottom of the cone, mounted our ponies and proceeded back to the Hermitage. Here we made a settlement, everybody putting in a claim for services rendered—even the men driven off at the muzzle of a carbine. Some rested their rights on leading the ponies, which, however, they were positively forbidden to do. One had carried the signora's shawl, another had picked up her bonnet; one had given signorina a push at a critical moment of the ascent,—and though she resented it as an insult, he must still be paid. Two men had lent the signore their strap, and wanted a dollar. One chap, a mere thatch of rags—who had trotted along from Resina, and had rendered no other service than to look at us by the way—burst into tears when he found his petition rejected. One of the young



BIRD'S-EYE VIEW OF POMPEII AS IT IS.

ladies, upon this, felt a spontaneous relaxation of her purse strings, to the extent of twenty cents—which greatly comforted the broken-hearted beggar. We paid our guide a dollar, and four dollars for each chair. The whole expense of the expedition was thirty dollars—a detail which I chronicle for the use of future excursionists and parties of six. Such is a very concise narrative of how we went to see *Volcan Vesuve*.

Pompeii as it is.

I hardly know which is most interesting—Vesuvius, the volcano, or Pompeii, the volcano's victim. I went twice to the buried city, once in a carriage, and once by railroad. It is some fifteen miles from Naples, and lies on the margin of the bay, immediately at the foot of Vesuvius. It has been so often described that I shall not impose a detailed account of it upon you. I shall content myself with remarking that, taken in connection with its

relics at the Borbonico Museum of Naples, it throws more light upon the domestic manners of ancient Rome, than all other sources of information. It is more exciting to the imagination, more satisfactory as a study to our curiosity, than the relics at Rome, whether in the streets or the Vatican. It is difficult, nay, impossible, to call up to the fancy the crowds that once thronged the former at the Forum, or rent the air with acclamations in the Coliseum—but at Pompeii, we can easily picture DIOMEDES and his daughter, SALLUST, and others, in their houses; for here are their very rooms, fresh with their decorations; here are their utensils, their books or rolls of papyrus, the very coin found in their purses, the very rings worn on their fingers. Here we see their sofas, their wine jugs, their lamps, their drinking cups, their plates and platters, their pots and kettles.

Here, also, were found their bones, dramatically laid out to tell the dread story of their death, and the final catastrophe of a great city. Whoever has read BULWER'S *Last Days of Pompeii*, has noticed the minuteness of his descriptions—the delineations of objects belonging to persons; and whoever has visited the place, has found that, in every particular, these are based upon facts which the senses verify. Except that there is a romantic hue and poetic exaggeration—lawful to the novelist—thrown over the scenes and events of the tale, and here and there a fictitious name or incident necessary to the continuity of a story, the whole might be a history, and far more reliable, far more susceptible of realization by the imagination, than the legends of ROMULUS and REMUS, of the Sabine Women, of EGERIA and NUMA POMPILIUS, of the fight of the three Romans and the three Albans, of the Sybilline Books, of the wrongs of LUCRETIA, the death of VIRGINIA, or the heroism of HORATIUS COCLES.

But while I make these remarks, I feel bound to warn the reader against adopting the extravagant language of critics upon the character of the arts displayed in the relics of Pompeii. It is quite true that the Pompeians seem to have had almost every convenient device common to our households, especially in the

kitchen. Furnaces, stoves, pots, pans, griddles, gridirons, were all in use. Glass, especially in bottles of diversified forms, was abundant. Glass for windows does not seem to have been used, except in a very few cases; the house of DIOMEDES was partially glazed with plates of mica, which are now at the Museum. The shapes of nearly all the utensils, such as vases, lamps, drinking-cups, and all such as admitted of tasteful proportions, were Egyptian in conception, whatever name they bore, as Grecian, Etruscan, and the like. I saw abundant evidence of the fact—becoming more and more evident every day—that Egypt was the great mother of ancient civilized nations and ideas; that the Pelasgians and Etruscans, the giant shadows of Italian history, as well as the Greeks, whether of the Peninsula or of Asia Minor, were of Egyptian kith and kin.

Still, when we come to speak of the fine arts of Pompeii in a modern sense, and compared with modern achievements, our language should be measured. The architecture certainly presents nothing of remarkable excellence. The vaunted frescoes, which have excited so much drooling ecstasy of admiration, would, for the most part, not satisfy the present requirements of a parlor fireboard. They are clever enough, as decorations of the houses of cits of a third-rate Roman town, eighteen hundred years ago. We are surprised, and have reason, therefore, to be delighted at finding the taste of these people so far advanced—at discovering their appreciation of luxury so refined. But to speak of them as exquisite specimens of pictorial art, as we now use language, is absurd. The mosaics, so much extolled, are all coarse and inferior, compared with the best modern productions in this branch of art. Most of the statuary is poor, a few groups only ranking among the higher achievements of sculpture.

One thing in these decorations is remarkable—the subjects are almost exclusively drawn from the Greek mythology. Among the thousand specimens, there are scarcely a dozen of a strictly historical character. Venus and Cupid are the great staple of these productions. Is there not a remarkable analogy in this to

the more modern paintings of Italy, so largely devoted to the Christian mythology? Here, the Virgin and Child occupy the first place in palaces, convents, churches, and private houses. Next come the Saints, and the more dubious their legends, the more sure are they of the honors of oil and fresco. Is not this a curious trait in the Italian mind, which seems thus in ancient as well as modern days to insist upon making religion a fable, and fable a religion? Is Italian inspiration safe to those who desire a religion whose basis is immutable truth?

Herculaneum.

This city lies nearer to Naples than Pompeii, being about six miles from that city. A small part only of the town is excavated, chiefly because the modern city of Resina is built immediately above it, on the very lava which covers it. Here, for fifteen hundred years, the people lived, ignorant of the wonders which lay buried beneath them. The chief object of interest among the disclosed relics, is the ancient theatre, of such dimensions that its orchestra was nearly one third more extensive than that of San Carlo of Naples—the largest modern theatre in the world. It is buried nearly one hundred feet in the lava; the descent is by a deep cut in the rock. It is but partially excavated, and parts and pieces of it can only be seen, and that by the light of torches. What an amazing revelation! a theatre which once held 8,000 spectators, now hidden in the earth, and actually beneath the streets of a modern city, whose busy wheels and jarring movements thunder over the head of the explorer!

Though Herculaneum was probably much less populous than Pompeii, it seems to have been more sumptuous. Several of the edifices disinterred, display considerable luxury and taste. Numerous statues, and a large number of valuable antiquities, now in the Museo Borbonico, at Naples, were found here. Among the marbles is the interminable family of BALBUCEs, including

father and son, both on horseback, and both the subjects of unbounded critical eulogy. Nevertheless, one of them has got the head of somebody else upon his shoulders—though fortunately an old one. This, by the way, is the son's statue; while the head of the father having been knocked off and lost, its place was supplied by a new one—the work of a modern sculptor, CANARDI! What an advantage stone has over flesh! It may be mended even to the extent of fitting another man's head upon a pair of shoulders, and thus it may rise from the dead, and, after eighteen hundred years, stand erect among living generations. But a real head once knocked off, is done for. What a curious commentary on life and the things of this world! Reality dies and turns to ashes: men perish, and all that constitutes existence, their consciousness, disappears like vapor: nothing but remembrance, the mere mirror of existence, is perpetuated. And in this dream of the past, how things do get jumbled! On the old trunk of BALBUS we find the vulgar head of some modern Smith or Jones, and to us and to BALBUS, it is all one and the same!

Note.—In the preceding account, it is stated that Vesuvius, in April, 1855, appeared to be preparing for a new eruption. This actually took place a few weeks after.



HORSES DRIVEN BY THE WIND UPON THE ICE.

A HURRICANE IN THE CRIMEA.

It appears by the concurrent testimony of various authorities, that the great plain which extends along the northern borders of the Caspian and Black Seas, is subject to tempests, which, if not of such spasmodic violence as those of tropical regions, are of longer continuance, and, by reason of the severity of the climate, are productive of even more disastrous consequences.

The shores of the Caspian are, indeed, but little known to the world. They are the abode of numerous tribes of Tartars, and are often traversed by the trading caravans of Russia; but it is rare that we meet with a person who has actually seen these

dreary regions. Nevertheless, it has long been understood that this country is subject to violent winds, which often produce very curious phenomena. A strong breeze from the south drives the waters over the low lands of the north, sometimes to the distance of several miles; vessels at such times are often borne aloft on the waves and carried so far inland, that on the retiring of the sea it is necessary to break them up where they lie, it being impossible to transport them back to the shore. The north winds have a different effect, inasmuch as the more elevated southern coast presents a barrier to the water: this, however, is heaped up several feet; but on the subsiding of the gale it rushes back, causing furious currents, not merely inconvenient but dangerous to navigation.

In winter, these tempests acquire greater intensity, and become not only terrific, but destructive. During the snow storms, the winds, seeming to burst from the four points of the compass, wrestle over the sea and land in dreadful fury, threatening to destroy every thing that is exposed to their irresistible currents. The large droves of horses owned by the Tartars, are sometimes surprised and overtaken by these tempests, and, unable to resist their violence, become confused, and rushing one against the other, are driven upon the ice along the shore, until at last it breaks beneath their feet, and they are swallowed up in whole droves by the waves. A few years since, the Kalmuck prince, TUMENI, lost six thousand horses in this way. In the year 1827, the Khirguis tribe lost nearly 300,000 horses, by the severity of the winter.

The accounts which reached us from the Crimea, during the siege of Sebastopol, were even more appalling. The following animated and picturesque description, presents a vivid picture of the scenes which transpired during the great hurricane of November, 1854:

“Stern as is the Black Sea in winter, murky its atmosphere, piercing its cold, violent its winds, and turbulent its waves, there has rarely been known a tempest equal in frightful fury to that which raged in those regions on the 14th of November, 1854;

bringing pitiless destruction to ships and mariners, strewing the coast with fragments of vessels and disrupted cargoes of valuable merchandise, and adding manifold to the discomforts of those who, by the exigencies of war, were living in camps and tents.

“Early in the morning of that day, when light had barely dawned, the officers and men encamped on the plateau outside Sebastopol found the strength of their canvas tents exposed to a severe test. The night had been one of heavy rain; the surface of the plateau had been converted into a sort of slime, through which walking was difficult; and rivulets of muddy water found an entrance into almost every tent, and disarranged every man’s bedroom comforts. Gradually the rain abated and the wind arose, rushing over the plateau with a roar as of a distant cannonade; until at length, overcoming all obstacles, the wind pierced into and under and around the tents, in many cases blowing them away altogether. The slimy compost on the outside, receiving the full action of the blast, was hurled into the faces of the tentless soldiers, producing a scene of unutterable discomfort.

“Some of the tent-poles snapping in the middle, the officers or men were for a time buried beneath a load of wet canvas; and when, rudely disturbed in their morning slumbers, and deprived of all shelter from the murky heavens above them, they looked around on the plateau, the scene presented was frightful, even though mingled in some instances with the ludicrous. The storm, having no respect for rank or office, had leveled alike the tent of the staff-officer and that of the subaltern: the strongest was on that day the best, whoever he might be. Officers, high in rank, were to be seen wildly struggling with the flapping canvas of their overturned tents, or rushing about in the almost hopeless attempt to save their apparel, books, or other chattels, from the fury of the wind. There were a few huts near head-quarters; and such of these as escaped prostration were speedily sought by tentless officers, who—saturated with miry water, and almost riven by the piercing blast—rushed to find shelter from the storm.

“The accounts published of this scene, by newspaper corres-

pondents, officers, and privates, were full of strange incidents. 'The principal medical officer of the British army might be seen in an unusual state of perturbation, seeking for his garments ere he took to flight. Brigadier ——, with mien for once disturbed, held on, as sailors say, "like grim death to a backstay," by one of the shrouds of his *marquée*. Captain ——, in drawers and shirt, was tearing through the rain and through the dirt like a maniac after a cap, which he fancied was his own, and which he found, after a desperate run, was his sergeant's.' Many of the narrators say that the air was filled with blankets, hats, great-coats, little-coats, and even tables and chairs; that *macintoshes*, quilts, India-rubber tubs, bed-clothes, sheets of tent-canvas, went whirling like leaves in the gale towards Sebastopol; that the shingle roofs of the outhouses were torn away, and scattered over the camp; that large arabas or wagons and ambulances were overturned; that men and horses were knocked down, and rolled over and over; that a large and heavy table in one of the tents was lifted off the ground, and whirled round and round till the leaf flew off; that inside the commissariat yard, overturned carts, dead horses, and groups of shivering men were seen, not a tent standing; and that 'Lord —— was seen for hours sitting up to his knees in sludge amid the wreck of his establishment; meditative as Marius amid the ruins of Carthage.' The power of the hurricane was indeed great. Heavy commissariat stores were hurled down as if they had been light parcels; compressed masses of hay for the cavalry, weighing 200 pounds each, were whirled over the ground, and down the ravines toward Sebastopol; and a large flock of sheep was so utterly scattered, that, while some of the poor animals were driven to distant camps, others were almost literally hurled into the beleaguered city.

"But what were these miseries, compared with the privations of the common soldiers? Officers, though rendered tentless for a time, speedily found shelter with and among each other; but the troops in general, engaged in camp, picket, and trench duties, and ill provided even for fine weather, were plunged into inde-

scribable wretchedness. The marines and riflemen on the cliffs overhanging Balaklava, lost tents, clothes, everything; the stern rock was rendered nearly bare by the whirl that carried off all rising above the surface, and the poor fellows had to cling to the ground in prostrate attitudes to avoid instant destruction. On the level ground between the ravines, where the camps of the several divisions had been pitched, the rows of neat white tents had almost disappeared, one after another having yielded to the force of the blast; until the whole plateau became speckled with ragged bits of fluttering canvas, sticking in the black glutinous mire that had become deepened to several inches by the heavy rain. The men, with a kind of patient sullenness, stood near the spots where their tents had lately sheltered them, and bitterly commented on the tardiness, as it appeared to them, of the commanders: wishing rather to dare all the hazards and horrors of a possibly successful assault on Sebastopol, than to be thus destroyed inch by inch.

“Not only was the wind terrific in violence, but it was accompanied by rain and snow—a conglomerate of heart-depressing visitations. Hungry and faint, too, were the troops; for the morning repast had not been taken before the hurricane began; and the commissariat officers, each feeling himself in personal peril, and seeing all his stores whirling in confusion around him, was little able to issue the rations during its continuance. The men on night-duty, who had passed perhaps eight or ten hours as trench-guards, covering-parties, patrols, outlying-pickets, or sentries, staggered back to their camps in the dusky morn, worn and haggard with fatigue, and there found tents down, fires extinguished, food unattainable, rest impossible, comrades murmuring, everything disheartening: the trenches being very sloughs of mud and filth, the officers and men employed therein returned to camp in a state of personal discomfort calculated to add materially to the wretchedness. The hospital-tents were mostly struck down, and the poor maimed soldiers, heroes perhaps of Inkermann, were exposed to the pitiless storm; even the hospitals

and storehouses built by the French, with stout planks and rafters, were scattered to the winds; and many a brave fellow succumbed under the trial, ending his brief career of glory too soon to hear the expression of admiration from the home-country. After the hurricane had endured about six hours, the temperature became colder, the falling snow became thicker, and the weakened men in all the camps were in much danger of perishing through so extraordinary an accumulation of inflictions. Many men died during the later hours of the day; whether starved or benumbed to death, it might be hard to say. A stable for the horses of Lord Raglan's escort became a choice rendezvous, in which English, French, and Turks, military and civilians, officers and privates, crowded and crouched down in fellowship with the horses. An orderly was sent off to Balaklava, to learn how matters were progressing in that quarter during the storm; but man and horse, after three quarters of an hour's struggling, and many falls and overturnings, were driven back by the irresistible blast.

"The soldiers' letters were full of such recitals. An Ennis-killen dragoon wrote: 'I was on trumpeter's guard at the time the storm came across the plain, accompanied with hailstones and snow; and it blew all our tents down. The only way to keep still was to lie down; I had to do so for fear of being borne among the dirt. You may think in what sort of a state our tents were, as, after it was all over, we had to lie down that night on the wet ground without anything to eat, the cooks being unable to keep the fires in.' A private soldier wrote thus: 'Lieutenant —— had just come in from night-duty. I had got him to bed comfortably, when down came his tent, and left the poor fellow stark naked. I had to carry him away with only a blanket around him, and he remained in that state all day, but he bore it remarkably well. Lieutenant —— was blown away on his bedstead. The doctor's cocked hat was blown right into Sebastopol, so we expect to find it on the head of Prince Menchikoff when we get there.'

"A rifleman, on the heights above Balaklava, thus records his

experience of that memorable day : ' We had such a terrible gale that our tents were all blown down, and many blown over the cliffs into the sea ; the one in which I stopped shared such a fate. . . . It was a fearful night that we passed ; every now and again might be seen men rubbing one another as the cramps took them in different parts of the body. The night was long, but morning broke at last ; and it was found that two of our poor fellows were dead from sheer exhaustion.' Another soldier said : ' In spite of all these misfortunes, every man made light of it until the hospital marquée went down : it was dreadful to see sick and wounded men actually blown away.'

" An officer, after describing his brother-officers as wandering about, drenched to the skin, in search of shelter, as a consequence of the demolition of their tents, says : ' All the tents have been struck, as nothing could withstand the fury of the tempest, except the Turkish ; these infidels understand tent-work better than we civilized folk.' Such, from various concurrent testimonies, appears indeed to be the case. The Turkish tent, although not constructed of such good material as an English bell-tent, resists the wind much more effectually and stands more steadily : on account, possibly, of a better proportioning of its height to its circumference ; the men dig about a foot deep and throw the earth round on the sides, where it serves to steady the whole tent, and prevents at the same time the water from penetrating ; in the officers' tents, there is also a raised settee of stamped earth, available as a couch.

" Far more serious, however, were the disasters to the fleets on this fatal day. The soldiers, except a small number, surmounted the tempest, and began on the next day to repair the disasters, so far as their means permitted ; but the ships on a furious sea are wholly at the mercy of the elements—one plank riven from its place, and hundreds of human beings may be consigned to a watery grave. To present a true picture of the maritime calamities, it will be necessary to attend to the harbor-arrangements adopted at Balaklava.

“When this miniature haven became the depôt of the British army encamped on the plateau inland, two officers were appointed, Captain Tatham and Captain Christie; the one as harbor-master, and the other as superintendent of transports: the one to exercise a general control over the whole harbor, and the other to regulate the entry, anchorage, and discharging of the laden transport-ships. When, on the day of the battle of Balaklava, Lord Raglan deemed the harbor in some danger, he gave orders that led to the departure of many vessels from thence; and some of these suffered in the storm three weeks later from this cause: tug-boats drew out the larger vessels; commissariat and ordnance officers re-embarked many of their stores; and the whole harbor became disarranged. The orders to this effect appear to have been given by Lord Raglan to Captain Tatham, who, so far as the harbor was concerned, controlled Captain Christie and the transports as well as the vessels-of-war. During many days, the harbor remained nearly empty; the transports being admitted a few at a time only, lest the army of Liprandi should make a second attempt in that quarter. It was felt, however, by Captain Christie and others, that the anchorage outside the harbor was very insecure; and that, unless a reoccupation of the harbor were permitted, some other place of disembarkation should be chosen. When the *Sanspareil* screw-steamer took up a defensive position within the harbor, Captain Dacres became senior officer and harbor-master, under the controlling authority of Lord Raglan; and all the regulations concerning the admission or non-admission of tugs or transports were then made by him, subservient to the higher military authority.

“Seeing that, after the battle of Inkermann, the British sick and wounded were carried down in hundreds, by means of ambulances, arabas, and any other vehicles that could be obtained, to be shipped at Balaklava for the military hospitals at Scutari, a departure from the plan became absolutely necessary—the ships being required to enter the harbor in greater numbers, to permit the poor fellows to be embarked. Three days after that battle,

the *Prince* arrived at Balaklava, bringing valuable supplies from England ; it was a new screw-steamer of great beauty and value, and the stores contained were of the utmost importance to the wellbeing of the troops during the approaching winter. In articles of warm clothing alone, the cargo would have been precious ; besides the varied stores of other kinds, specie for the commissariat, and several companies of the 46th regiment. Captain Dacres, as harbor-master, was within the harbor ; Captain Christie, as transport-master, was outside the harbor, amongst the transports ; and there appears to have been much tedious formality necessary in obtaining the authority of both officers for a ship to enter. The specie and the troops were landed by means of two steam-tugs, and the *Prince* anchored outside the harbor, with the store of warm clothing on board.

“ From this date, it is hardly possible to narrate in detail the occurrences in the harbor of Balaklava, without incurring a risk of doing injustice to some of the officers engaged. Calamities of a deplorable kind occurred in great number ; soldiers suffered unspeakable miseries as a consequence of these calamities ; accusations were brought by an indignant nation against those who were supposed to be in the wrong ; bitter recriminations ensued between various officials ; some charges were found to have been unjustly made ; and death, resulting from wounded honor, carried off others too soon for the clearing up of their fair fame.

“ Much of this confusion and disaster arose from the circumstances, that the transport-ships were controlled by the transport-agent in the harbor ; that he was controlled by the harbor-master ; that the harbor-master acted in obedience to orders from Lord Raglan ; that his lordship was three or four miles distant from the harbor ; that the road from the harbor to head-quarters was so wretched as to render the communication of messages difficult ; and that there was thus no available machinery for settling promptly any embarrassments arising from conflicting or disputed authority. The quarter-master general, adjutant-general, commis-

sary-general, artillery and engineering commanders, all of whom were looking out anxiously for supplies from England, were connected with the army; whereas the transports, as well as the ships-of-war, were connected with the navy; and hence repeated collisions of authority arose. This much it is necessary to mention at the outset, in explanation of the strange fact that many of the ships were on the outside of the harbor when the great storm arose.

“On the 11th of November, a gale sprang up, sufficiently violent to place in some peril the ships outside Balaklava, and to give rise to irritating discussions between the various captains concerned in the unfortunate regulations within the harbor. The 12th and the 13th were in like manner rough days; but it was not until the 14th that the awful visitation came in full force. As the morning dawned, the wind howled and the waves lashed, but when the forenoon approached, the gale increased to a hurricane such as none of the officers or seamen had before seen in those parts. A dark and gloomy sky aided in filling all minds with dread; and when the cables strained and the planks creaked, mariners felt that they were in the hands of a greater power than man.

“Inside the harbor were about thirty vessels; comprising four ships-of-war, eight steam and seven sailing transports, four tugs, and the remainder private ships chartered by or for dealers who had settled as shopkeepers at Balaklava village. Outside the harbor were rather more than twenty vessels; comprising the steam-war-ships *Retribution*, *Niger*, *Vesuvius*, and *Vulcan*; the steam-transports *Prince*, *Melbourne*, *Avon*, and *City of London*; and the remainder sailing transport-ships and freight-ships. The ships on the outside of the harbor speedily became placed in great peril; they were in danger of snapping cables, and being hurled against the rocks. Many of the captains, seeing the danger, weighed and stood out to sea, knowing that a deep sea is better than a rocky shore during a storm.

“The hurricane increased in violence; the waves rose higher

and higher in their fury ; and the ships, one by one, felt the dread influence of the tempest. First one transport parted from her anchors, and was speedily breached and sunk, carrying her whole crew to a watery grave ; then two others met equally rapid destruction, leaving only a few sailors, who were dashed high up against the rocks—they hardly knew how or where ; then, amid the blinding spray and torn waves, might be seen other ships vainly struggling against a power too great for them, yielding one by one to the force, and following their predecessors to the fatal rocks which sternly bind the mouth of the harbor. The clouds became blacker, the wind shrieked more fiercely, and the warring elements raged with yet greater and greater fury. Transport after transport yielded ; until at length the splendid *Prince*, laden with a cargo which raised the total value to at least half a million sterling, parted anchor, and was drifted towards the shore, despite all the efforts of the engineers to steam out seaward. The crew, hoping to save the vessel by cutting away the mast, expedited the approaching catastrophe ; for the fragments became entangled in the screw, stayed its revolutions, and rendered null the power of engines and of helm. The noble vessel struck ; then struck again ; then parted midships ; and then sank to the bottom—leaving only a few relics to tell of the once proud structure. With her sank all but seven of 160 persons who were on board.

“The great loss on this tragic day was that of the *Prince* ; but many other ships swelled the fearful list. The *Retribution* steam-frigate, the home at that time of the Duke of Cambridge, who had left Inkermann unnerved and invalided, was exposed for four hours to a tremendous infliction ; she parted all her cables but one ; then dragged that one nearly half a mile ; then shipped a hundred tons of water ; and was only saved from dashing against the rocks by the energetic exertions of the crew in throwing all the heavy guns overboard. Even within the little land-locked harbor, though the waves were still, the wind whirled with such fury as to endanger the vessels there anchored ; many ships were torn

from their moorings and hurled against others ; many were driven on shore ; others, again, were heeled over almost upon their beam-ends ; while all became injured to a greater or less degree.

“The iron paddle-box boat of the *Trent* steamer, weighing seven tons, was lifted bodily into the air by the force of the blast ; smaller boats were hurled high up the gorge of Inkermann towards the plateau ; and a boat containing two men was caught up, the men overturned, and the boat dashed against the wall of a house in Balaklava. Many affecting incidents occurred. The *Wild Wave*, a small but fine clipper-transport, was deserted by all her crew except three boys, and then left to float to destruction ; many spectators, perched on the rugged cliffs, seeking to render aid, flung out a rope, at which one of the boys sprang, but a raging wave carried him away ; they flung it again, and a second boy was lost in endeavoring to clutch it ; a third time was the rope hurled out, and the remaining boy succeeded in reaching the shore, bruised and senseless, just before the hapless ship was dashed to fragments against the rocks.

“When all was over, and night had given temporary rest to the worn mariners, the scene of devastation was frightful to witness. The *Prince*,* *Resolute*, *Rip Van Winkle*, *Kenilworth*,

* An inquiry, instituted by the government, into the circumstances under which the valuable stores in the *Prince* were lost, made public the curious diversity of the cargo, and the complexity of the official arrangements concerned in its management. The list of ordnance stores, in ammunition and clothing, was immense ; but this list by no means comprised all. There were sent out four complete sets of diving apparatus, four galvanic batteries, eight miles' length of conducting wire, a quantity of stores for subaqueous explosions, and men to manage the apparatus—all to be employed in blowing up the Russian ships sunk across the mouth of Sebastopol Harbor ; then, besides these and the stores for the army, there was on board a considerable supply of ordnance stores for the navy, intrenching-tools and shot-boxes, medicines for the army, and 200 tons of provisions. The following list contains the stores and clothing only :

Cartridges, musket,	{ Pn. '1851.' 2½ dms.,	.	.	1,000,000
	{ Smooth bore, 4½ "	.	.	750,000
Shot,	{ Round 9-pounders,	.	.	3,000
	{ Case { Gun. 9 "	.	.	400
	{ Howitzer, 24 "	.	.	140

Wild Wave, Progress, Wanderer, Peltoma, and a Maltese brig, were either sunk or had gone to pieces, losing all on board except twenty-three persons in the whole; while the *Vesuvius, Retribution, Melbourne, Mercia, Lady Valiant, Caduceus, Pride of the Ocean, Medora*, and *Sir Robert Sale*, were seriously damaged, most of them totally dismasted. All this disaster had occurred within or near the mouth of Balaklava Harbor, but the whole

Shells,	{	Shrapnel { Guns, 9-pounders,	600
		Howitzers, 24 "	800
		Common, empty, 24 "	630
Carcasses, fixed 24-pounders,			30
Cartridges, flannel, filled,	{	Guns, 9-pounders, 2½ lbs.,	4,000
		Howitzers, 24 " "	1,600
		Bursters of sorts,	2,090
Fuzes, Boxers,	{	Common,	700
		Shrapnel,	1,540
Tubes,	{	Brass,	1,680
		Friction,	5,040
Portfires,			168
Match, slow, cwts.			3

FOR BATTERING-TRAIN RESERVE.

Shot, hollow,	8 inch,		600	
Shells, common, empty,	8 "		2,570	
Carcasses, fixed,	10 "		40	
Cartridges, flannel,	{	Filled { Guns, 8 inch,	3,960	
		Bursters of sorts,	7,116	
		Empty mortars, 5½ inch,	1,000	
Powder, L.G., lbs.,			4,560	
Fuzes,	{	Boxers, 5½ inch,	2,800	
		Common {	10 "	3,390
			5½ "	3,000
Match, lbs.,			170	
Portfires,			230	
Tubes,	{	Brass,	2,500	
		Friction,	6,000	

CLOTHING.

Frocks, woollen,		53,000
Stockings, half-worsted, pairs,		33,000
" " Lambs' wool, pairs,		2,700
Drawers,	" " "	17,000
Blankets, single,		16,100
Rugs,		3,750
Palliassees "		10,000
Cloaks, watch,		2,500
Boots, ankles, pairs,		12,880
Shoes, pairs,		1,000

Nothing can give a better idea of the extent of the "Eastern War," than this table, which, however, only furnishes a list of the articles sent in one ship for the British army.

coast exhibited a scene of wreck and ruin—there being hardly a spot upon the beach which was not covered with the fragments of some vessel or its cargo—masts, spars, sails, pieces of boats, oars, hatches, barrels of rum, cordage, bales of clothes, beds, blankets, rafts of timber, fragments of furniture, boxes and chests, trusses of hay, tents, and numberless sundries.

“A commission of inquiry had at a later date to thread a perfect labyrinth of intricacy, in the endeavor to discover who had controlled the loading of this hapless vessel—the *Prince*. The Minister of War, the Admiralty, the Horse Guards, the Ordnance Office, the Army Medical Department, the General Screw Company, and the captain of the vessel, had all possessed some control in the matter; but the limits of the control were ill defined. When she arrived at Scutari, early in November, the medicines should have been landed, but were not; when she arrived at Balaklava, a few days afterwards, the clothing should have been landed, but was not: medicines and clothing alike went to the bottom of the Black Sea, entailing indescribable misery upon the sick soldiery at Scutari and the working soldiery outside Sebastopol.

“The tempest was not confined to Balaklava and its vicinity; it raged all round the coast, and wrought sad devastation among the ships. The larger vessels of the combined fleets, anchored off the mouth of the Katcha, were severely tried; there were nearly fifty sail, of all kinds, within about a mile of a lee-shore, exposed to a hurricane such as few of the seamen had ever before experienced. All the line-of-battle ships tried three, and even four anchors, and the steamers steamed full power against the gale to prevent dragging; yet was the peril great. The flag-ship was anchored close in shore, and was with difficulty kept from sinking; the waves swept clean over her upper deck, and, although all her hatches were battened down, she still shipped five or six feet of water.

“Among the smaller vessels of the two fleets, cables began to strain, and rudders to lose their command; then cables parted,

and anchors were lost; then ships crashed against each other—spars snapped like rotten sticks: jib-booms, bowsprits, yards, masts, went to ruin; then two vessels, thus locked together, would be driven against a third, stripping it from stem to stern; and then would all three be driven together against the rocks, or grounded upon the beach. The *Sampson* was reduced almost to a wreck by one of these collisions. Ten transports, five English and five French, were on shore; two were riding out the remnant of the gale with their masts cut away; another had gone down in deep water; a Turkish two-decker, the *Muhbiri Surur*, with the Turkish admiral's flag flying, had nothing but mainmast and bowsprit left; the French ships *Ville de Paris*, *Suffren*, *Bayard*, *Montebello*, and *Friedland*, were much knocked about; and many of the English ships-of-war had been rudely treated, though not sunk or driven on shore.

“The French squadron at Kamiesch, consisting chiefly of war-steamer with steam and sailing transports, suffered less than the ships at Balaklava and Katcha; in the latter case, the vessels were off a lee-shore, unprotected by any kind of haven; while in relation to Balaklava, the unfortunate mismanagement led to the anchoring of many ships without instead of within the harbor, and to the incurring of disaster that might in great part have been avoided. At Kamiesch, a bay or inlet afforded some shelter; insomuch that, although dismantling occurred, the amount of damage was small compared with that wrought in other quarters on this dreadful day.

“Eupatoria was no more spared than other parts of this dangerous coast, during the awful hurricane. A few ships-of-war had been left there since the time of the landing of the Allies in the Crimea; and these ships felt the full effects of the tempest. The chief catastrophe of the day was the wreck of the *Henri Quatre*, a splendid French ship-of-war of 100 guns. No fewer than four anchors were employed to enable the noble vessel to maintain her place successfully against the raging tempest; but all in vain. The timbers of the ship creaked and groaned; the

furniture and fittings were flung wildly from side to side; one cable snapped, then another; and the crew, watching at whiles the wreck of many smaller vessels on the beach, dreaded lest their own hour of trial should be at hand. As evening was about to close in, the two remaining cables yielded.

“The Abbé Bertrand, chaplain of the ship, in a letter written four days afterwards, described vividly what followed: ‘It was but too true—the ship was on her beam-ends. There was no further hope; the sea and the wind were too violent for us to hope to get out to sea. We had only to resign ourselves to our fate. All that was left for us was to be thrown on that part of the coast where the bottom was sandy. You cannot have an idea of the anguish we all felt, expecting every moment the first shock when the ship touched the ground. We did feel the first shock, the second, the third, and yet the good ship held out. We were aground; but we knew not at what distance from the shore, as we were in darkness. The weather continued awful. At last the day dawned, and we found ourselves at 200 metres from the shore, and our ship had not a single drop of water in her hold. At some yards from us, a Turkish vessel had been wrecked at eleven o’clock at night, three hours after us. She drove on a bank, which threw her on her side, and the whole of the crew we saw clinging to the masts and shrouds, not being able to remain on the deck, which was completely under water. At last, after a night passed in indescribable anguish, fearing each moment that the ship was opening asunder, the day dawned, and we found ourselves so near land that, in the event of any great accident occurring, it would not be difficult to save ourselves.’”



A BIBLE STORY.

THE story of Rebecca, who became the wife of Isaac, as recorded in the 24th chapter of Genesis, has ever been regarded as one of the most pleasing narratives in the Bible. It not only describes a state of manners of primeval simplicity, indicative of the patriarchal age, but also a remarkable and interesting instance of confiding faith: and all this is related with a charming naturalness, seeming to be the words of truth itself. The repetitions in the narrative, which modern rules of

rhetoric would disdain, are like those which we find in nearly all the early compositions of a people, and strongly remind us of what we meet with in ancient ballads: the same ideas, the same words, often recurring, like a chorus, and giving a certain impressiveness to the story. The truth of these observations will, perhaps, be more striking, if we read the Scripture narrative in the form of modern typography.

“And Abraham was old, and well stricken in age: and the LORD had blessed Abraham in all things. And Abraham said unto his eldest servant of his house, that ruled over all that he had: Put, I pray thee, thy hand under my thigh, and I will make thee swear by the LORD, the God of heaven, and the God of the earth, that thou shalt not take a wife unto my son of the daughters of the Canaanites, among whom I dwell; but thou shalt go unto my country, and to my kindred, and take a wife unto my son Isaac.

“And the servant said unto him: Peradventure the woman will not be willing to follow me unto this land; must I needs bring thy son again unto the land from whence thou camest? And Abraham said unto him: Beware thou that thou bring not my son thither again. The LORD God of heaven, which took me from my father's house, and from the land of my kindred, and which spake unto me, and that sware unto me, saying, Unto thy seed will I give this land; he shall send his angel before thee, and thou shalt take a wife unto my son from thence. And if the woman will not be willing to follow thee, then thou shalt be clear from this my oath; only bring not my son thither again. And the servant put his hand under the thigh of Abraham his master, and sware to him concerning that matter.

“And the servant took ten camels, of the camels of his master and departed—for all the goods of his master were in his hand—and he arose and went to Mesopotamia, unto the city of Nahor. And he made his camels to kneel down without the city by a well of water, at the time of the evening, even the time that women go out to draw water. And he said, O LORD God of my master

Abraham, I pray thee, send me good speed this day, and show kindness unto my master Abraham. Behold, I stand here by the well of water, and the daughters of the men of the city come out to draw water: and let it come to pass, that the damsel to whom I shall say, Let down thy pitcher, I pray thee, that I may drink; and she shall say, Drink, and I will give thy camels drink also; let the same be she that thou hast appointed for thy servant Isaac; and thereby shall I know that thou hast shewed kindness unto my master.

“And it came to pass, before he had done speaking, that, behold, Rebecca came out, who was born to Bethuel, son of Milcah, the wife of Nahor, Abraham’s brother, with her pitcher upon her shoulder. And the damsel was very fair to look upon, a virgin; neither had any man known her: and she went down to the well, and filled her pitcher, and came up. And the servant ran to meet her, and said, Let me, I pray thee, drink a little water of thy pitcher. And she said, Drink, my lord; and she hastened, and let down her pitcher upon her hand, and gave him drink.

“And when she had done giving him drink, she said, I will draw water for thy camels also, until they have done drinking. And she hastened, and emptied her pitcher into the trough, and ran again unto the well to draw water, and drew for all his camels. And the man, wondering at her, held his peace, to wit whether the LORD had made his journey prosperous or not.

“And it came to pass, as the camels had done drinking, that the man took a golden earring of half a shekel weight, and two bracelets for her hands of ten shekels weight of gold, and said, Whose daughter art thou? tell me, I pray thee. Is there room in thy father’s house for us to lodge in? And she said unto him, I am the daughter of Bethuel the son of Milcah, which she bare unto Nahor. She said, moreover, unto him, We have both straw and provender enough, and room to lodge in.

“And the man bowed down his head, and worshiped the LORD. And he said, Blessed be the LORD God of my master Abraham, who hath not left destitute my master of his mercy and

his truth : I being in the way, the LORD led me to the house of my master's brethren. And the damsel ran, and told them of her mother's house of these things.

“And Rebecca had a brother, and his name was Laban : and Laban ran out unto the man, unto the well. And it came to pass, when he saw the earring, and bracelets upon his sister's hands, and when he heard the words of Rebecca his sister, saying, Thus spake the man unto me, that he came unto the man ; and, behold, he stood by the camels at the well. And he said, Come in, thou blessed of the LORD ; wherefore standest thou without ? for I have prepared the house, and room for the camels.

“And the man came into the house : and he ungirded his camels, and gave straw and provender for the camels, and water to wash his feet, and the men's feet that were with him. And there was set meat before him to eat : but he said, I will not eat, until I have told mine errand. And he said, Speak on.

“And he said, I am Abraham's servant. And the LORD hath blessed my master greatly, and he is become great : and he hath given him flocks and herds, and silver and gold, and men-servants, and maid-servants, and camels, and asses. And Sarah, my master's wife, bare a son to my master when she was old ; and unto him hath he given all that he hath. And my master made me swear, saying : Thou shalt not take a wife to my son of the daughters of the Canaanites, in whose land I dwell ; but thou shalt go unto my father's house, and to my kindred, and take a wife unto my son. And I said unto my master, Peradventure the woman will not follow me. And he said unto me, The LORD, before whom I walk, will send his angel with thee, and prosper thy way ; and thou shalt take a wife for my son of my kindred, and of my father's house. Then shalt thou be clear from this my oath, when thou comest to my kindred ; and if they give not thee one, thou shalt be clear from my oath. And I came this day unto the well, and said, O LORD God of my master Abraham, if now thou do prosper my way which I go, behold, I stand by the well of water, and it shall come to pass, that when the virgin cometh forth to

draw water, and I say to her, Give me, I pray thee, a little water of thy pitcher to drink ; and she say to me, Both drink thou, and I will also draw for thy camels : let the same be the woman whom the LORD hath appointed out for my master's son. And before I had done speaking in mine heart, behold, Rebecca came forth with her pitcher on her shoulder, and she went down unto the well and drew water : and I said unto her, Let me drink, I pray thee. And she made haste, and let down her pitcher from her shoulder, and said, Drink, and I will give thy camels drink also : so I drank, and she made the camels drink also. And I asked her, and said, Whose daughter art thou? And she said, The daughter of Bethuel, Nahor's son, whom Milcah bare unto him : and I put the earring upon her face, and the bracelets upon her hands. And I bowed down my head, and worshiped the LORD, and blessed the LORD God of my master Abraham, which had led me in the right way, to take my master's brother's daughter unto his son. And now, if ye will deal kindly and truly with my master, tell me : and if not, tell me ; that I may turn to the right hand, or to the left.

“Then Laban and Bethuel answered and said : The thing proceedeth from the LORD ; we cannot speak unto thee bad or good. Behold, Rebecca is before thee, take her, and go, and let her be thy master's son's wife, as the LORD hath spoken.

“And it came to pass, that, when Abraham's servant heard their words, he worshiped the LORD, bowing himself to the earth. And the servant brought forth jewels of silver, and jewels of gold, and raiment, and gave them to Rebecca : he gave also to her brother and to her mother precious things. And they did eat and drink, he and the men that were with him, and tarried all night : and they rose up in the morning ; and he said, Send me away unto my master. And her brother and mother said, Let the damsel abide with us a few days, at the least ten ; after that she shall go. And he said unto them, Hinder me not, seeing the LORD hath prospered my way ; send me away, that I may go to my master. And they said, We will call the damsel, and enquire at

her mouth. And they called Rebecca, and said unto her, Wilt thou go with this man? And she said, I will go. And they sent away Rebecca their sister, and her nurse, and Abraham's servant, and his men. And they blessed Rebecca, and said unto her, Thou art our sister; be thou the mother of thousands of millions, and let thy seed possess the gate of those which hate them.

"And Rebecca arose, and her damsels, and they rode upon the camels, and followed the man; and the servant took Rebecca, and went his way.

"And Isaac came from the way of the well Lahai-roi; for he dwelt in the south country. And Isaac went out to meditate in the field at the even-tide; and he lifted up his eyes, and saw, and, behold, the camels were coming. And Rebecca lifted up her eyes; and when she saw Isaac, she lighted off the camel. For she had said unto the servant, What man is this that walketh in the field to meet us? And the servant had said, It is my master: therefore she took a vail, and covered herself. And the servant told Isaac all things that he had done. And Isaac brought her into his mother Sarah's tent, and took Rebecca, and she became his wife, and he loved her; and Isaac was comforted after his mother's death."



THE HUMMING BIRDS.

THESE are at once the smallest and most beautiful of the feathered tribes. One species only is common as far north as New England ; this is called the ruby-throat, and is what is generally spoken of as the humming bird, in the United States. Farther south, however, in the tropical parts of America, and in the West Indies, there are three hundred different species, all bearing a general resemblance, yet each kind possessing peculiarities of form, color, and habits.

There is considerable diversity in size, from two to four inches in length. In delicacy of texture, and metallic brilliancy of color, their feathers are unrivaled. They are the most active of all known birds, exceeding even the swallow in swiftness. Suspended in air and hovering over a flower, their wings move with so much rapidity that they are not seen, except as gleams of light, all radiant, as the sun takes them at those angles which give out their different lustres. This rapid motion of the wings produces a humming noise, resembling that of the larger insects ; it is this which gives name to the genus.

In the northern parts of the United States, the humming bird is a frequent summer visitor of the flowers around the house and

in the garden ; more than a single pair are, however, seldom seen at a time, or in one place. In the warmer parts of the continent, on the contrary, they absolutely swarm like bees, as well in the forests as the parterres. They are great lovers of tubular flowers, and as these abound in the tropics, the forests being often thickly festooned with them, the humming birds, of many forms and hues, are seen by thousands among them, making the air musical with their wings.

To the naturalist, these little creatures are a study of extreme interest, their structure being in many respects peculiar. The energy with which they are endowed, has ever extorted admiration from attentive observers. Among those who have most happily described our own little ruby-throat, is Wilson the ornithologist.

"The nest," he says, "is generally fixed on the upper side of a horizontal branch, not among the twigs, but on the body of the branch itself. Yet I have known instances where it was attached by the side to an old moss-grown trunk ; and others, where it was fastened on a strong rank stalk, or weed, in the garden : but these cases are rare. In the woods, it very often chooses a white oak sapling to build on ; and in the orchard, selects a pear-tree for that purpose. The branch upon which the nest is built, is seldom more than ten feet from the ground.

"The nest is about an inch in diameter, and nearly as much in depth ; the outward coat is formed of small pieces of a blueish-gray lichen that vegetates on old trees and fences, thickly glued over with the saliva of the bird, giving firmness and consistency to the whole, as well as keeping out moisture. Within this, are thick matted layers of the fine wings of certain flying seeds, closely laid together ; and lastly, the downy substance from the great mullen, and from the stalks of the common fern, lines the whole. The base of the nest is continued round the stem of the branch, to which it closely adheres, and when seen from below, appears as a mere mossy knot or accidental protuberance. The eggs are two, pure white, and of equal thickness on both sides. When a person

approaches their nest, the little proprietors dart round with a humming sound, passing frequently within a few inches of his head; and should the young be newly hatched, the female will resume her place on the nest, even while you stand within a yard or two of the spot.

“The precise period of incubation, I am unable to give; but the young are in the habit, a short time before they leave the nest, of thrusting their bills into the mouths of their parents, and sucking what they have brought them. I never could perceive that they brought them any animal food, though, from various circumstances, I think it highly probable that they do. As I have found their nests with eggs as late as the 12th of July, I do not doubt but that they frequently, and perhaps usually, raise two broods in the same season.

“The humming bird is extremely fond of tubular flowers, and I have often stopped with pleasure to observe his manœuvres among the blossoms of the trumpet-flower. When arrived before a thicket of these that are full-blown, he poises or suspends himself on the wing for the space of two or three seconds, so steadily, that his wings become invisible, or only like a mist; and you can plainly distinguish the pupil of his eye, as he looks round with great quickness and circumspection; the glossy, golden green of his back, and the fire of his throat, dazzling in the sun—he forms altogether a most interesting object.

“When he alights, which is frequently, he always prefers the small dead twigs of a tree or bush, where he dresses and arranges his plumage with great dexterity. His only note is a single chirp, not louder than that of a small cricket or grasshopper, generally uttered while he passes from flower to flower, or when engaged in fights with his fellows; for when two males meet at the same bush or flower, a battle instantly takes place, and the combatants ascend in the air, chirping, darting and circling round each other, till the eye is no longer able to follow them. The conqueror, however, generally returns to reap the fruits of his victory. I have seen one of these heroic little creatures attack, and, for a

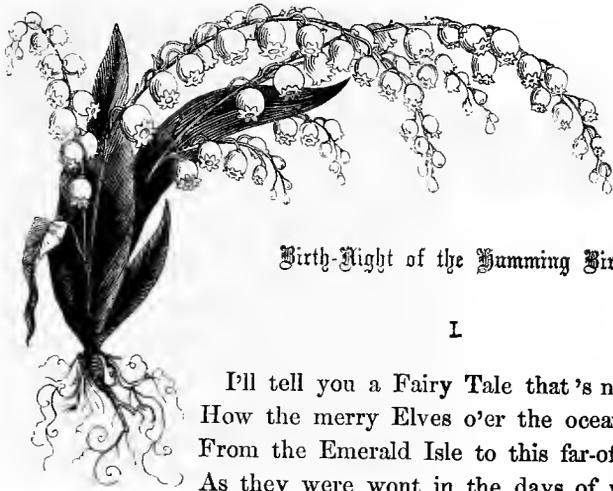
few minutes, tease the king-bird; and have also seen him, in his turn, assaulted by an humble bee, which he soon put to flight.

“The flight of the humming bird, from flower to flower, greatly resembles that of the bee, but is so much more rapid that the latter seems a mere loiterer in comparison. He sometimes enters a room by the window, examines the bouquets of flowers, and passes out at an opposite door or window. He has been known to take refuge in a hothouse, during the cool nights of autumn.

“He is one of the few birds that are universally beloved; and amid the sweet, dewy serenity of a summer’s morning, his appearance among the arbors of honey-suckles, and beds of flowers, is truly interesting.

“When morning dawns, and the blest sun again
Lifts his red glories from the eastern main,
Then through our woodbines, wet with glittering dews,
The flower-fed humming bird his round pursues;
Sips with inserted tube the honeyed blooms,
And chirps his gratitude as round he roams.
While richest roses, though in crimson drest,
Shrink from the splendor of his gorgeous breast;
What heavenly tints in mingling radiance fly!
Each rapid movement gives a different dye;
Like scales of burnished gold the dazzling show,
Now sinks to shade—now like a furnace glow!”

It is curious that this beautiful family of birds, so numerous and of such diversified species, should be wholly confined to the American continent. There is nothing to which it is akin, except the nectar-suckers of Africa, in the Eastern hemisphere, which are not only generically distinct, but widely different in size, form, and habits. The humming bird is as much our exclusive property, as are the fairies the essential possession of eastern countries. It is this fact that suggested the following lines:



Birth-Night of the Humming Bird.

I

I'll tell you a Fairy Tale that's new—
How the merry Elves o'er the ocean flew
From the Emerald Isle to this far-off shore,
As they were wont in the days of yore—
And played their pranks one moonlit night,
Where the zephyrs alone could see the sight.

II.

Ere the Old World yet had found the New,
The Fairies oft in their frolics flew,
To the fragrant isles of the Caribbee—
Bright bosom-gems of a golden sea.
Too dark was the film of the Indian's eye,
These gossamer sprites to suspect or spy—
So they danced 'mid the spicy groves unseen,
And gay were their gambolings, I ween,
For the fairies, like other discreet little elves,
Are freest and fondest when all by themselves.
No thought had they that in after time
The muse would echo their deeds in rhyme;
So gaily doffing light stocking and shoe,
They tripped o'er the meadow all dappled in dew.
I could tell, if I would, some right merry tales
Of unslipper'd fairies that danced in the vales—

But the lovers of scandal I leave in the lurch—
 And besides—these elves don't belong to the church.
 If they danced—be it known—'twas not in the elime
 Of your Mathers and Hookers, where laughter was crime;
 Where sentinel virtue kept guard o'er the lip—
 Though witchcraft stole into the heart by a slip!
 O no! 'twas the land of the fruit and the flower—
 Where summer and spring both dwelt in one bower—
 Where one hung the citron all ripe from the bough,
 And the other with blossoms encircled its brow;
 Where the mountains embosomed rich tissues of gold,
 And the rivers o'er rubies and emeralds rolled:
 It was there, where the seasons came only to bless,
 And the fashions of Eden still lingered, in dress,
 That these gay little fairies were wont, as I say,
 To steal in their merriest gambols away.
 But, dropping the curtain o'er frolic and fun,
 Too good to be told, or too bad to be done,
 I give you a legend from Fancy's own sketch,
 Though I warn you he's given to fibbing—the wretch!
 But I learn by the legends of breezes and brooks,
 'Tis as true as the fairy tales told in the books!

III.

One night, when the moon shone fair on the main,
 Choice spirits were gathered from mountain and plain,
 And lightly embarking from Erin's bold cliffs,
 They slid o'er the wave in their moonbeam skiffs.
 A ray for a rudder—a thought for a sail—
 Swift, swift was each bark as the wings of the gale!
 Yet long were the tale, should I linger to say
 What gambols and frolics enlivened the way;
 How they flirted with bubbles that danced on the wave;
 Or listened to mermaids that sang from the cave;
 Or slid with the moonbeams down deep to the grove
 Of coral, “where mullet and gold fish rove:”

How there, in long vistas of silence and sleep,
They waltzed, as if mocking the death of the deep:
How oft, where the wreck lay scattered and torn,
They peeped in the skull, now ghastly and lorn,
Or deep, 'mid wild rocks, quizzed the goggling shark,
And mouthed at the sea-wolf so solemn and stark—
Each seeming to think that the earth and the sea
Were made but for fairies—for gambol and glee!
Enough, that at last, they came to the isle,
Where moonlight and fragrance were rivals the while.
Not yet had those vessels from Palos been here,
To turn the bright gem to the blood-mingled tear;
O no! still blissful and peaceful the land,
And the merry elves flew from the sea to the strand.
Right happy and joyous seemed now the bright crew,
As they tripped 'mid the orange groves flashing in dew,
For they were to hold a revel that night—
A gay, fancy ball, and each to be dight
In the gem or the flower that fancy might choose
From mountain or vale, for its fragrance or hues.

IV.

Away sped the maskers like arrows of light,
To gather their gear for the revel bright.
To the dazzling peaks of far-off Peru,
In emulous speed, some sportively flew;
And deep in the mine, or 'mid glaciers on high,
For ruby and sapphire searched heedful and sly.
For diamonds rare that gleam in the bed
Of Brazilian streams, some merrily sped;
While others for topaz and emerald stray,
'Mid the cradle cliffs of the Paraguay.
As these are gathering the rarest of gems,
Others are plucking the rarest of stems:
They range wild dells, where the zephyr alone
To the blushing blossoms before was known;

Through forests they fly, whose branches are hung
 By creeping plants, with fair flowerets strung —
 Where temples of nature with arches of bloom
 Are lit by the moonlight, and faint with perfume:
 They stray where the mangrove and clematis twine,
 Where azalia and laurel in rivalry shine;
 Where, tall as the oak, the passion-tree glows,
 And jasmine is blent with rhodora and rose.
 O'er blooming savannas and meadows of light,
 'Mid regions of summer, they sweep in their flight,
 And gathering the fairest, they speed to their bower,
 Each one with his favorite brilliant or flower.

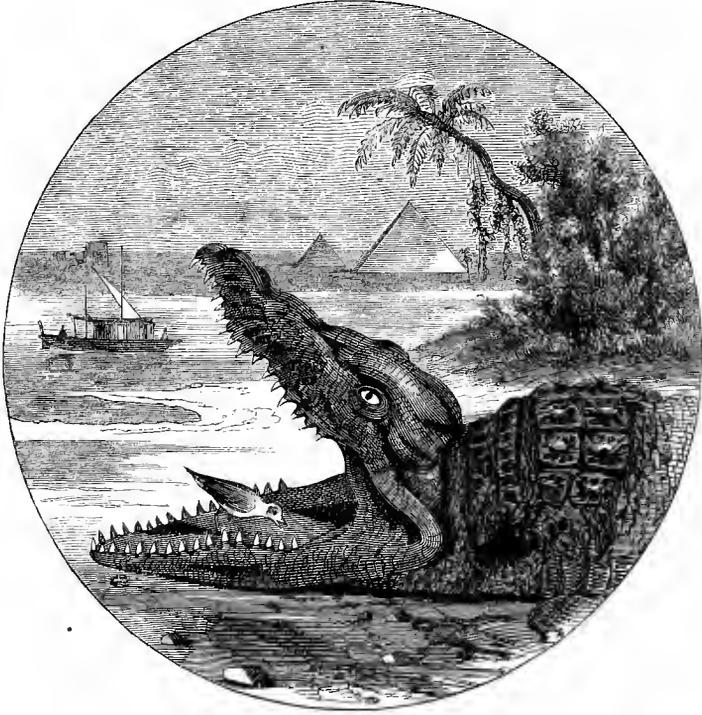
V.

The hour has come, and the fairies are seen
 In their plunder arrayed on the moonlit green.
 The music is breathed — 'tis a soft strain of pleasure,
 And the light giddy throng whirl into the measure.
 'Twas a joyous dance, and the dresses were bright,
 Such as never were known till that famous night,
 For the gems and the flowers that shone in the scene,
 O'ermatched the regalia of princess and queen.
 No gaudy slave to a fair one's brow,
 Was the rose or the ruby or emerald now;
 But lighted with souls by the playful elves,
 The brilliants and blossoms seemed dancing themselves.

VI.

Of all that did chance, 'twere a long tale to tell,
 Of the dresses and waltzes, and who was the belle;
 But each was so happy, and all were so fair,
 That night stole away, and the dawn caught them there!
 Such a scampering never before was seen,
 As the fairies' flight, on that island green:

They rushed to the bay with twinkling feet,
But vain was their haste, for the moonlight fleet
Had passed with the dawn, and never again
Were these fairies permitted to traverse the main—
But 'mid the groves, when the sun was high,
The Indian marked with a worshiping eye,
The HUMMING BIRDS, all unknown before,
Glancing like thoughts from flower to flower,
And seeming as if earth's loveliest things
The brilliants and blossoms, had taken wings:
And Fancy hath whispered, in numbers light,
That these are the fairies who danced that night,
And linger yet in the garb they wore,
Content in our clime, and more blest than before!



THE CROCODILE.

THIS animal enjoys a greater, historical celebrity than almost any other that can be named. It was abundant in the Nile, in the most ancient times, and at an early period became mingled in the superstitions of the Egyptians. Herodotus, who traveled in Egypt about 450 B. C., thus speaks of it:

“The crocodile, which during the four severer months of winter eats nothing, is a quadruped, but amphibious: it is also oviparous, and deposits its eggs in the sand. The greater part of the day it

spends on shore ; but all the night in the water, as being warmer than the external air, whose cold is increased by the dew. No animal that I have seen and known, from being at first so remarkably diminutive, grows to so vast a size. The eggs are not larger than those of geese : on leaving the shell, the young are proportionally small, but when arrived at its full size it is sometimes more than seventeen cubits in length. It has eyes like a hog, teeth large and prominent in proportion to its body, but, unlike all other animals, it has no tongue. It is further most singularly distinguished by only moving its upper jaw. Its feet are armed with strong fangs ; the skin is protected by hard scales, regularly divided. In the open air its sight is remarkably acute, but it cannot see well in the water. Living in the water, its throat is always full of leeches : beasts and birds universally avoid it, the trochilus only excepted, which, from a sense of gratitude, it treats with kindness. When the crocodile leaves the water, it reclines itself on the sand, and generally toward the west, with its mouth open : the trochilus, entering its throat, destroys the leeches ; in acknowledgement for which service it never does the bird any injury.

“The crocodile, by many of the Egyptians is esteemed sacred ; by others, it is treated as an enemy. They who live near Thebes and the lake Moeris, hold it in religious veneration : they select one which they render tame and docile, and suspend golden ornaments from its ears, and sometimes gems of value : the fore feet are secured by a chain. They feed it with the flesh of the sacred victims, and with other appointed food. While it lives they treat it with unceasing attention ; and when it dies, it is first embalmed, and afterwards deposited in a sacred chest.

“On the other hand, they who live in or near Elephantine, so far from considering these beasts as sacred, make them an article of food.”

This account, written twenty-three centuries ago, has been in most respects confirmed by abundant observations in modern times. The pretty story of the trochilus, appears to be fabulous ;

if a bird is sometimes seen to enter the crocodile's mouth, it is probably by accident or mistake, and not from any such good-fellowship as Herodotus supposes. As to the veneration of this animal by the Egyptians, there is no doubt: millions of them have been found embalmed in the tombs. Other ancient authors tell us that these creatures were so much petted, as to be feasted with cake, roast meat, and mulled wine poured down their throats. Such deification cannot be wondered at among a people who worshiped bulls, provided indeed that, on a careful examination by their priests, there was not a black hair on their bodies, and no blemishes on their tongues, and the hair of their tails all grown in its natural form and place: and who, furthermore, held cats, serpents, and monkeys to be sacred, and embalmed and buried their bodies as such!

Nor is even this the whole of the ancient history of the crocodile. About the year 120 B. C., five of these creatures were publicly exhibited to the wondering citizens of Rome. In the time of Augustus, thirty-six of them were displayed at once in the amphitheater. These were attacked by gladiators, and after a furious combat, all were slain.

The manner in which this formidable animal struck the imagination of the ancients, is evinced by the writer of the book of Job, in which it is thus spoken of, chap. xli., 1, etc.:

“Canst thou draw out leviathan with a hook, or his tongue with a cord which thou lettest down? Canst thou put a hook into his nose, or bore his jaw through with a thorn? Will he make many supplications unto thee; will he speak soft words unto thee? Wilt thou play with him as with a bird; or wilt thou bind him for thy maidens?

“Who can open the doors of his face? His teeth are terrible round about. His scales are his pride, shut up together as with a close seal. One is so near to another that no air can come between them. By his neesings a light doth shine, and his eyes are like the eyelids of the morning. Out of his mouth go burning lamps, and sparks of fire leap out. Out of his nostrils goeth

smoke, as out of a seething pot or cauldron. His breath kindleth coals, and a flame goeth out of his mouth. In his neck remaineth strength, and sorrow is turned into joy before him. His heart is as firm as a stone, yea, as hard as a piece of the nether millstone."

At the present day, the crocodile is comparatively scarce in the lower parts of the Nile; but in the higher portions, it is in many places abundant. The same species is found in other parts of Africa, and its natural history is now well known. The gavia of the Ganges, and the alligator of America, are of the same family; but they are different species, and of less formidable strength and habits.

With the exception of the elephant, the rhinoceros, and the hippopotamus, the bulk of the crocodile perhaps exceeds that of every terrestrial animal; no fishes frequenting fresh water equal it, and but a few species of those belonging to the seas. The largest are not less than thirty feet in length, and one of only half that size is five feet in circumference. The body stands low on the ground, and the animal universally presents a dull and sluggish aspect. Nevertheless, its motions in pursuit of prey are not slow, and the difficulty which it finds in turning is the surest means of escape on land; its agility in water is infinitely greater.

These facts are better illustrated when the animal is roused to action. Its natural abode is in the water; for scarcely one fourth of its existence is passed upon the earth. The muddy edges and thick reeds of slow and tranquil streams, are its favorite haunts, and it sometimes descends rivers to within the flowing of the tide. On leaving them, it always advances with a slow pace, nearly in a straight line, its belly frequently dragging on the ground, and its head commonly elevated before it. However, it is seldom seen standing; and its chief enjoyment seems to be lying in a state of absolute quiescence. When in pursuit of prey, it swims gently and silently, just on a level with the water, until it approaches the place where some terrestrial animal comes to quench its thirst. Then, curving its tail, it strikes it a violent blow,

which is invariably in the direction of the water, and, at the same time, towards its own mouth.

Should the animal surprised be of large size, such as an ox or a horse, the crocodile adopts another manœuvre in seizing it by the nostrils, and forcibly dragging it under the water to be drowned. When a tortoise is taken, the crocodile raises its head above water, and with the inconceivable strength of its jaws crushes the shell in pieces. Men, and particularly negroes, are said to be its favorite prey, and it is greedy after the flesh of dogs; hence, the negroes that hunt the crocodile are accustomed to beat the dogs on purpose that their howling may attract it from its haunts. The prey being drowned, is conveyed to some sub-aquatic hole or receptacle, and left to putrefy before it is devoured. But the crocodile cannot feed in the water; therefore, except small fishes, the prey is always carried to the land.

Its structure is such, that it must rise to the surface once in an hour, or hour and a half, for breathing. Nothing that it once seizes can escape; it never quits its hold. Even strong levers forced between the jaws for that purpose, have proved ineffectual; and, shaking its prey to pieces, it is swallowed without mastication. Much has been said of the stratagems employed by the crocodile to seize its prey: that it lies like a log on the banks of rivers, or floats inactive on the surface, and then springs forward whenever the victim comes within its reach. This may be partly true, though it appears under many exaggerations; for it is well authenticated, that it remains motionless until considerable objects are quite close and evidently within its reach, when it leaps upon them. The agility of the crocodile is not so great, even when in pursuit of prey, that a man may not escape at tolerable speed, more especially by frequent deviation from the straight path. The blow with the tail, suddenly given, is principally to be dreaded.

It is well known that crocodiles are not so numerous in the lower parts of the Nile, as they were in ancient times; the few that do appear are now not much dreaded there, but farther up

the river, where the climate is warmer, they are still numerous and dangerous. Lord Prudhoe, while traveling in Sennaar, between the Black and White Nile, found that they were much more formidable: during his sojourn in the country, several of the natives were carried off by them, and the banks of the river were in many places so musky in their smell as to be very offensive.

Crocodiles are oviparous, and the eggs are but small in proportion to their size, not being quite so large as those of a goose. These are, as is the case with reptiles generally, equally thick at both ends; they are covered with an envelope, which hardens in the air, but it contains very little carbonate of lime. The males are more numerous than the females, and fierce battles ensue between them in the pairing time. These battles of gallantry are generally decided in the water, and they are accompanied by the most dismal bellowings that can possibly be imagined: the noise is said to resemble both that of the bull and the bittern, but to be much louder, and more dismal and husky than either.

The female digs a cavity in the earth, in which she places her eggs, in a circular form, in successive layers, and with portions of earth between, the whole being afterwards covered up. This nest is generally placed in a dry hillock, and the earth is gathered up, so that, on the average, the eggs are about ten inches below the surface. This being done, the mother abandons them to be hatched by the heat of the sun; yet instinct prompts her frequently to revisit the spot, as the term of exclusion approaches. She then testifies uncommon agitation, roaming about the place, and uttering a peculiar growling, as if to awaken her hideous offspring to animation. The period of maturity being at length attained, the nascent crocodiles answer to her solicitude by a kind of yelping, like puppies. A hollow murmur, in return, denotes her satisfaction; and she hastens to scrape up the earth with such anxiety, that several of the young are generally crushed beneath her unwieldy body.

Having withdrawn them from their nest, the mother leads them

straightway to the neighboring water; but now, her utmost vigilance is required for their preservation, for, unlike the instinct with which she is animated, the male, silently approaching, will frequently devour them before she is aware of their danger. He perpetually seeks their destruction, and the watch of the female over her young is protracted for three months from their first appearance. An opinion is prevalent that the crocodile continues growing during its whole existence; that it lives to a great age; and that the utmost limits of its size are at least fifty feet.

In its earlier stage, we have seen that it is liable to perish either from being crushed to death by the female, or devoured by the male. A species of tortoise frequenting the Nile makes incredible havoc among the young. The hostility of the ichumenon has been related from times of remote antiquity, and though we cannot agree that it proves destructive of the crocodile itself, we at least know that it devours the eggs. In this manner, the numbers of so formidable a creature, when less capable of defence, are diminished; but after having attained its utmost power, different means repress its voracity, and other enemies are on the watch for its destruction. Although the crocodile drags its prey under water to extinguish life, we have already remarked that it must resort to shallows, or the land, to feed upon it. In like manner, when attacked by the sword-fish or shark, it is easily vanquished; for on opening its mouth in resistance, a torrent of water rushes in, and it is drowned. Of all the enemies, however, which the crocodile has to dread, the most inveterate is man. By a perpetual and sanguinary war carried on against it in almost every country, and by the various devices adopted for its capture, the race is prodigiously reduced. But it is no easy matter to overcome an animal of such enormous strength, and whose hide is generally impenetrable by a leaden musket-ball. It is, however, more vulnerable in the belly; and a bullet discharged down the throat, or into the eyes, is fatal. Even harpoons or spears will penetrate the body and inflict mortal wounds, if thrown by a skilful hand.

The alligators, being distributed over the warm parts of our own continent, we are more familiar with than with the crocodiles; yet, from their peculiar characteristics, they are unceasing objects of interest. They are ungainly and even ugly animals; but they are not naturally ferocious. They kill only to eat, and they kill but one at a time. If, indeed, the prey is so tough that they cannot break it by the pressure of the jaws, they take it under water, and bury it there till it becomes softened by partial putrefaction. In these cases, the same unquenched hunger sends them to look for more; and they continue the process till they can meet with something which can be eaten immediately. No reptiles masticate, or grind their food; and few, if any, give it a second bite. The jaws of the alligator close like the sides of a spring trap; and if they do not enclose the whole of the prey, the only way that the animal has of detaching the portion which they do seize, in order to swallow it, is by shaking it; and when they are unable to accomplish this, they bury it under water in the manner which has been stated.

During the heat of the day, alligators either lie stretched and languid on the banks, or in the mud, on the shores of the rivers and lagoons which are their favorite haunts; and as the other natives of these localities—the winged ones that sport in the sun excepted—are generally at rest at these times, the consequence is that during the day they capture but few animals excepting such as wander near them. They sometimes, however, are put into motion during the heat and the drought, by that singular wave called the “bore,” which is often very high and violent in its agitations in the level-bedded rivers of warmer climates.

Heavy and strong as the full-grown alligators are, the force of the bore rolls them powerless before it, and they rattle against each other and bellow in such a manner as to increase the noise and confusion. There is no bore in the bays or lagoons, and none in the rivers above the first rapid, even though that is an inconsiderable one; and thus, during the hot and sunny days, the alligators in these are at peace. When evening comes, however,

they begin to move, and the roaring of the larger ones is terrific. It is a compound of the sounds of the bull and the bittern, but far louder than either, and it grates and shivers on the ear as if the ground were shaking. Whether it produces any effect upon the prey of the alligators, in making that prey disclose itself by its efforts to escape, is not known; and indeed, harsh and terrific as it is, it seems not only to be the common noise of the reptiles, but also their love song, which they emit frequently and freely in the pairing season.

The history of the pairing is not very complete, but there are some reasons for concluding that they are polygamous. The males engage in fierce conflicts at that season, and not, as has been observed, at any other; the fair inference therefore is, that these are battles of gallantry. They usually take place in the water, though in the shallows rather than the depths. When they combat with their teeth, the contest is desperate, and the death of one, sometimes of both, is inevitable. It has already been said that the alligator can give no second bite, and as little is it disposed to leave the first one, till the object which it seizes is fairly under water. The jaws close in the same manner as those of the "biting turtles," and they can with difficulty be wrenched asunder even by a lever of considerable length.



INDIAN LEGENDS.

HR. LONGFELLOW'S poem of HIAWATHA, has awakened a very general interest in the legends of the Indians, and most persons are surprised, on inquiry, to find how much of imagination and sentiment are to be found in these relics of the tribes now passed or passing away. Everybody has read and admired the tales of COOPER, and others of his school, who impute to the savages of the forest, the romantic

sentiment and chivalrous conduct of artificial life; but nobody really believed these things to be true. The character of the Indian, as presented by history, is exceedingly bald, affording only a few strong lights and shadows, such as befit a savage hunter and warrior. And this view is confirmed by his personal appearance, which is that of a being who is wholly occupied with sensible things. His eye is keen and watchful, like that of the tiger, but it has no depth: it sees all that is without and around, but it does not seem to reflect a world of thought within—that world which, to the soul of civilized man, is as real and as boundless as the visible universe. We are, therefore, somewhat surprised when we discover the fact that the Indians really have a mythology, and that they have their poems, fables, proverbs and allegories.

For this knowledge, we are chiefly indebted to the intelligent and untiring labors of Mr. SCHOOLCRAFT, which have been given to the public in several interesting and instructive volumes. It is from these Mr. LONGFELLOW chiefly derived not only the substance of his story of HIAWATHA, but the machinery and the episodes of his remarkable poem. It is, however, curious to remark that, before the appearance of this work, the public had received Mr. SCHOOLCRAFT'S Indian revelations with coldness, either because they were distrusted, or because they appeared barbarous and repulsive. But the kind of artistic sorcery by which the poet has unfolded a soul in these mystic legends, and still more, the amazing skill with which he has woven the hard and guttural sounds of the Indian tongue into mellifluous verse—making words that were before revolting to the ear, now musical as the songs of birds and waterfalls—have endowed these topics with an irresistible charm. It is probable that the early heroes of Greece—HERCULES, THESEUS, and the rest—were not very different from our BLACK HAWKS and TECUMSEHS; their first annalists, their SCHOOLCRAFTS, telling the simple truth, it may be supposed, furnished only a rugged outline of the life and action of those early days, it being reserved for the HESIODS and the HOMERS—the LONGFELLOWS of that age—to elevate individuals

into heroes and gods, to fill the sea with Nereids, and the woods with Fauns ; to breathe religion into the actions of man, to subdue the rough accents of savages, and convert their language into a worthy vehicle for the story of ULYSSES and ACHILLES, for the songs of ANACREON and the sonnets of SAPPHO.

Since the appearance of HIAWATHA, Mr. SCHOOLCRAFT has published a volume, presenting in a condensed form the principal portion of his Indian legends. With the new vision which the poet has bestowed, these are read with intense interest. One fact, creditable alike to the historian and the bard, will strike every mind, and that is the general outline of truth which pervades the poem, not only in the story of HIAWATHA, but in all the illustrations and embellishments of the tale. In thought, sentiment, scenery, costume, habits and customs, the work is consistent : it is all Indian, all savage ; and yet, let us add, it is all human—it is humanity in its childhood.

Of the legend which forms the basis of LONGFELLOW's poem, as received by the Western tribes, Mr. SCHOOLCRAFT gives the following account :

“The myth of the Indians of a remarkable personage, who is called MANABOZHO by the Algonquins, and HIAWATHA by the Iroquois, who was the instructor of the tribes in art and knowledge, was first related to me in 1822, by the Chippewas of Lake Superior. He is regarded as the messenger of the Great Spirit, sent down to them in the character of a wise man and a prophet. But he comes clothed with all the attributes of humanity, as well as the power of performing miraculous deeds. He adapts himself perfectly to their manners, and customs, and ideas. He is brought up, from a child, among them.

“He is made to learn their mode of life. He takes a wife, builds a lodge, hunts and fishes like the rest of them ; sings his war songs and medicine songs, goes to war, has his triumphs, has his friends and foes, suffers, wants, hungers, is in dread or joy—and, in fine, undergoes all the vicissitudes of his fellows. His miraculous gifts and powers are always adapted to his situation.

When he is swallowed by a great fish, with his canoe, he escapes by the exertion of these powers; but always as much as possible in accordance with Indian maxims and means. He is provided with a magic canoe, which goes where it is bid; yet, in his fight with the great wampum prince, he is counseled by a wood-pecker to know where the vulnerable point of his antagonist lies. He rides the earth of monsters and giants, and clears away wind-falls, and obstructions to the navigation of streams. But he does not do these feats by miracles; he employs strong men to help him. When he means to destroy the great serpents, he changes himself into an old tree, and stands on the beach till they come out of the water to bask in the sun. Whatever man could do in strength or wisdom, he could do. But he never does things above the comprehension or belief of his people; and whatever else he is, he is always true to the character of an Indian.

“This myth is one of the most general in the Indian country: it is the prime legend of their mythology. He is talked of in every winter lodge—for the winter season is the only time devoted to such narrations. The moment the leaves come out, stories cease in the lodge. The period of spring in the botanical world, opens, as it were, so many eyes and ears to listen to the tales of men; and the Indian is far too shrewd a man, and too firm a believer in the system of invisible spirits by which he is surrounded, to commit himself by saying a word which they, with their acute senses on the opening of the spring, can be offended at.

“He leaps over extensive regions of country, like an *ignis fatuus*. He appears suddenly like an avatar, or saunters over weary wastes, a poor and starving hunter. His voice is at one moment deep and sonorous as a thunder-clap, and at another clothed with the softness of feminine supplication. Scarcely any two persons agree in all the minor circumstances of the story, and scarcely any omit the leading traits. The several tribes who speak dialects of the mother language from which the narrative is taken, differ in like manner from each other, in the particulars of his exploits. His birth and parentage are mysterious. Story

says his grandmother was the daughter of the moon. Having been married but a short time, her rival attracted her to a grape-vine swing on the banks of a lake, and by one bold exertion pitched her into its center, from which she fell through to the earth. Having a daughter, the fruit of her lunar marriage, she was careful to instruct her from early infancy, against certain snares that might beset her. This good counsel was at some subsequent period of her life forgotten, and she thus became the victim of the seductive arts of the mighty NINGABIUN, or the West Wind."

The reader need not be reminded of the similarity between this delineation and that of the poem of HIAWATHA: the latter is, in truth, a poetic amplification of the historical legend. The embellishments of the poem are alike truthful, either in their particular incidents or their general outline. Even when the story is aided by invention, the scenery is true to nature. Thus, while HIAWATHA'S wooing, as was meet and proper, is invested with a little romance not found in the books, the name of his bride is derived from an actual locality, and the charm of one of the most beautiful objects in natural scenery is thus associated with her birth and character. The cascade of Minnehaha, being, in fact, the Little Falls of St. Anthony, near Fort Snelling, has long been noted for its surpassing beauty. Even the savages have been struck with its charms, and have given it a name which signifies Laughing Water. The scenery around is charming. With what admirable tact does the poet connect this delicious scene with his story:

“Only once his pace he slackened,
Only once he paused or halted,
Paused to purchase heads of arrows
Of the ancient arrow maker,
In the land of the Dacotahs,
Where the falls of Minnehaha
Flash and gleam among the oak trees,
Laugh and leap into the valley.

“There the ancient arrow maker
Makes his arrow heads of sandstone,
Arrow heads of chalcedony,
Arrow heads of flint and jasper,
Smoothed and sharpened at the edges,
Hard and polished, keen and costly.

“With him dwelt his dark-eyed daughter,
Wayward as the Minnehaha,
With her moods of shade and sunshine;
Eyes that smiled and frowned alternate,
Feet as rapid as the river,
Tresses flowing like the water,
And as musical a laughter;
And he named her from the river,
From the water-fall he named her,
Minnehaha, Laughing Water.

“Was it here for heads of arrows,
Arrow heads of chalcedony,
Arrow heads of flint and jasper,
That my Hiawatha halted
In the land of the Dakotahs?

“Was it not to see the maiden,
See the face of Laughing Water,
Peeping from behind the curtain,
Hear the rustling of her garments
From behind the waving curtain,
As we see the Minnehaha
Gleaming, glancing through the branches,
As one hears the Laughing Water
From behind its screen of branches?”

The personification and deification of the powers of nature is common to all races of men, in the infancy of society. This is especially manifest in the Indian myths. Among the principal

heroes of the poem of *HIAWATHA*, are, therefore, the four winds. One of them, *WABUN*, the East Wind, seems to be a sort of Aurora, and is thus beautifully described in the poem :

“Young and beautiful was Wabun ;
He it was who brought the morning,
He it was whose silver arrows
Chased the dark o'er hill and valley ;
He it was whose cheeks were painted
With the brightest streaks of crimson,
And whose voice awoke the village,
Called the deer, and called the hunter.

“Lonely in the sky was Wabun ;
Though the birds sang gayly to him,
Though the wild-flowers of the meadow
Filled the air with odors for him,
Though the forests and the rivers
Sang and shouted at his coming,
Still his heart was sad within him,
For he was alone in heaven.

“But one morning, gazing eastward,
While the village still was sleeping,
And the fog lay on the river,
Like a ghost that goes at sunrise,
He beheld a maiden walking
All alone, upon a meadow,
Gathering water-flags and rushes
By a river in the meadow.

“Every morning, gazing eastward,
Still the first thing he beheld there,
Was her blue eyes looking at him,
Two blue lakes among the rushes ;

And he loved the lonely maiden
 Who thus waited for his coming;
 For they both were solitary—
 She on earth, and he in heaven.

“And he wooed her with caresses,
 Wooed her with his smile of sunshine,
 With his flattering words he wooed her,
 With his sighing and his singing,
 Gentlest whispers in the branches,
 Softest music, sweetest odors—
 Till he drew her to his bosom,
 Folded in his robes of crimson—
 Till into a star he changed her,
 Trembling still upon his bosom;
 And for ever in the heavens
 They are seen together walking,
 Wabun and the Wabun-Annung,
 Wabun and the Star of Morning.

One of the favorite forms in which Indian lore presents itself in Mr. SCHOOLCRAFT'S work, is that of allegory. The following is one of these fanciful, but still moral and instructive compositions :

The Wolf-Brother.

A solitary lodge stood on the banks of a remote lake. It was near the hour of sunset. Silence reigned within and without. Not a sound was heard but the low breathing of the dying inmate and head of this poor family. His wife and three children surrounded his bed. Two of the latter were almost grown up: the other was a mere child. All their simple skill in medicine had been exhausted to no effect. They moved about the lodge in whispers, and were waiting the departure of the spirit. As one

of the last acts of kindness, the skin-door of the lodge had been thrown back to admit the fresh air. The poor man felt a momentary return of strength, and raising himself a little, addressed his family :

“ I leave you in a world of care, in which it has required all my strength and skill to supply you with food, and protect you from the storms and cold of a severe climate. For you, my partner in life, I have less sorrow in parting, because I am persuaded you will not remain long behind me, and will therefore find the period of your sufferings short. But you, my children, my poor and forsaken children, who have just begun the career of life, who will protect you from its evils? Listen to my words. Unkindness, ingratitude and every wickedness is in the scene before you. It is for this cause that years ago, I withdrew from my kindred and my tribe, to spend my days in this lonely spot. I have contented myself with the company of your mother and yourselves during seasons of very frequent scarcity and want, while your kindred, feasting in a scene where food is plenty, have caused the forests to echo with the shouts of successful war. I gave up these things for the enjoyment of peace. I wished to shield you from the bad examples you would inevitably have followed. I have seen you thus far grow up in innocence. If we have sometimes suffered bodily want, we have escaped pain of mind. We have at least been kept from scenes of rioting and bloodshed.

“ My career is now at its close. I will shut my eyes in peace, if you, my children, will promise me to cherish each other. Let not your mother suffer the few days that are left to her ; and I charge you on no account to forsake your youngest brother—of him I give you both my dying charge to take a tender care.” He sank exhausted on his pallet. The family waited a moment as if expecting to hear something further, but when they came to his side, the spirit had taken its flight.

The mother and daughter gave vent to their feelings in lamentations. The elder son witnessed the scene in silence. He soon exerted himself to supply, with bow and net, his father's place.

Time, however, wore away heavily. Five moons had filled and waned, and the sixth was near its full, when the mother also died. In her last moments, she pressed the fulfilment of their promise to their father, which the children readily received, because they were yet free from selfish motives.

The winter passed, and the spring, with its enlivening effects in a northern hemisphere, cheered the drooping spirits of the bereft family. The girl, being the eldest, dictated to her brothers, and seemed to feel a tender and sisterly affection for the youngest, who was rather sickly and delicate. The elder boy soon showed symptoms of restlessness and ambition, and addressed the sister as follows :

“ My sister, are we always to live as if there were no other human beings in the world ? Must I deprive myself of the pleasure of associating with my own kind ? I have determined this question for myself ; I shall seek the villages of men, and you cannot prevent me.”

The sister replied, “ I do not say no, my brother, to what you desire. We are not prohibited the society of our fellow mortals, but we are told to cherish each other, and to do nothing independent of each other. Neither pleasure nor pain ought therefore to separate us, especially from our younger brother, who, being but a child, and weakly withal, is entitled to a double share of our affection. If we follow our separate gratification, it will surely make us neglect him, whom we are bound by vows, both to our father and mother, to support.” The young man received this address in silence. He appeared daily to grow more restive and moody, and one day, taking his bow and arrows, left the lodge and never returned.

Affection nerved the sister's arm. She was not so ignorant of the forest arts as to let her brother suffer from want. For a long time she administered to his necessities, and supplied a mother's cares. At length, however, she began to be weary of solitude and of her charge. No one came to be a witness of her assiduity, or to let fall a single word in her native language. Years which

added to her strength and capability of directing the affairs of the household, brought with them the irrepressible desire of society, and made solitude irksome. At this point, selfishness gained the ascendancy in her heart, for in meditating a change in her mode of life, she lost sight of her younger brother, and left him to be provided for by contingencies.

One day, after collecting all the provisions she had been able to save for emergencies, and after bringing a quantity of wood to the door, she said to her little brother: "My brother, you must not stray from the lodge. I am going to seek our elder brother: I shall be back soon." Then taking her bundle, she set off in search of other habitations. She soon found them, and was so much taken up with the pleasures and amusements of social life, that the thought of her brother was almost wholly obliterated. She accepted proposals of marriage, and after that, thought still less of her helpless and abandoned relative.

Meantime, her elder brother had also married, and lived on the shores of the same lake whose ample circuit contained the abandoned lodge of his father and his forsaken brother. The latter was soon brought to the pinching turn of his fate. As soon as he had eaten all the food left by his sister, he was obliged to pick berries, and dig up roots. These were finally covered up by the snow. Winter came on with all its rigors. He was obliged to quit the lodge in search of other food. Sometimes he passed the night in the clefts of old trees or caverns, and ate the refuse meals of the wolves. The latter at last became his only resource; and he became so fearless of these animals, that he would sit close by them while they devoured their prey. The wolves, on the other hand, became so familiar with his face and form, that they were undisturbed by his approach, and, appearing to sympathize with him in his outcast condition, would always leave something for his repast. In this way he lived till spring. As soon as the lake was free from ice, he followed his new-found friends to the shore. It happened the same day, that his elder brother was fishing in his canoe a considerable distance out in the lake, when he thought

he heard the cries of a child on the shore, and wondered how any one could exist on so bleak and barren a part of the coast. He listened again attentively, and distinctly heard the cry repeated. He made for the shore as quickly as possible, and as he approached the land, discovered and recognized his little brother, and heard him singing in a plaintive voice—

“ Neesia—neesia—
 Shyegwuh goosuh !
 Ni my een gwun iewh !
 Ni my een gwun iewh !
 Heo hwooh ! ”

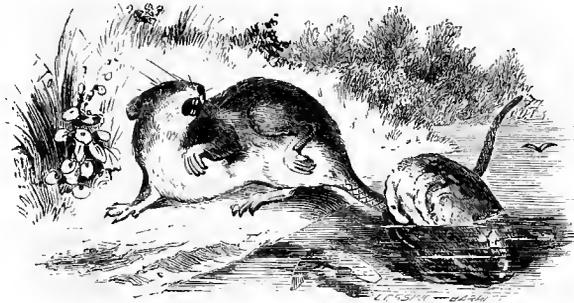
The meaning of which is,

“ My brother—my brother—
 Ah ! see—I am turning into a wolf ! ”

At the termination of his song, which was drawn out with a peculiar cadence, he howled like a wolf. The elder brother was still more astonished, when, getting nearer the land, he perceived his poor brother partly transformed into that animal. He immediately leaped on shore, and strove to catch him in his arms, soothingly saying, “ My brother, my brother, come to me.” But the boy eluded his grasp, crying as he fled, “ Neesia, neesia,” &c., and howling in the intervals.

The elder brother, conscience stricken, and feeling his brotherly affection return with redoubled force, exclaimed in great anguish, “ My brother, my brother, my brother ! ”

But the nearer he approached, the more rapidly the transformation went on ; the boy alternately singing and howling, and calling out the name, first of his brother and then of his sister, till the change was completely accomplished, when he exclaimed, “ I am a wolf ! ” and bounded out of sight.



THE RAT THAT WENT FISHING.

RRAT, with greedy appetite,
Went fishing with his tail one night :
He once had seen a fox do that,
And if a fox, why not a rat ?
For he is surely quite as knowing
As any other beast that's going.

Cocking his eye in fond conceit
That he knew fish as well as meat,
He silent sat upon the shore,
And bobbed for half an hour or more.
At last, a hungry bite he felt,
And deemed it roach, or perch, or smelt :
Eager, yet cautious, did he wait
To let his prey grasp well the bait ;
Then, like a fisher, skilled and nice,
He jerked : but lo ! as in a vice
His tail stuck fast, and, strange as true,
The more he pulled, the worse it grew !

This way and that, in vain he turned—
In vain he jerked, and jumped, and squirmed—
In vain he yelled with pain and grief—
In vain cried murder, fire, and thief!
In vain ; for lo ! an oyster vast,
Had caught his tail, and held it fast !

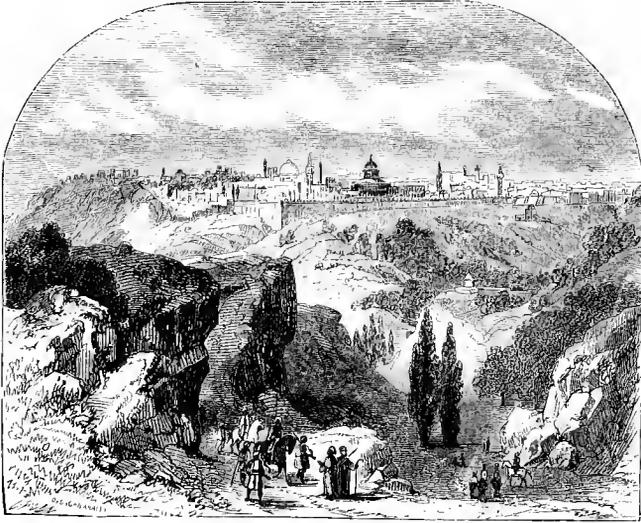
At length, the rat perceived the case,
And putting on a smiling face—
Staying the while his tears and groans,
Though pain and terror thrilled his bones—
Addressed the oyster thus : “ My friend,
Here’s some mistake ; my latter end
Was never made for feast or fête—
I only put it in for bait ;
And as you’ve ta’en it, I opine
That you are caught, and so are mine :
I pray you, therefore, oyster tender,
Just come ashore, and thus surrender.”

‘The oyster answered not a wink,
But in the wave began to sink ;
Down, down, by slow degrees he went
To the wild rocks, in sheer descent,
Dragging the rat, ’mid cries of slaughter,
Beneath the “ dark and stormy water.”
He sank, and o’er him danced the bubbles,
In mockery of all his troubles :
Nothing was left but this his story,
And the plain truth it sets before you.

The cunning rat who apes the fox,
And risks his tail among the rocks—
Heedless of dangers, dark and awful,
In search of pleasures all unlawful—

Is by a stupid oyster caught,
And made the prey of him he sought.
Ye cunning human rats, beware—
Unlawful pleasures should you dare
To seek along the shores of sin—
Lest some huge oyster pulls you in!

You doubt, and think me a reviler?
Well, sirs, ask HUNTINGTON and SCHUYLER.



JERUSALEM.

THIS, in many respects, is the most remarkable city in the world. It is older than Rome, and has been the scene of more astonishing events than Athens or Constantinople, or even Nineveh and Babylon. It was the city of DAVID and SOLOMON : here CHRIST preached, and here he was crucified ; here Christianity had its beginning, and from this city its apostles went forth to Christianize the world : here were the dreadful massacres of TITUS and the Crusaders. Jerusalem is at once the hope and the humiliation of the Jews : it is the Holy City of the Christians of all lands, and was formerly the proud capital of a great people : it is now a miserable and squalid town, whose whole importance lies in its relics of the past, and its associations with men and things which have passed away.

What a strange contrast does this place, known to history for

three thousand years, present, to the cities of America—New York, Boston, Philadelphia, Baltimore—counting twenty or thirty times its present population, yet comprising hardly two centuries from the very beginning of their history! What a difference! and yet DAVID and SOLOMON are likely to be remembered, when all the present inhabitants of our great cities are consigned to oblivion. A brief historical notice of this extraordinary place, cannot fail to interest the reader.

In the time of King DAVID, it appears that the Jebusites had a considerable town and fortress, upon Mount Zion, named Jebus; it was built upon a rocky and barren foundation, but possessed many natural advantages for defence, and had also numerous springs and rivulets around it, as well as places of great fertility in the vicinity. In earlier ages it was said to have been the royal residence of MELCHIZEDEC, and to have had the title of Salem. JOAB, DAVID'S chief commander, captured this city, 1046 B. C., and here, on Mount Zion, DAVID established the metropolis of his kingdom. Thus, he is generally regarded as the true founder of Jerusalem.

Through the reigns of DAVID and SOLOMON, this city was the capital of the whole Jewish kingdom, and continued to increase in wealth and splendor. It was resorted to, at the festivals, by the whole population of the country; and the power and commercial spirit of SOLOMON, improving the advantages acquired by his father DAVID, centered in it most of the eastern trade, both by sea, through the ports of Elath and Ezion-Geber, and overland, by the way of Tadmor and Palmyra. Or, at least, though Jerusalem might not have been made a general depôt of merchandize, the quantity of precious metals flowing into it by direct importation, and by duties imposed on goods passing to the ports of the Mediterranean, and in other directions, was unbounded.

Some idea of the prodigious wealth of Jerusalem at this time, may be formed, by stating that the quantity of gold left by DAVID for the use of the Temple, amounted to twenty-one million six hundred thousand pounds sterling, beside three million one

hundred and fifty thousand pounds in silver ; and SOLOMON obtained three million two hundred and forty thousand pounds in gold, by one voyage to Ophir ; while silver was so abundant " that it was not any thing accounted of." These were the days of Jerusalem's glory. Universal peace, unmeasured wealth, the wisdom and clemency of the prince, and the worship of the true God, marked Jerusalem above every city, as enjoying the presence and the especial favor of the Almighty.

But these days were not to continue. Intestine divisions and foreign wars, wicked and tyrannical princes, and last of all, the crime of idolatry, most offensive to Heaven, and the one least to be expected amongst so favored a people, led to a series of calamities, through the long period of nine hundred years, with which no other city or nation can furnish a parallel. After the death of SOLOMON, ten of the twelve tribes revolted from his successor REHOBOAM, and under JEROBOAM, the son of NEBAT, established a separate kingdom ; so that Jerusalem, no longer the capital of the whole empire, and its Temple frequented only by the tribes of JUDAH and BENJAMIN, must have experienced a mournful declension.

Four years after, the city and Temple were taken and plundered by SHISHAK, king of Egypt. One hundred and forty-five years after, under AMAZIAH, they sustained the same fate from JOASH, king of Israel. One hundred and sixty years from this period, the city was again taken by ESARHADDON, king of Assyria, and MANASSEH, the king, was carried a prisoner to Babylon. Within the space of sixty-six years more, it was taken by PHARAOH-NECHO, king of Egypt, whom JOSIAH, king of Judah, had opposed in his expedition to Carchemish. In a battle with the Egyptians at Megiddo, JOSIAH was killed, and his son ELIAKIM was placed on the throne in his stead by NECHO, who changed his name to JEHOIAKIM, and imposed a heavy tribute upon him, having sent his elder brother, JEHOAHAZ, who had been proclaimed king at Jerusalem, a prisoner to Egypt, where he died.

Jerusalem was three times besieged and taken by NEBUCHAD-

NEZZAR, king of Babylon, within a very few years; the first, in the reign of the last-mentioned king, JEHOIAKIM, who was sent a prisoner to Babylon, and the vessels of the Temple transported to the same city; the second, in that of his son JEHOIACHIN, when all the treasures of the palace and the Temple, and the remainder of the vessels of the latter which had been hidden or spared in the recent capture, were carried away or destroyed, and the best of the inhabitants, with the king, led into captivity. The third took place in the reign of ZEDEKIAH, the successor of JEHOIACHIN, in whose ninth year, the most formidable siege which this ill-fated city ever sustained, except that of TITUS, was commenced. It continued two years, during a greater part of which the inhabitants suffered all the horrors of famine; when, on the ninth day of the fourth month, in the eleventh year of ZEDEKIAH, which answers to July, in the year B. C. 588, the garrison, with the king, endeavored to make their escape from the city, but were pursued and defeated by the Chaldeans, in the plains of Jericho. ZEDEKIAH was taken prisoner, and his sons killed before his face at Riblah. After his eyes were put out, he was himself bound with fetters of brass and carried prisoner to Babylon, where he died; thus fulfilling the prophecy of EZEKIEL, which declared that he should be carried to Babylon, but should not see the place, though he should die there. In the following month, the Chaldean army, under their general NEBUZARADAN, entered the city, took away every thing that was valuable, and then burned and utterly destroyed it, with its Temple and walls, and left the whole razed to the ground. The entire population of the city and country, with the exception of a few husbandmen, were then carried captive to Babylon.

During seventy years, the city and Temple lay in ruins; when those Jews who chose to take immediate advantage of the proclamation of CYRUS, under the conduct of ZERUBBABEL, returned to Jerusalem, and began to build the Temple; all the vessels of gold and silver belonging to which, that had been taken away by NEBUCHADNEZZAR, being restored by CYRUS. Their

work, however, did not proceed far without opposition ; for in the reign of CAMBYSES, the son of CYRUS, who in Scripture is called AHASUERUS, the Samaritans presented a petition to that monarch to put a stop to the building. CAMBYSES appears to have been too busily engaged in his Egyptian expedition, to pay any attention to this malicious request. His successor, SMERDIS, the Magian, who in Scripture is called ARTAXERXES, to whom a similar petition was sent, representing the Jews as a factious and dangerous people, listened to it, and, in the true spirit of a usurper, issued a decree putting a stop to the further building of the Temple ; which, in consequence, remained in an unfinished state till the second year, according to the Jewish, and third, according to the Babylonian and Persian account, of DARIUS HYSTASPES, who is called simply DARIUS, in Scripture.

To him, also, a representation hostile to the Jews was made, by their inveterate enemies, the Samaritans ; but this noble prince refused to listen to it, and having searched the rolls of the kingdom, and found in the palace at Achmetha the decree of CYRUS, issued a similar one, which reached Jerusalem in the subsequent year, and even ordered the Samaritans to assist the Jews in their work ; so that it was completed in the sixth year of the same reign. But the city and walls remained in a ruinous condition until the twentieth year of ARTAXERXES LONGIMANUS, the ARTAXERXES of profane history ; by whom NEHEMIAH was sent to Jerusalem, with a power granted to him to rebuild them.

Accordingly, under the direction of this zealous servant of God, the walls were speedily raised ; but not without the accustomed opposition on the part of the Samaritans, who, despairing of the success of an application to the court of Persia, openly attacked the Jews with arms. But the building, notwithstanding, went steadily on, the men working with an implement of labor in one hand, and a weapon of war in the other. The wall, with incredible labor, was finished in fifty-two days, 445 B. C. After this, the city itself was gradually rebuilt. From this time, Jerusalem remained attached to the Persian empire, but under

the local jurisdiction of the high-priests, until the subversion of the empire by ALEXANDER, about 330 B. C.

This conqueror, who appeared like a meteor suddenly crossing the heavens and startling all mankind, at last approached Judea. After a siege of some months, Tyre had been captured, eight thousand of the citizens falling in the conflict, and thirty thousand being sold into slavery. Gaza, too, had been taken, after a siege of two months. The Jews had refused to supply the invader with money, and now he marched upon Jerusalem to punish the people for their disobedience. The authorities seem to have adopted a measure of deep policy, and accordingly the high-priest, JADDUS, went forth to meet the conqueror, attended by a vast retinue of priests and people, bearing the imposing signs and symbols of the Jewish religion. ALEXANDER seems to have been profoundly affected by the spectacle: he not only pardoned the authorities, but he reverently entered the Temple, and assisted in the sacrifices conducted by JADDUS.

At the death of ALEXANDER and the partition of his kingdom by his generals, Jerusalem, with Judea, fell to the Syrian monarchs. But, in the frequent wars which followed between the kings of Syria and those of Egypt, called by DANIEL the Kings of the North and South, it belonged sometimes to one, and sometimes to the other; an unsettled and unhappy state, resulting in general disorder and corruption. The high-priesthood was openly sold to the highest bidder, and numbers of Jews deserted their religion for the idolatries of the Greeks.

At length, in the year 170 B. C., ANTIOCHUS EPIPHANES, king of Syria, enraged at hearing that the Jews had rejoiced at a false report of his death, plundered Jerusalem, and killed eighty thousand men. Not more than two years afterwards, this cruel tyrant, who had seized every opportunity to exercise his barbarity on the Jews, sent APOLLONIUS with an army to Jerusalem, who pulled down the walls, grievously oppressed the people, and built a citadel on a rock adjoining the Temple, which commanded that building, and had the effect of completely overawing the seditious inhabitants.

Having thus reduced this unfortunate city into entire submission, and rendered resistance useless, the next step of ANTIOCHUS was to abolish the Jewish religion altogether, by publishing an edict which commanded all the people of his dominions to conform to the religion of the Greeks; in consequence of which the service of the Temple ceased, and a statue of Jupiter Olympus was set up on its altar. But this extremity of ignominy and oppression led, as might have been expected, to rebellion; and those Jews who still held their insulted religion in reverence, fled to the mountains with MATTATHIAS and JUDAS MACCABÆUS; the latter of whom, after the death of MATTATHIAS, with his followers and successors, being known by the name of Maccabees, waged successful war with the Syrians; defeated APOLLONIUS, NICANOR, and LYSIAS, generals of ANTIOCHUS; obtained possession of Jerusalem, purified the Temple, and restored the service after three years' defilement by the Gentile idolatries.

From this time, under several succeeding Maccabæan rulers, who were at once high-priests and sovereigns of the Jews, but without the title of king, Jerusalem was able to preserve itself from Syrian violence. It was, however, twice besieged; first by ANTIOCHUS EUPATOR, in the year 163 B. C., and afterwards by ANTIOCHUS SIDETES, in the year 134 B. C. But the Jews had caused themselves to be sufficiently respected to obtain conditions of peace on both occasions, and to save their city; till, at length, HYRCANUS, in the year 130 B. C., shook off the Syrian yoke, and reigned after this event twenty-one years in independence and prosperity.

His successor, JUDAS, made an important change in the Jewish government, by taking the title of king; which dignity was enjoyed by his successors forty-seven years, when a dispute having arisen between HYRCANUS II. and his brother ARISTOBULUS, and the latter having overcome the former and made himself king, was in his turn conquered by the Romans, under POMPEY, by whom the city and temple were taken, ARISTOBULUS made prisoner, and HYRCANUS created high-priest and prince of the Jews, but

without the title of king. By this event, Judea was reduced to the condition of a Roman province, in the year 63 B. C. Nor did Jerusalem long after enjoy the dignity of a metropolis, that honor being transferred to Cæsarea. JULIUS CÆSAR, having defeated POMPEY, continued HYRCANUS in the high-priesthood, but bestowed the government of Judea upon ANTIPATER, an Idumean by birth, but a Jewish proselyte, and father of HEROD THE GREAT.

The capture and destruction of Jerusalem by TITUS, the Roman general, A. D. 70, is one of the most terrible events in the history of this wonderful city. For several years, the Jews had been in a state of revolt, and some of the most bloody conflicts in the history of human warfare had taken place between them and their rulers. VESPASIAN had commanded the Roman army; but having been declared emperor, he went to Rome, and sent his son TITUS to complete the subjugation of Jerusalem, that place having been invested for some time.

Notwithstanding their peril from foreign foes, the Jews within the city were divided into factions, who seemed to hate each other even more cordially than their besiegers. TITUS now caused his troops to level all the ground, in their approach to the walls, and to make every preparation for a vigorous onset. Some proposals of peace were sent to the besieged, but they were rejected with indignation, and the Romans were consequently ordered to play their war engines against the city with all their energy. The Jews were compelled to retire from those dreadful stones which the enemy threw incessantly, and the battering-rams were at full liberty to ply against the walls. A breach, at length, was made, and the besieged were compelled to retire behind the enclosure. This lodgement was effected about a fortnight after the beginning of the siege.

The second wall was then immediately attempted, and the engines and battering-rams were applied so furiously that one of the towers began to shake. The Jews who occupied it, aware of their impending ruin, set it on fire, and precipitated themselves

into the flames. The fall of this structure afforded an entrance to the second enclosure ; but, as TITUS was desirous of preserving the city from demolition, the breach and the passages were left so narrow that a great number of his men perished for want of room when they were attacked by SIMON, the Jewish leader. TITUS, however, quickly rectified this mistake, and carried the place four days after the first repulse, entering that part of the lower city which was within the wall.

A famine now raged in this afflicted place, and a pestilence followed in its track. As these calamities increased, so did the cruelty of the factions, who forced the houses in quest of provisions, punishing those with death upon whom they found any, because they had not apprised these robbers of it ; they put others to the most excruciating tortures, under the pretence that they had concealed food. TITUS again attempted to prevail on the Jews to surrender, by sending JOSEPHUS to represent the fatal consequences of their obstinacy, but without effect. He then caused the city to be surrounded by a high wall, to prevent their reception of any kind of succor, or their escape by flight.

Nothing was now to be seen in the streets of Jerusalem but putrescent bodies, emaciated invalids, and objects of the deepest distress ; even those who escaped in safety to the Roman camp were frequently murdered by the soldiers, who inferred, from certain circumstances, that they had swallowed quantities of gold. In searching for this, two thousand of them were ripped up in a single night. While the military operations against the city were making progress, the famine within still grew more and more terrible.

In the language of the historian, " Men would fight even their dearest friends for the most miserable morsel. The very dead were searched, as though they might contain some scrap of food. The robbers themselves began to suffer severely ; they went prowling about like mad dogs, or reeling, like drunken men, from weakness, and entered and searched the same house twice or thrice in the same hour. The most loathsome and disgusting food was sold at

an enormous rate. They gnawed their belts, shoes, and even the leathern coats of their shields; chopped hay and shoots of trees sold at high prices. Yet what are all these horrors to that which followed? There was a woman of Perea, MARY, the daughter of ELEAZAR. She possessed considerable wealth when she took refuge in the city. Day after day she had been plundered by the robbers, whom she had provoked by her bitter imprecations. No one, however, would mercifully put an end to her misery, and, her mind maddened with wrong, her body preyed upon by famine, she wildly resolved on an expedient which might gratify at once her vengeance and her hunger. She had an infant that was vainly endeavoring to obtain some moisture from her dry bosom; she seized it, cooked it, ate one half, and set the other aside!

"The smoke and the smell of food, quickly reached the robbers. They forced her door, and, with horrible threats, commanded her to give up what she had been feasting on. She replied, with fierce indifference, that she had carefully reserved for her good friends a part of her meal. She uncovered the remains of her child! The savage men stood speechless; at which she cried out with a shrill voice, 'Eat, for I have eaten; be ye not more delicate than a woman, more tender hearted than a mother.' They retired, pale and trembling with horror. The story spread rapidly through the city, and reached the Roman camp, where it was first listened to with incredulity, afterwards with the deepest commiseration." It was upon hearing of this dreadful deed, that the Roman general swore to extirpate both city and people, at the same time taking Heaven to witness that this was not his work.

Towards the end of summer, the Romans had made themselves masters of Fort Antonia, and set fire to the gates, after a destructive encounter; yet, so blind were the Jews to their real danger, that, though nothing was left but the Temple, which must soon fall, they could not persuade themselves that God would permit his holy habitation to be taken by the heathen.

On the 17th of July, the daily sacrifice ceased for the first time since its restoration by JUDAS MACCABEUS, there being no proper

person left in the Temple to make the offering. The gallery that afforded a communication between the Temple and Fort Antonia was now burned down, and the Jews, having filled the western portico with combustibles, induced the Romans, by a feigned flight, to scale the battlements, and set fire to the building; so that the troops were either consumed in the flames, or dashed to pieces by leaping from the roof. Contrary to the intentions and orders of TIRUS, who wished to preserve the Temple, one of his soldiers set that noble edifice on fire. Efforts were made to extinguish it, but in vain. With a view to save what he could of its contents, the commander entered the Sanctuary, and the Most Holy Place, where he found the golden candlestick, the table of show-bread, the golden altar of perfumes, and the book of the law, wrapped up in a rich tissue of gold.

A dreadful slaughter now ensued, in which many thousands perished; some by the sword, some by the flame, and others by falling from the battlements. The conquerors, exasperated by the useless obstinacy of the people, carried their fury to such a height as to massacre all whom they met, without distinction of age, sex, or quality, and even to inflict the dreadful torture of crucifixion on many wretches who fell into their hands. All the treasure-houses of the Temple were burned, though they were full of the richest furniture, vestments, plate, and other valuables. In short, they persisted in their barbarous work, till the whole of the holy building was utterly demolished, except two of the gates of that part of the court which was appropriated to the women. Great preparations were made, in the mean time, for attacking the upper city, and the royal palace; and, on the 8th of September, the engines played so furiously on the iniquitous zealots, that they were overwhelmed with confusion, and ran, like lunatics, towards Shiloah, intending to attack the wall of circumvallation, and by that means effect their escape. They were, however, repulsed by the enemy, and compelled to hide themselves in the public sinks and sewers, while all the other inhabitants were put to the sword, except some of the most vigorous, who were reserved for

the victor's triumph. Among the latter were JOHN and SIMON, the two most desperate rebels.

When the slaughter had ceased for want of subjects, and the troops were satisfied with plunder, TITUS gave orders for the total demolition of the remaining parts of the city, with its fortifications, palaces, towers, and sumptuous edifices, excepting a part of the western wall, and the three towers of Hippicus, Phasael, and Mariamne, which might prove to future times the astonishing strength of the city, and the valor of its conqueror.

During the whole siege, the number killed was one million one hundred thousand; that of the prisoners taken, ninety-seven thousand. In truth, the population, not of Jerusalem alone, but of the adjacent districts—many who had taken refuge in the city, and more who had assembled for the feast of unleavened bread—had been shut up by the sudden formation of the siege. If the numbers in JOSEPHUS may be relied on, there must be added to this fearful list, in the contest with Rome, nearly one hundred and thirty thousand slain before the war under VESPASIAN, one hundred and eighteen thousand during the war in Galilee and Judea, and, after the fall of Jerusalem, nearly nine thousand in other parts of the country. The prisoners, who, in the whole of these wars, amounted to over one hundred thousand, were doomed to be exposed in public, to fight like gladiators, or be devoured by wild beasts; twelve thousand perished from want, either through the neglect of their keepers, or their own sullen despair. These items swell the number of victims of the war to more than a million and a half of souls.

After this dreadful blow, Jerusalem lay in a ruinous condition about forty-seven years, when the emperor ÆLIUS ADRIAN began to build it anew, and erected there a heathen temple, which he dedicated to Jupiter Capitolinus. In this state Jerusalem continued, under the name of Ælia, and inhabited more by Christians and Pagans than by Jews, till the time of the emperor CONSTANTINE, styled the Great; who, about the year 323 A. D., having made Christianity the religion of the empire, began to improve it,

adorned it with many new edifices and churches, and restored its ancient name. About thirty-five years afterwards, JULIAN, named the Apostate, not from any love he bore the Jews, but out of hatred to the Christians, whose faith he had abjured, and with the avowed design of defeating the prophecies, which had declared that the Temple should not be rebuilt, wrote to the Jews inviting them to their city, and promising to restore their Temple and nation. He accordingly employed great numbers of workmen to clear the foundations; but balls of fire bursting from the earth, soon put a stop to their proceedings. This, which was deemed a miraculous interposition of Providence, is attested by many credible witnesses and historians, and in particular by AMMIANUS MARCELLINUS, a heathen, and friend of JULIAN; ZEMUCH DAVID, a Jew; NAZIANZEN, CHRYSOSTOM, AMBROSE, RUFFINUS, THEODORET, SOZOMEN, and SOCRATES, who wrote his account within five years after the transaction, and while many eye-witnesses of it were still living. So stubborn-indeed, is the proof of this alleged miracle, that even GIBBON, who strives to invalidate it, is obliged to acknowledge the fact.

Jerusalem continued nearly in the same condition till the beginning of the seventh century, when it was taken and plundered by the celebrated CHOSROES, king of Persia, by whom many thousands of the Christian inhabitants were killed, or sold as slaves. The Persians, however, did not hold it long, as they were soon after entirely defeated by the emperor HERACLIUS, who rescued Jerusalem, and restored it, not to the unhappy Jews, who were forbidden to come within three miles of it, but to the Christians. A worse calamity was, however, speedily to befall this ill-fated city. The Mahomedan imposture arose about this time; and the fanatics who had adopted its creed, carried their arms and their religion with unprecedented rapidity over the greater part of the East. The caliph Omar, the third from Mohammed, invested the city, which, after once more suffering the horrors of a protracted siege, surrendered on terms of capitulation in the year 637; and has ever since, with the exception of the short

period it was occupied by the crusaders, been trodden under foot by the followers of the false prophet.

Never before nor since, have such scenes been witnessed upon the earth, as those of the crusades, which had for their object the delivery of Jerusalem from the infidels. A sudden impulse arose in Europe, which precipitated upon Asia several armies, consisting of hundreds of thousands of men, led on by the ablest kings and princes of Christendom, and all were wasted away, either on the march or in conflict with the Mahomedans in Palestine. Once only, and for a brief space, did the Christians succeed in their object. In 1099, the crusaders, having the year before taken Nice and Antioch, laid siege to Jerusalem, and carried it by assault, with a prodigious slaughter of the garrison and inhabitants, which was continued for three days, without respect either to age or sex, thus showing that the mercy of the followers of the cross was no better than that of the followers of the crescent. Eight days after, the Latin chiefs elected the renowned GODFREY OF BOUILLON, to preside over their conquests in Palestine. In a fortnight, he was called out to defend his capital against the powerful army of the sultan of Egypt, and overthrew him at the battle of Ascalon. The four cities of Hems, Hamah, Damascus and Aleppo were soon the only relics of the Mahomedan conquests in Syria. The feudal institutions of Europe were introduced into this kingdom in all their purity, and a code of laws established.

The defeat and dispersion of the armies of the second crusade tended greatly to weaken the Christian cause in the Holy Land, and shake the foundations of the new kingdom of Jerusalem. Treason and dissension also contributed to its overthrow. In the midst of these, Sultan SALADIN, a prince uniting refined humanity to valor, policy, and military skill, assailed the kingdom. His complaints of the pillage of the caravans of pilgrims being unheeded, he invaded Palestine with eighty thousand horse and foot. In a decisive battle at the siege of Tiberias, the Christians were completely overthrown, with the loss of thirty thousand men. Fol-

lowing up his victory, Jerusalem was taken by the sultan after a siege of fourteen days ; and the Latin kingdom, though, for a time, sustaining itself on the coast, and even regaining Jerusalem, was at last put an end to in the capture of Acre by the Mamelukes, about 1290. Palestine continued under Egypt, with two short exceptions, till it fell under the Turks, who have held it for the last three hundred years.

Jerusalem at present is but the shadow of what it was in ancient times. It is now a town not far from three miles in circumference, situated on a rocky elevation, surrounded on all sides, except the north, with a steep ascent and deep valleys, and then again environed with other hills at some distance from these. The soil is, for the most part, stony, yet affords corn, wine, and oil, where cultivated. The houses are built with flint stones, one story high. The tops of the dwellings are flat and plastered, having battlements a yard high. In the daytime, the people screen themselves from the sun under the roof ; in the night, they walk, eat, and sleep on it. The number of inhabitants is about 12,000, consisting of Mahomedans, four thousand five hundred ; Jews, three thousand ; Christians, three thousand five hundred. To these are to be added, for the convents and garrison, about five hundred more, making in all, eleven thousand five hundred. Surely the glory of Jerusalem is departed, sunk as she is into the neglected capital of a petty Turkish province !

Some streets seem to consist of ruins rather than dwelling-houses. Within the walls, large places lie desolate, covered with stones and earth. In digging for the foundations of the English church, on Zion, forty feet of rubbish and ruins were penetrated. The gardens are badly managed, being surrounded with low walls of mud, which are constantly washing down, and requiring new repairs. The citizens are tailors, cooks, smiths, or shoemakers—a destitute, immoral race, the refuse of different nations.

Jerusalem is surrounded with high walls of hewn stone, flanked with towers. Several of the mosques are splendid structures of great size, and adorned with numerous columns and domes. The



THE SHRINE OF THE CHURCH OF THE HOLY SEPULCHRE.

most magnificent edifice in Jerusalem is called the Mosque of Omar, which consists, in fact, of a collection of mosques and chapels, environed with a vast enclosure. It is upon the site of the ancient Temple. One of the chapels, called the Rock, is an octagon of one hundred and sixty feet in diameter, rising from a platform four hundred and sixty feet long by three hundred and thirty-nine broad, with a marble pavement, raised sixteen feet; its interior is decorated with great splendor, and is always illuminated with thousands of lamps.

Several Christian edifices adorn the holy city. Among these, are the Church of the Holy Sepulchre, said to be built upon the spot where the body of Jesus was entombed; the Catholic convent of St. Savior, in the church of which are gold and silver vessels and ornaments valued at nearly two million dollars; and the Armenian convent, with more than eight hundred cells for

the accommodation of pilgrims, many thousands of whom visit this spot every year.

We close this sketch with a brief extract from a traveler, who visited Jerusalem in March, 1857, and who therefore furnishes the most recent intelligence from this desolate but renowned place.

“The city seems to be built on a slope, and not crowning the mountains, so often spoken of in the Psalms and elsewhere. The only really fine and impressive view is from the Mount of Olives. From Ramleh we came up with some hundreds of pilgrims, who are flocking hither from all quarters in numbers heretofore unparalleled. It is estimated that there will be more than 15,000, and that there are now about 8,000 in the city. A more rag-tag, desperate, ill-looking set of vagabonds I never saw; most of those now here are Armenians and Greeks from the Ionian Islands; and, though they have great need of the wash in the Jordan to remove the outward impurities, I fear it will have little effect upon the inward man, and should be very sorry, unarmed, to meet any of them among their own hills.

“Jerusalem, consequently, is crowded to overflowing; the streets are thronged, and numbers of noisy miscreants are to be met with at all hours, in places to which one would desire to go alone; thus taking away the feeling with which one naturally expects to be filled amidst scenes made sacred by the life and death of the Redeemer. Every spot, too, with which history or tradition can, by any possibility, or impossibility, connect an incident in the life, teachings or death of Christ or the Virgin Mary, is covered by a chapel or church, and one cannot visit it without witnessing the mummeries of Greek or Roman Catholicism, with their tawdry trappings and bare-faced impositions. The Mount of Calvary and the reported place of the Sepulchre are covered by a large and very fine building, called the Church of the Holy Sepulchre. The spot where the body was washed is marked by a marble slab; the holes in the rock where the cross of Christ and those of the thieves stood, are marked by a broad ring of gold

or brass, as is also the rent in the mountains ; at the place where he was scourged, is an altar ; and in the sepulchre where he was laid is a marble sarcophagus, with lights constantly burning around it and a priest in attendance. At all these places, the pilgrims repeat aves, and bending on their knees, kiss them ; some few with an outward appearance of feeling, but most with careless levity and indifference, often laughing and joking. The same is the case with the tomb of the Virgin Mary, where, during the time that it is open, mass is constantly said.

“ The only place about Jerusalem at present, possessing any degree of seclusion, is Gethsemane, and even that is often crowded. For the city itself, it has no beauty ; the streets are all narrow and filthy to a degree beyond belief, often making the air intolerable.”



THE ANT-EATER.

SOUTH AMERICA can boast of some of the most curious animals in the whole range of zoölogy. Among them are the tapirs, the armadillos, and the ant-eaters. The latter, of which there are several species, may be considered as the very oddest creature in existence, seeming to combine in grotesque proportions, something of the bear, the sloth, the racoon, and the skunk. We shall give a brief account of the Great Ant-eater, which stands as the head and representative of the family, and whose portrait is herewith presented.

This is, in fact, a large animal. The head, from the point of the snout to the ears, is about thirteen inches long ; thence to the insertion of the tail, nearly three feet and a half, and the tail nearly two feet and a half in the solid, and a foot more to the

points of the hair. The whole length is thus about eight feet. The height is about three feet three at the shoulder, but half a foot less at the croup. The hair, excepting on the head, where it is short and close, is shaggy and dry, like that of the sloths.

The mouth, which is a long, toothless tube, is small, and the tongue slender, but remarkable for its length. It is in the form of a worm. When in repose, it folds back within the mouth; but it is protrusile to the length of at least eighteen inches beyond the snout; and the celerity with which it can be protruded and retracted, forms a remarkable contrast with the sluggish motions of the animal. This celerity of motion in the tongue is, however, just as necessary for a large animal which feeds on such small insects as ants, as swifter progressive motion would be unnecessary. The tongue is covered by a viscid secretion, by which the ants are captured; as it is laid over them, they are rubbed off against the palate when the tongue is doubled back into the mouth.

In order to understand how the parts of this singular organization work together, we must suppose that the animal has arrived at the side of an ant-hill, or rather burrow of social insects, and that he is hungry, and inclined to feed. There is every reason to believe that his sense of smell is acute, as is generally the case with long-snouted animals, and that in obtaining food, he is fully as much guided by that, as by the sight of his small eyes. Well, he arrives at the ant-hill, his broad hind feet forming a firm base, and his long tail balancing him on those feet as on a pivot. The fore foot is then extended to its utmost stretch, but in its general position, and with the claws curving a little backward.

In this species, the claws on the fore feet are four in number; the first and fourth smaller, but the second, two inches, and the third, two inches and a half in length, strong in proportion, and grooved on their posterior surfaces. The stroke of the foot plunges these into the ant-hill up to the roots, and the animal pulls the foot home, tearing a rugged furrow in the insect domain. The ants, as is their habit, instantly come to the breach in numbers; and while they are in agitation there, the tongue is pro-

truded over them, and withdrawn at the rate of about twice in a second; many dozens being captured at each time. When the first breach is cleared, others are made in the same way.

But though the animal subsists in this manner, it is said never to get fat, notwithstanding its indolence at those times when it is not feeding. It is capable, however, of enduring great privation in the way of food, which might be inferred from its sluggish habits. The position of repose is that of partially rolling itself into a ball, with the snout doubled on the breast, the legs brought together, the long and bushy tail covering the outer part, and the whole animal having something the appearance of a bunch of withered grass. Probably much of its defence from enemies depends on this position, in which it spends the greater portion of its time.

Great ant-eaters are pretty generally distributed over all the warmer parts of South America, but they are not numerous in any one locality. The low and swampy grounds, by the sides of streams and pools, or in the forests, are his favorite haunts, though he never either climbs in the woods, or swims in the water. He is wholly a ground animal, but a surface one, and not a burrower.

These are slow breeding animals. The female has only one at a birth: she carries it on her back, and tends and nurses it for more than a year. They are remarkably quiet and harmless, living and feeding among the ant-hills, and, not, so far as is known, offering or doing harm to any other creature. So retired are they, indeed, that they are considered as rare, even in their own native forests. The Indians and negroes eat the flesh of this species, which is not unpalatable; but, as is the case with several others of the ground animals, it has a rank, musky flavor, which is rather offensive to Europeans.

The species, now noticed, is the only one of the genus which is literally an "ant-eater," and a dweller exclusively upon the ground; the remaining species, though they resemble it in having no teeth, have many of their characters so different, that each of them might, perhaps, be made a separate genus.



THE BEES AT HOME.



IF we were called upon to select the insect which combines in the highest degree, the wonderful and the useful, we should no doubt choose the Honey-bee. A careful examination of the habits of this little creature, in its social capacity, has exhibited instincts which approach nearer to the results of reason and reflection, than any thing within our knowledge. To the bee we are also indebted for two valuable staples of commerce—honey and wax. Since the introduction of sugar, honey has become less an article of general use, and more one of luxury; but wax is still extensively consumed throughout the civilized



world, being in fact a necessity in the arts and in domestic life.

Honey is collected from flowers, is swallowed by the bees, and afterwards regurgitated. The bee, laden with honey, returns to the hive, enters a cell, pierces a hole in the crust on the surface of the honey already therein, disgorge the honey in large drops from its mouth, new models the crust, and closes up the hole: this mode of proceeding is regularly adopted by every bee that contributes to the general store. Wax is secreted,

as occasion may require, from small sacs situated between the segments of the body of the bee, on the under side; it is used for constructing the combs in which the family provision of honey and the young brood are deposited. The wax of commerce is produced by melting down these combs.

A bee-hive contains three kinds of individuals—a queen, drones, and workers: the queen is a female, and not only the ruler, but, in great part, the mother of the community; the drones are males, and the workers are abortive females. The sole office of the queen appears to be the laying of eggs, and this occupies her almost incessantly, as a single one only is deposited in each cell, thus causing her to be in continual motion; she is slow and majestic in her movements, and differs from the workers in being larger, having a longer body, shorter wings, and a curved sting. The queen is accompanied by a guard of twelve workers, an office which is taken in turns, but never intermitted: in whatever direction she wishes to travel, these guards clear the way before her, always with the utmost courtesy turning their faces towards her, and when she rests from her labors, approaching her with humility, licking her face, mouth, and eyes, and fondling her with their antennæ.

The drones are all males; they are smaller than the queen, but larger than the workers; they live on the honey of flowers, but bring none home, and are wholly useless, except as being the fathers of the future progeny: when this office is accomplished, they are destroyed by the workers. A buzzing commences in the hive; the drones and the workers sally forth together, grapple each other in the air, and hug and scuffle for a minute, during which operation the stings of the workers are plunged into the sides of the drones, who, overpowered by the poison, almost instantly die.

The workers are the smallest bees in the hive, and by far the most numerous; they have a longer lip for sucking honey than either of the others; their thighs are furnished with a brush for the reception of the pollen of flowers, and their sting is straight.

The workers do the entire labor of the community : they build the cells, guard the hive and the queen, collect and store the honey, elaborate the wax, feed the young, kill the drones, etc. The average number of these three kinds of bees in a hive, is one queen, 2,000 drones, and 20,000 workers. The eggs are long, slightly curved, and of a bluish color ; when laid, they are covered with a glutinous matter, which instantly dries, attaching them to the bottom of the cell.

For eleven months the queen lays only workers' eggs ; afterwards, those which produce drones. As soon as this change has commenced, the workers begin to construct royal cells, in which, without discontinuing to lay the drones' eggs, the queen deposits here and there, about once in three days, an egg which is destined to produce a queen. The workers' eggs hatch in a few days, and produce little white maggots, which immediately open their mouths to be fed ; these the workers attend to with untiring assiduity. In six days, each maggot fills up its cell ; it is then roofed in by the workers, spins a silken cocoon, and becomes a chrysalis ; on the twenty-first day, it becomes a perfect bee. The drones emerge on the twenty-fifth day, and the queens on the sixteenth.

It has been already stated, that the queen, for nearly a year, lays no eggs that are destined to produce queens ; it therefore follows, that if any evil befall her, the hive is left without a queen. It sometimes happens that she dies, or is taken away by the owner of the hive, to observe the result. For twelve hours little notice is taken of the loss ; it appears not to be known, and the workers labor as usual : after that period, a hubbub commences ; work is abandoned ; the whole hive is in an uproar ; every bee traverses the hive at random, and with the most evident want of purpose. This state of anarchy sometimes continues for two days ; then the bees gather in clusters of a dozen or so, as though engaged in consultation, the result of which seems to be a final resolution to supply the loss. A few of the workers repair to the cells in which are deposited the eggs of workers ; three of these cells

are quickly broken into one, the edges polished and the sides smoothed and rounded, a single egg being allowed to remain at the bottom.

When this egg hatches, the maggot is fed with a peculiarly nutritive food called royal bee-bread, which is never given to any maggots but such as are to produce queens; work is now resumed over the whole hive, and goes on as briskly as before. On the sixteenth day the egg produces a queen, whose appearance is hailed with every demonstration of delight, and who at once assumes sovereignty over the hive. When, under ordinary circumstances, a young queen emerges from the chrysalis, the old one frequently quits the hive, heading the first swarm for the season, and flying to some neighboring resting-place, is observed by the owner, captured, placed under a new hive, and a new colony is immediately commenced.

Before a swarm leaves the hive, sure indications are given of the intended movement: the workers leave their various occupations and collect in groups, especially near the door of the hive, as though in consultation on the important event about to take place.

As the summer advances, many queens are hatched; but the workers do not allow them instant liberty, as severe battles would take place between them and the reigning queen, in which one would be killed: the workers, therefore, make a small hole in the ceiling of each royal cell, through which the captive queen thrusts her tongue and receives food from the workers. In this state of confinement the young queen utters a low querulous note, which has been compared to singing. When the reigning or a newly-created queen finds one of these captives, she uses every effort to tear open the cell, and destroy her rival: to prevent this the workers often interpose, pulling her away by the legs and wings; to this she submits for a short time, when, uttering a peculiar cry, called her voice of sovereignty, she commands instant attention and obedience, and is at once freed from her assailants. The cocoon spun by the maggots of the workers and

drones completely envelopes the chrysalis; but that spun by the maggot of the queen appears imperfect, covering only the upper end of the chrysalis. It has been supposed that they are thus designedly exposed to the attacks of other queens, and their destruction, before emerging, facilitated. When the chrysalis of the queen is about to change to a perfect insect, the bees make the cover of the cell thinner, by gnawing away part of the wax; and with so much nicety do they perform this operation, that the cover at last becomes pellucid, owing to its extreme thinness.

The combs of a bee-hive comprise a congeries of hexagonal cells, built by the bees as a receptacle for honey, and for the nurseries of their young. Each comb in a hive is composed of two ranges of cells, backed against each other: the base or partition between this double row of cells is so disposed as to form a pyramidal cavity at the bottom of each. There is a continued series of these double combs in every well-filled hive; the spaces between them being just sufficient to allow two bees, one on the surface of each comb, to pass without touching. Each cell is hexagonal, the six sides being perfectly equal. This figure ensures the greatest possible economy of material and space; the outer edges of the cells are slightly thickened, in order to gain strength; the same part is also covered with a beautiful varnish, which is supposed to give additional strength. The construction of several combs is generally going on at the same time: no sooner is the foundation of one laid, with a few rows of cells attached to it, than a second and a third are founded on each side, parallel to the first, and so on till the hive is filled; the combs which were commenced first being always in the most advanced state, and therefore the first completed.

The design of every comb is sketched out, and the first rudiments laid, by a single bee; this foundress-bee forms a block out of a rough mass of wax, drawn partly from its own resources, but principally from those of other bees, which furnish wax from the small sacs before described, taking out the plates of wax with their hind feet, and carrying it with their fore feet to their mouths,

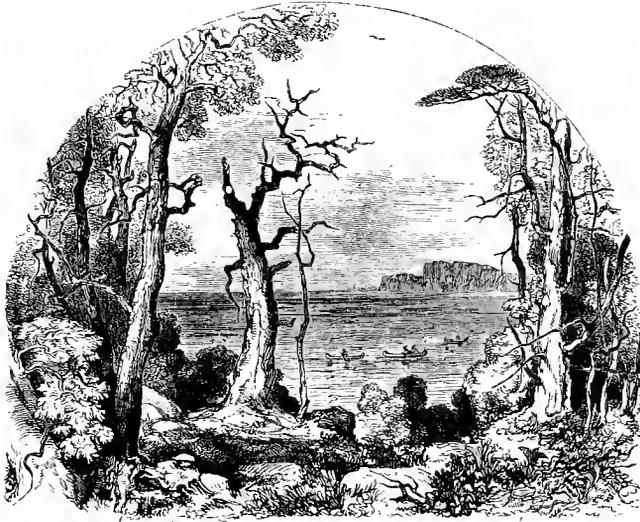
where it is moistened, masticated, and rendered soft and ductile. The foundress-bee determines the relative position of the combs and their distance from each other, the foundations which she marks serving as guides to the ulterior labors of the wax-working bees, and of those which build the cells, giving them the advantage of the margins and angles already formed.

The mass of wax prepared by the assistants, is applied by the foundress-bee to the roof or bottom of the hive, and thus a slightly double-convex mass is formed: when of sufficient size, a cell is sculptured on one side of it by the bees, who relieve one another in the labor. At the back and on each side of this first cell, two others are sketched out and excavated: by this proceeding, the foundations of two cells are laid, the line betwixt them corresponding with the center of the opposite cells. As the comb extends, the first excavations are rendered deeper and broader; and when a pyramidal base is finished, the bees build up walls from its edges, so as to complete what may be called the prismatic part of the cell. The cells intended for the drones are considerably larger and more substantial than those for the workers; and being formed subsequently, they usually appear nearer the bottom of the combs. Last of all are built the royal cells for the queens: of these there are usually three or four, sometimes ten or twelve, in a hive, attached commonly to the central part, but not unfrequently to the edge of the comb. The form of the royal cells is an oblong spheroid, tapering gradually downwards, and having the exterior full of holes; the mouth of the cell, which is always at the bottom, remains open until the maggot is ready for transformation, and it is then closed like the rest.

When a queen has emerged, the cell in which she was reared is destroyed, and its place supplied by a range of common cells; the site of this range may always be traced by that part of the comb being thicker than the rest, and forming a kind of knob. The common breeding cells of drones and workers are occasionally made the depositories of honey; but the cells are never sufficiently cleansed to preserve the honey undeteriorated. The finest honey

is stored in new cells constructed for the purpose of receiving it, their form precisely resembling that of the common breeding cells. These honey-cells vary in size, being larger or smaller according to the productiveness of the sources from which the bees are collecting, and also according to the season.

The cells formed in July and August, being intended only for honey, are larger and deeper than those formed earlier; the texture of their walls is thinner, and thus they have more dip or inclination; this dip diminishes the risk of the honey's running out, which, from the heat of the weather at this season, and its consequent thinness, it is liable to do. When the cells intended for holding the winter's provision are filled, they are always closed with waxen lids, and are never reopened till the whole of the honey in the unfilled cells is expended. The waxen lids are thus formed: the bees first construct a ring of wax within the verge of the cells, to which other rings are successively added, till the aperture of the cell is finally closed by a lid composed of concentric circles.



LEGENDS OF LAKE SUPERIOR.

THIS extraordinary sheet of water — the largest fresh water lake in the world — appears to have made a profound impression upon the minds of the early travelers along its shores. Its vastness and isolation, with the wild rocks along its borders and the wolf-haunted forests that shaded the adjacent country, excited emotions, in which sublimity was mingled with awe. In the following lines, an attempt is made to embody these associations :

“FATHER of Lakes!” thy waters bend
Beyond the eagle’s utmost view,
When, throned in heaven, he sees thee send
Back to the sky its world of blue.

Boundless and deep the forests weave
Their twilight shade thy borders o'er,
And towering cliffs, like giants, heave
Their rugged forms along thy shore.

Pale Silence, 'mid thy hollow caves,
With listening ear in sadness broods,
Or startled Echo, o'er thy waves,
Sends the hoarse wolf-notes of thy woods.

Nor can the light canoes that glide
Across thy breast, like things of air,
Chase from thy lone and level tide,
The spell of stillness deepening there.

Yet round this waste of wood and wave,
Unheard, unseen, a spirit lives,
That, breathing o'er each rock and cave,
To all, a wild, strange aspect gives.

The thunder-riven oak, that flings
Its grisly arms athwart the sky,
A sudden, startling image brings
To the lone traveler's kindled eye.

The gnarled and braided boughs, that show
Their dim forms in the forest shade,
Like wrestling serpents seem, and throw
Fantastic horrors through the glade.

The very echoes round this shore,
Have caught a strange and gibbering tone,
For they have told the war-whoop o'er,
Till the wild chorus is their own.

Wave of the wilderness, adieu!
Adieu, ye rocks, ye wilds, ye woods!
Roll on, thou element of blue,
And fill these awful solitudes!

Thou hast no tale to tell of Man—
God is thy theme. Ye sounding caves,
Whisper of Him, whose mighty plan
Deems as a bubble all your waves!

This was written some five-and-twenty years ago ; since that time, the southern shores of this isolated sea have become the haunts of civilized men, who are beginning to make the woods resound with the ax and the anvil, which a few years since echoed only with the wolf-howl and the war-whoop. But, as the aboriginal inhabitants are fading away, their history and their legends acquire an interest which they never before possessed. Thus it is, that we begin to read with attention and curiosity the Indian myths and fables, collected by Mr. SCHOOLCRAFT, and especially those of the Chippewas, who dwelt in the vicinity of Lake Superior.

As might have been anticipated, it is among the inhabitants of these cold northern regions, that we find the greatest number and the most imaginative of these legends. Here the story of PAUP-PUK-KEEWIS is made to answer the purpose of our tales of BLUE BEARD and JACK THE GIANT KILLER. The vernal equinox in the north generally takes place while the ground is covered with snow, and winter still wears a polar aspect ; storms of wind, and light drifting snow, expressively called *poudre* by the French, and *pee-wun* by the Indians, fill the atmosphere, and render it impossible to distinguish objects at a short distance. The fine powdery flakes of snow are driven into the smallest crevices of buildings and fixtures, and seem to be endowed with a subtle power of insinuation, which renders Indian joiner-work but a poor defence. It is not uncommon for the sleeper, on waking up in the morning, to find heaps of snow where he had supposed himself quite secure on lying down.

Such seasons are, almost invariably, times of scarcity and hunger with the Indians, for the light snows have buried up the traps of the hunters, and the fishermen are deterred from exercising their customary skill in decoying fish through the orifices

cut in the ice. They are often reduced to the greatest straits, and compelled to exercise their utmost ingenuity to keep their children from starving. Abstinence on the part of the elder members of the family is then regarded both as a duty and a virtue. Every effort is made to satisfy the importunity of the little ones for food, and if there be a story-teller in the lodge, he is sure to draw upon his cabin lore to amuse their minds and beguile their time, as an alleviation of their sufferings.

In these storms, when each inmate of the lodge has his *conaus*, or wrapper, tightly drawn around him, and all are cowering about the cabin fire, should some sudden puff of wind drive a volume of light snow into the lodge, it would scarcely happen but that some one of the group would cry out, "Ah, PAUP-PUK-KEEWIS is now gathering his harvest!" — an expression which has the effect to put them all into good humor.

For an account of the Indian hero here alluded to, we must refer the reader to Mr. SCHOOLCRAFT'S work, which we have already mentioned in a former part of this volume. We quote however, another story, which seems to show, that although the white settlers of America have never been able to induce the European fairies to settle in this country, the Chippewas, around Lake Superior, had long ago peopled these regions with beings of similar endowments.

The Indian Fairies.

The Pukwudjinnees, or fairies of Lake Superior, had one of their most noted places of residence at the great sand dunes of *Naigow Wudjoo*, called by the French, *Les grandes Sables*. Here they were frequently seen on bright moonlight evenings, and the fishermen, while sitting in their canoes on the lake, often saw them playing their pranks, and skipping over the hills.

There was a grove of pines in that vicinity, called the Manito Wac, or Spirit Wood, into which they might be seen to flee on

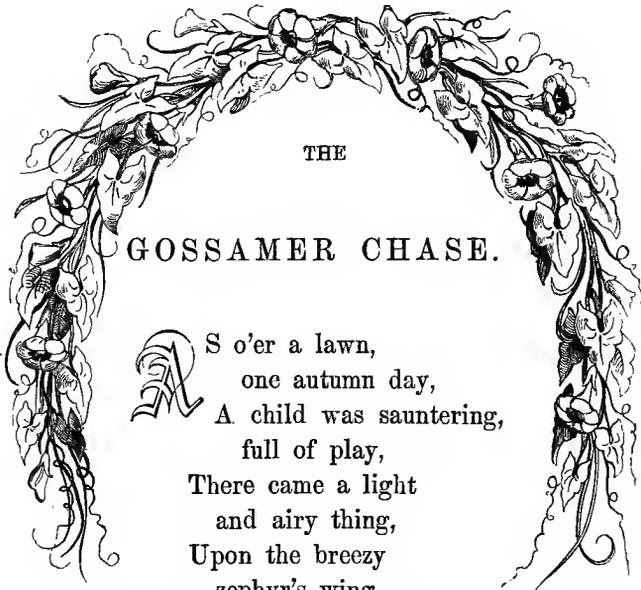
the approach of evening ; and there is a romantic little lake on those elevated sand-hills, not far back from the Great Lake, on the shores of which their tracks could be plainly seen in the sand. These tracks were not bigger than little children's footprints, and the spirits were often seen in the act of vanishing behind the little pine trees. They loved to dance in the most lonesome places, and were always full of glee and merriment, for their little voices could be plainly heard.

These little men — the pukwudjininees — were not deeply malicious, but rather delighted in mischief and freaks ; and would sometimes steal away a fisherman's paddle, or come at night and pluck the hunter's feathers out of his cap, in the lodge, or pilfer away some of his game or fish. On one occasion, they went so far as to entice away into their sacred grove, and carry off, a chief's daughter—a small but beautiful maiden, who had been always inclined to be pensive, and took her seat often in these lonesome haunts. From her baby-name, *Neenizu*, my dear life, she was called LEELINAU ; but she never attained to much size, remaining very slender, but of the most pleasing and sylph-like features, with very bright black eyes, and little feet. Her mother often cautioned her of the danger of visiting these lonely fairy haunts, and predicted playfully that she would one day be carried off by the pukwudjininees, for they were very frolicsome, mischievous, and full of tricks.

To divert her mind from these recluse moods and tastes, the mother endeavored to bring about an alliance with a neighboring forester, who, though older than herself, had the reputation of being an excellent hunter and an active man, and he had even been creditably on the war-path, though he had never brought home a scalp. To these suggestions, LEELINAU had turned rather a deaf ear. She had imbibed ideas of a spiritual life and existence which she fancied could only be enjoyed in the Indian elysium ; and instructed as she was by the old story-tellers, she could not do otherwise than deem the light and sprightly little men who made the fairy footprints, as emissaries from the *Happy Land*.

For this land she sighed and pined. Bloodshed and the taking of life, she said, the Great Spirit did not approve, and they could never be agreeable to minds of a pure and spiritual mould; and she longed to go to a region where there were no weeping, no cares, and no deaths. If her parents laughed at these notions as childish, her only resource was silence, or she merely revealed her emotions in her eyes. She was capable of the deepest concealment, and locked up in her heart what she feared to utter, or uttered only to deceive. This proved her ruin.

At length, after a series of conversations with her parents on the subject, she announced her willingness to accede to the matrimonial proposals, and the day was fixed for this purpose. She dressed herself in the finest manner possible, wreathing flowers in her hair and carrying a bunch of wild-flowers, mixed with tassels of the pine-tree, in her hand. One only request she made, which was to make a farewell visit to the sacred grove of the fairies before she was led to the nuptial bower. This was granted on the evening of the proposed ceremony, while the bridegroom and his friends gathered in her father's lodge, and waited her return. But they waited in vain. Night came, but LEELINAU was never more seen, except by a fisherman on the lake shore, who was persuaded that he had seen her go off with one of the tall fairies, known as the Prince of Green Pines, with green plumes nodding o'er his brows; and it is supposed that she is still roving with him over the Elysian Fields.



THE
GOSSAMER CHASE.

S o'er a lawn,
one autumn day,
A child was sauntering,
full of play,
There came a light
and airy thing,
Upon the breezy
zephyr's wing.

Lit by the morning sun it shone—
Yet on it glided, still and lone.
Near and more near the feather flew,
And caught the child's admiring view ;
She reached and sought the waif to clasp,
But lo! it shunned her eager grasp ;
And rising on the eddy air,
Flew swift, as if the chase to dare.

With outspread hand and longing view,
The little maiden did pursue,
Up hill and down, the romping race—
Her cheeks all glowing in the chase,
Her locks unbound, in dancing curls,
Like morn-light on a river's whirls.

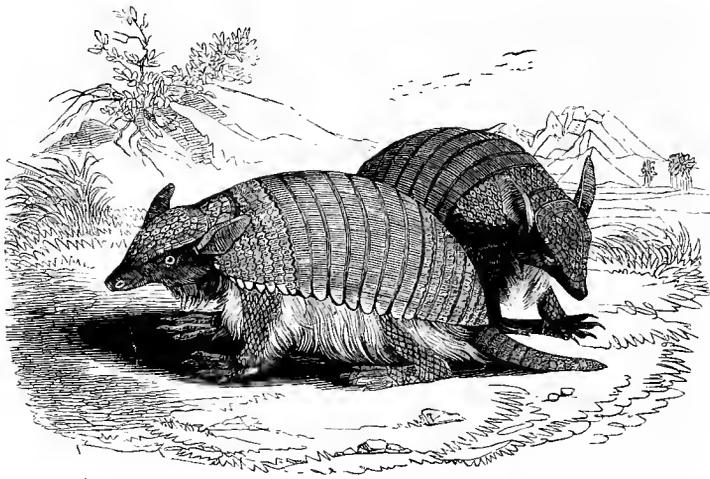
Thus on she flew, her brow all bright
With silvery hope—life's sunrise light.

At last the soft coquettish spray,
Paused gently in its airy way—
As if, perchance, it changed its thought,
And now was willing to be caught:
The little maiden made a grasp,
And seized and crushed it, in her clasp!

Let maundering age, with grisly frown,
Compare life's joys to thistle down,
That woo like fairies on their wings,
But caught and crushed, are worthless things:
A better moral let us trace
In this light tale—a gossamer chase.

Look on that little maiden now,
With health and beauty on her brow!
What though the fickle toy she caught
Is crushed and gone—a thing of nought—
Yet still the chase was glorious fun,
And joyous all her pulses run,
While smiling lip and glowing cheek,
Her laughing triumph gayly speak!

Ah, simple child, let others spurn—
I choose of thee a truth to learn:
'Tis Heaven that teaches thee to seize
Light joys that float on life's fresh breeze;
Gentle and pure, they cheer thy way,
And give thee grace—for work or play!



THE ARMADILLO.

THIS animal is well worthy a place in our book of artificial and created wonders. Amid all the infinite devices and contrivances in nature, which distinguish the multifarious kingdom of quadrupeds, nothing appears more curious than those which belong to the Armadillo.

This is a flat, squat, corpulent creature, its body some fourteen inches long, with thick short legs, a long tail, little stupid eyes, a pointed, keen-scented nose, and erect, sharp, quick-hearing ears. But the most remarkable thing about this creature is his armor, or coat-of-mail, which consists of three hard bony bucklers, one on the head, one on the shoulders, and one along the back, extending to the rump. These are so measured and fitted to the body as completely to protect the flesh, even down the sides, and partially covering the belly. This crust greatly resembles the plate-armor of the middle ages, in which knights errant rode about Christendom, to win glory at tournaments, or in delivering

fair dames shut up in enchanted castles, or in personal conflicts, incited by the mere love of a free fight.

Nevertheless, despite this provision of nature, seeming to invite him to become a warrior, the armadillo is a shy little beast, living in his burrow by day, and only stealing forth at night in quest of such innocent food as fruits, roots, maize, worms, and insects, that chance to come in its way. It does not, however, disdain carrion, and is a great frequenter of the pampas, where, with other wild animals, it has a perpetual feast on the carcasses of the cattle killed by the people for their skins. It then gets enormously fat, and being roasted in the shell, is esteemed a great delicacy. It is an exceedingly amiable thing in the armadillo to furnish a shell to be cooked in, especially on the pampas, where plates and gridirons are scarce, and this merit is duly acknowledged by the hunters.

In case of danger, the armadillo runs away, if there is a chance, and with remarkable celerity too, considering its short legs and dumpy form. If it is captured, it does not bite, but rolls itself into a ball, its vital parts completely shielded by its buckler. If it is pursued among high rocks and cliffs, it will pack itself in its case, and tumble down from precipice to precipice, till it reaches the bottom and is safe from the reach of its enemy. The only instance in which it seems to become a robber, like the knights of old, is in occasionally ripping open an ant-hill, and devouring the inhabitants without distinction of age, sex, or condition.

There are several species of this curious animal, but, with various peculiarities, they have a general resemblance to each other. They are common in Brazil and the states of Buenos Ayres. In the woods and pampas, they are particularly abundant. The inhabitants take them in traps, at night. They burrow with amazing facility: if one of them is discovered at a distance from his retreat, he will sometimes bury himself, by making a new hole in the earth, and thus escape. They are great breeders, and bring forth five and six young ones at a time. Nevertheless, the mother has but four teats, so that some of these little fellows

are in much the same condition as office-seekers, applying to a government just inaugurated, and which has always more applicants than places.

Finally, we have to state, that the armadillo can be easily tamed, and might thus be multiplied like rabbits, in a warren. In some future age of the world, we shall no doubt see this done, and we may then have armadillo shows, as well as cattle fairs and hen conventions.



GROTTO OF POSILIPO.

NAPLES.

THE City of Naples, for many reasons, is one of the most interesting cities in the world. Its picturesque form, rising in a crescent, terrace above terrace ; its lovely bay, leaping and laughing in the sunshine ; its delicious climate, seeming to be a perpetual sermon in behalf of mirth and music ; its

history, reaching back to the early days of Greece, and finally, its terrific neighbor, Vesuvius, hoary with centuries, and blasted by its own convulsions—altogether form a spectacle of unrivaled beauty and sublimity. It is a city of picturesque and striking contrasts, and to an American is full of things strange and beautiful, grotesque and graceful, merry and mournful. As I visited it in 1855, I propose to give a few glimpses of the city, noting only those objects which seem to be specially worthy of notice.

The houses of Naples are chiefly built of a soft olive-covered sand-stone, of which there is an abundance in and around the city: these, on account of their light color, give the place a cheerful and even gay appearance. The stone is easily wrought, being less hard than brick. When exposed to the weather it becomes friable, and is soon injured and destroyed. It is therefore only useful for interior work, or when it is to be covered with stucco. But it is an exceedingly cheap and convenient material, and has no doubt contributed largely to the growth of the city. For the streets and great public roads, which are admirably paved, flat slabs of tufa are used, of which there are numerous quarries—the whole country, in the neighborhood, being underlaid with it. For public buildings, requiring a durable material, tufa is also used.

The grottoes and catacombs around Naples are among its wonders. That of Posilipo, which is a tunnel 2,250 feet long, 22 feet wide, and 25 to 70 feet high, is in fact a public thoroughfare through the rocks consisting of stratified tufa, leading at once by a short cut, from the sea shore into the country. But for this, it would be necessary to travel round the cliffs, a distance of several miles. It is ventilated by holes cut through the roof, and is lighted by lamps. Its history is traced back to AUGUSTUS; but there are several other perforations of even greater extent, which appear to be the work of the ancient colonists.

Of this nature are the Catacombs, which are believed to extend to Pozzuoli, a distance of over eight miles, embracing also numerous ramifications. It is probable they were partly wrought for build-

ing materials, and partly as passage-ways. It is conjectured that they had also, in remote ages, some connection with the mysterious rites of pagan superstition. In later times, they have served the purposes of sepulture, and even now, the coverings, the inscriptions, and the mouldering bones of the tombs, are abundant. In some places, large chapels have been wrought out, and numerous legends of saints and martyrs are related at particular localities, by the guides. The great Gallery of Naples, the Museo Borbonico, has numerous interesting relics derived from these mysterious chambers.

Naples, though older than Rome, displays few present antiquities. The early structures of the Phœnicians, Greeks, and others, who settled and inhabited it, have been mostly buried and hidden from the view, by succeeding generations. Could its foundations be upturned, as in the case of Pompeii, no doubt the vestiges of the various races who have been its masters, might be found in abundance. But at present it seems to be almost wholly a modern city. Nevertheless, its museum, just mentioned, supplied with historical mementoes from the surrounding country, is the richest in the world. Pompeii, Herculaneum, Baiæ, Cumæ, and other adjacent places, have furnished it with innumerable treasures, to which are added some of the finest ancient Greek and Roman sculptures in the world, collected from various sources.

This city has 257 churches, a sufficient indication of the religious bias of the people. Many of them are sumptuous, but there is no St. Peter's. The Cathedral of San Gennaro still exhibits the miracle of the "Liquefaction of the Blood" of its patron saint, who was decapitated 1500 years ago, and some of whose blood was caught and preserved in two phials. For three centuries, the performance of this miracle, which takes place twice a year, and is repeated eight successive days, has been regarded by the people of Naples as their greatest holiday. The masses believe it to be a genuine miracle, and not long since, an article in a leading American Catholic organ, spoke of it as a dispensation of Providence, intended to compensate the people here for the dangers of

their situation, in the midst of a region of earthquakes and volcanoes! A staunch Irish Catholic, however, whose acquaintance I made at Naples, and who is a resident here, told me under his breath, that it was known by all well-informed people to be a trick, but as it was considered of good tendency, in supporting the faith of the ignorant, it was sustained alike by the Church and the Government. The general explanation of the miracle is, that the seeming blood is composed of some chemical substance which melts in the warmth of the hand, communicated to the phials as they are handed from one person to another.

I may here remark, that the crowds of people, especially of the lower classes, which throng to the churches on the numerous festival days, are immense. The idleness, and beggary, so prevalent here, are largely attributable to these constant interruptions of labor, and encouragements to dissipation. The people are particularly delighted with the theatrical show and pantomimic pomp of the Church. The procession in celebration of the recent discovery of the immaculacy of the Virgin, headed by the bare-headed King and his nobles, was two miles long, and took seven hours to pass a given point. Nowhere has the Madonna's new dignity been hailed with more enthusiasm than here, especially by the lazzaroni and the street eaters of maccaroni. The friars who preach to these fellows in the open air, tell them that the Virgin, being now declared by the Church to be free from original sin, has much greater power in heaven than before, and therefore it is a prodigious advantage to them, as they can pray to her for blessings on themselves, their friends, the Church, and the city of Naples, with more confidence than ever!

There are two royal palaces in Naples, and several in the vicinity. They are not too large for King BOMBA, who is a giant of a man — six feet high, and of enormous proportions. The old families, once so rich and renowned, have dwindled down to about twenty. Some of their palaces are still sumptuous, but their glory is gone. Several of their former occupants are lying in prison among the hundreds — perhaps I ought to say thousands — of

victims to the jealousy and vengeance of the miserable tyrant who holds the throne. The lazzaroni are less numerous than formerly, and have lost something of their distinctive character. It is said, notwithstanding the misgovernment of the country, that Naples has improved and is still improving; the result of that irresistible tendency to progress which is now visible over the whole world. After all, things here are not worse, nay, not so bad as might have been expected. What might not be hoped from the eight millions of the Two Sicilies, under a good and wise government?

In spite of the indolence prevalent here, there is a large amount of active and productive industry, though far less than there should be. On approaching Naples, one can hardly fail to be struck with the number of athletic men and vigorous women at work, with good effect, in the fields. The ground is usually tilled with the spade, the plow being little used. Women, in troops of twelve to twenty, hoe the trenches between the rows of wheat. They all have white cloths laid over their heads, after the Roman fashion, and invariably sport red petticoats, with boddices of green or yellow. Gold ear-rings and silver combs are universal with these female cultivators, even though barefoot.

I had noticed the carrying of burdens of various kinds upon the head at Marseilles, where there is a set of women devoted to the practice. In Naples, the custom is more general. I have seen here three men carrying a grand piano in this way. It is amazing to see the immense burdens which are thus constantly transported from place to place. The head, here, seems to take the place of the hand-cart or wheelbarrow with us. What we dignify with the title of *knowledge-box*, and conceive to be the throne of reason, is at Naples a servile drudge, and though not without brains, it is treated like a beast of burden.

Among the manufactures of Naples, maccaroni takes a high rank. Along the road to Vesuvius, you see enormous quantities of it hung out on poles to dry. If I might speak of cooking it, I should say that the custom of basting it with gravy at Naples, is an abominable abuse of a very elegant invention. As to eating

it, the Neapolitans may challenge the world. It is one of the amusements of the stranger to order a quantity, and call on the loafers around to come and devour it. Discreetly ambitious to see all that ought to be seen, I bought a half dollar's worth, in a crowded street, and had it cooked. When it was reeking with fat and parmesan, a shout was set up: "Ho! ye eaters of maccaroni, come to the feast!" And come they did. First come, first served. Two huge paws were suddenly thrust into the dish, and down it went into the cavernous gullets of two lazzaroni, hot and hissing as it was. It disappeared as if it was plunged into bottomless pits. There was no strangling and no choking. It was done as easily as the "twa dips and twa swallops" of treacle, hawked about in Edinburgh for a "bawbee." Two such salamander gluttons I do not expect to see again.

The "working" of coral is carried to great perfection here; and bracelets in this material may be had at prices as high as \$150. A single breastpin often sells for \$100. The carvings in lava are beautiful, and reach to the rank of a fine art. Nearly every poetic and historical subject of Greek and Roman antiquity, may be had exquisitely wrought in these charming reliefs.

The beautiful bay and the enchanting shores round Naples, give encouragement to a multitude of boatmen, who are allowed a stand in the most favored part of the city. On a fine day, trips to Capri and Ischia are easily and safely made, and nothing can be more delightful. The resources of Naples for boat-sailing are unrivaled, both in the pleasure of the excursions themselves, and in the interesting scenes to which they introduce the excursionist.

I pass by, unnoticed, the long processions of priests, frequently visible in this gay and picturesque city, as well as the masses of troops constantly seen marching in one direction or another: I say nothing of the lugubrious fraternities of misericordia, passing the dead on their way to the tomb. All these have been often described. I must even let the harlequin costumes of the country-people, in the market-places, go undescribed. But there is one

conspicuous inhabitant of this city to which justice has not been done, and therefore I beg leave to say a few words respecting him.

The Ass is an animal not very common in our country ; but in Europe, Asia, and Africa, it is really one of the great, common blessings of society. It is too slow for us : we must have railways and electric telegraphs ; but in many eastern lands, it is exactly suited to the lazy, languid habits of the people. In France, Switzerland, Italy, and Greece, it is particularly the friend and helper of the poor. Those who cannot afford to ride in coaches drawn by horses, can still own an ass. He will toil for them, and ask little in return. He will take kicks and stripes, and still patiently carry his master on his back, or transport his vegetables to market. He will bear any burden he can stand under, and will be satisfied with thistles and pure water for his living.

In some of the cities of Italy, and especially at Naples, there is an astonishing number of these animals. This place is famous for the incessant outcries of people selling various things in the streets. A love of noise seems to characterize this buzzing race of perambulating traders. The outcries of venders of friction-matches and oranges, and other trifles, are absolutely deafening. The vociferation is usually in proportion to the insignificance of the articles offered for sale.

But the eloquence of these gifted sons of thunder, is quite outdone by that of the ass. Among the obtrusive sounds of this sonorous city, his voice is conspicuous. It begins in the morning and ceases not till midnight. As a general thing, it may be remarked that the music of nature is sad : the cricket on the hearth, the nightingale in the grove, the owl in the wood, the wolf in the glen, the jackal in the desert, all have melancholy and plaintive voices, set to melancholy melodies. But the bray of the Neapolitan ass is deeper, wider, more desponding. It seems the wail of one not only broken-hearted, but utterly without hope. It begins in woe and ends in despair. It sounds like a rasp in agony, or a file giving up the ghost. It is half tender, and half

misanthropic. It is the outpouring of a bosom overwhelmed with sorrow and rendered malignant by injury. It is now a bellow and now a sigh—a mingled blessing and curse. It rings far and wide upon the air. In the city, it echoes from street to street; in the adjacent country, it trembles from the valley up the hill-side to the mountain top.

It is strange the world can laugh at such sad melody—which, in fact, seems a pathetic appeal to earth and heaven against abuse, injustice, and imposition. You see one of these mild, patient, sapient creatures crawling along, like ISSACHAR of old, between two burdens, and, as he staggers beneath his load, you laugh to hear him bray an awful bray, as if he would blow out his bowels in the effort! And yet, historically, the ass is the most honored of brutes. Our Savior rode an ass into Jerusalem; BONAPARTE crossed the Alps on a mule—the ass's first cousin. ESOP, as well as other sensible fabulists, has made him the oracle of wit and wisdom. BALAAM's ass spoke, and to the purpose. The instincts of the ass are as marvelous as his virtues. Nay, if rightly viewed, he is beautiful; for, of all beasts, he contributes most to the embellishment of a landscape.

Having thus done some justice to this amiable and excellent creature, I must say a word of another animal, conspicuous in this city of strong lights and deep shadows—namely, the Goat. This is usually associated with the ass, and, like that, is given up to a sort of general contempt merely because it is a friend of the poor; but to me it is interesting, because it is not only useful, but it is one of the liveliest and most cheerful and sociable of four-footed things. When young, it is the very personification of grace, frolic and fun; when old, it is sage, familiar, industrious, and moral. In our country, this animal is comparatively rare: with our rich pastures we can afford to keep cows, and therefore do not need to rely upon the saving, economical goat, who can get a living amid barren hill-sides and moss-covered rocks. But what would Naples do without goats? Indeed, what would Italy, and Greece, and Switzerland, and the Tyrol, do without them?

In Naples, they are a study. You must know that neither this city nor the vicinity has any pastures. All the arable land is occupied with gardens and vineyards. The few cows which furnish milk to the rich and to the hotels, are fed on grass, cut by hand, and on grain and garden vegetables. The avenues to the city are at evening crowded with women carrying fresh bundles of cow-feed on their heads. What would the rest of the people do for milk, if it were not for the goats?

These creatures come into the city at evening by thousands, attended by their herdsmen. In the morning they go forth again to their grazing, such as it is. They carry little bells on their necks, and their tinkling at even-tide and early morn, is a gentle kind of music, soon associated with all recollections of Naples. In passing through the grotto of Posilipo, I have seen at once twenty flocks of thirty each. They come and go with the steady march of so many sages. I never saw among them a single reprobate.

They get their living in the steeping rocks and dizzy declivities around the city, and thus convert from idle waste to useful purposes, the vagrant vegetation of the sterile portions of the soil. Their milk is thin and tasteless, say the epicures, but it is better than none. Nay, the physicians of Naples prescribe a tumbler of goat's milk every morning about spring time, as a guarantee of health for the season. What admirable economists, what thrifty graziers, what blessed mediciners are these creatures! Yet the world gives them a name which is synonymous with contempt. "As silly as a goat," says the proverb!

The world is certainly wrong; and so think the Neapolitans, for in truth they cherish these animals with all the kindness of fellow-feeling and mutual affection. There are few sights more interesting to me, than the boy or girl goat-herds in the midst of their flocks, upon the craggy hill-sides of Italy. However listless may seem the master of the flock, his eye is upon each and all. A straggler is readily brought in by a whistle or a call. The daring and diligence of the goats are marvelous. From morning

to night they cease not their activity. They climb giddy rocks, and fearlessly kneel down on the edges and reach over their heads to get at the tufts of grass, sprouting from the fissures. It makes one dizzy to see these desperate feats, which are performed, however, with perfect coolness. They pluck the leaves from briars and thorns ; they gather succulent stalks from dark ravines and hidden crevices ; they stand upon their hind legs and strip off the leaves from the drooping branches of the trees. And all this is done with a neat dexterity, and a crisp, hearty manner, betokening cheerfulness, good will, and good appetite. Others may laugh at these creatures, but I claim the privilege of thinking them a very moral and picturesque generation.



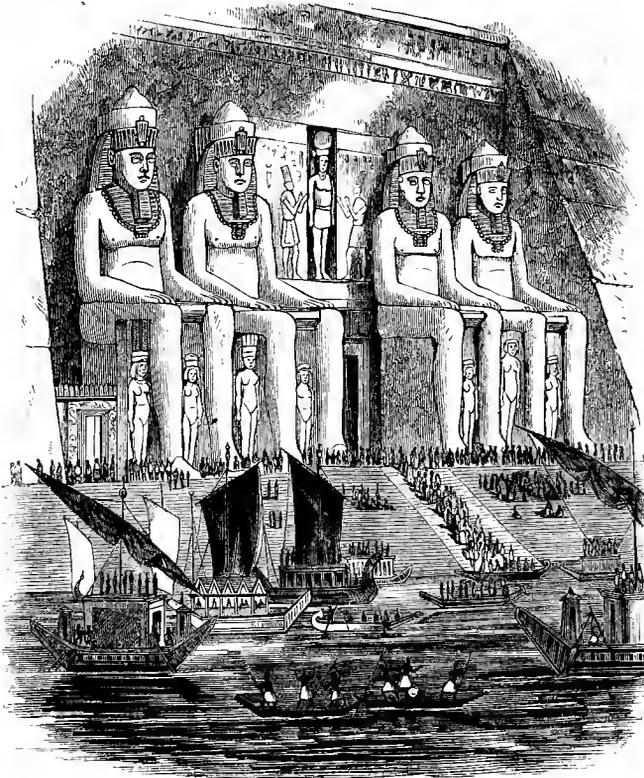
TEMPLE OF ABOO-SIMBEL AS IT NOW APPEARS.

THE ROCK TEMPLE OF ABOO-SIMBEL.

HOW remote—how vast are the historical associations which the very name of Egypt excites in the mind!

The annals of this country not only embrace the entire period of sacred history from ABRAHAM to the Christian dispensation, but, in its profane history, it seems to issue at once from the mists of time, already a great and powerful nation. To us, Egypt has no historical infancy. Evidence remains in the ruins of her vast structures, of her maturity four thousand years ago. These are the records of her social condition at that period; and the earliest historians, and the latest and most profound inquirers, confirm the claim which her imperishable pyramids and temples offer to her ancient greatness.

The discovery by which the hieroglyphic records of Egyptian history have become legible, and a lost language recovered, is one almost unparalleled in human research. It is not more than



TEMPLE OF ABOO-SIMBEL, RESTORED.

thirty years ago that this discovery was made: before that time, our knowledge of this most ancient people was chiefly derived from HERODOTUS, who traveled in Egypt at a period low in the date of her history, though this historian is the most ancient of profane authorities. He wrote on Egypt in the fifth century B. C.; and from materials furnished by tradition and the priesthood, sketched her history. But he wrote of a people whose high civilization and established government had existed two thousand years before his visit to their land, and a thousand years after the

eighteenth dynasty of her kings—the most glorious period of her annals.

When the “Father of History” visited Egypt, she had fallen from her greatness, and was under the government of the Persians; but she had been conquered and ruled by the Ethiopians and Saites, before the destructive curse of the Persian invasion under CAMBYSES, which occurred 520 B. C. The hatred of this monarch to the people of the Valley of the Nile led him to destroy many of their monuments: the strength of others defied his power; he tried in vain to demolish those records which are still legible to us, the “hand-writing on the wall” of their own history. These hieroglyphics, which had become and remained a mystery for nearly two thousand years, have been disclosed in our own day. The very writings which might have been, and doubtless were read by ABRAHAM, which were familiar to JOSEPH, and in which MOSES “was learned,” still remain to us. These inscriptions on their monuments were left by the ancient Egyptians themselves; they are not copies or translations, but the actual characters which these patriarchs might have beheld, and which we can still behold—the original traces on stone, from which we can yet read much of the history of those who left them there, three or four thousand years ago.

Among all the stupendous monuments of antiquity found in the valley of the Nile, nothing strikes the beholder with more astonishment than the remains of the great Temple of Aboo-Simbel, which are situated in Nubia, on the west bank of the Nile, in latitude $22^{\circ} 22'$. At this place, it appears, that the valley of this river is contracted to a narrow space, and on the left side consists of a wall of rocks: this has been fashioned, thousands of years ago, into the fronts of two edifices, called the lesser and larger Temples of Aboo-Simbel. Both were discovered by BURCKHARDT; the first he called the Temple of Isis; the latter, which exceeds in magnitude any other work of the kind, is now regarded as having been erected by SESOSTRIS, or as he is more generally called, REMESES II, who flourished nearly forty centuries ago.

The discovery of this extraordinary temple was made by BURCKHARDT, on his return from Mahass, after an ineffectual attempt to reach Dongola, in the spring of 1813. He had visited the lesser temple, and having, as he supposed, seen all the antiquities here, he was about to ascend the sandy side of the mountain by the same path that he had descended, when "having," as he says, "luckily turned more to the southward, I fell in with what is still visible, the front of a temple, consisting of four immense colossal statues, cut out of the rock, at a distance of about two hundred yards from the lesser temple. They stand in a deep recess, excavated in the mountain; but it is greatly to be regretted that they are now almost entirely buried beneath the sands, which are blown down here, in torrents. The entire head and part of the breast and arms of one of the statues are yet above the surface."

In 1816, BELZONI ascended the Nile into Nubia, with the intention of opening the great Temple of Aboo-Simbel, and commenced his undertaking; but the chiefs of the country threw so many obstacles in his way, that at length his funds failed, and he was obliged to discontinue, but not until he had cleared downwards twenty feet in the front of the temple. It is remarkable that this is the first time the natives learned the use of money as a recompense for labor.

In the spring of 1817, he returned to his excavations at Aboo-Simbel, accompanied by Mr. BEECHY. At Philœ, they had the good fortune to be joined by Captains IRBY and MANGLES, then on their journey in the East. The united exertions of these gentlemen accomplished the entrance to the Great Temple, in defiance of the dangers and difficulties thrown in their way, and which are most interestingly narrated in IRBY and MANGLES' travels. BELZONI and his friends removed forty feet of sand, which had accumulated above the top of the door, before the recent excavations; but they carried them no further than three feet below the top of the entrance, when they effected their passage into this temple, and saw the most extraordinary work that remains to us of the age of REMESESES II. BELZONI describes its façade as one hundred

and seventeen feet wide and eighty-six feet high ; the height from the top of the cornice to the top of the door being sixty-six feet six inches, and the height of the door twenty feet.

Each of these enormous statues—the largest in Egypt or Nubia, except the Sphinx of the Pyramid—measures from the shoulder to the elbow fifteen feet six inches, the face seven feet, the ears three feet six inches, across the shoulders twenty-five feet four inches. Their height, as they sit, is about fifty-one feet, not including the caps, which are about fourteen feet. These, the most beautiful colossi yet found in any of the Egyptian ruins, represent REMESES II ; they are seated on thrones attached to the rock. On the sides, and on the front angles of the thrones, and between the legs of the statues, are sculptured female figures, supposed to be of his wife and children ; they are well preserved, though the material is a coarse, friable gritstone. During the execution, defects in the stone were filled and smoothed with stucco, and afterwards painted, of which traces yet remain. The upper part of the second figure has fallen, but the faces of these colossi exhibit a beauty of expression the more striking as it is unlooked for in statues of such dimensions.

Such is the external aspect of this amazing structure. Its enormous proportions—the awful repose impressed upon the countenances of the gigantic images—its manifest formation of a part of the solid rock—all combine to produce an impression of almost overwhelming sublimity upon the beholder. When the inquirer goes back to the time of its builder, an epoch of perhaps four thousand years ago, and reflects upon the appearance which it then presented, and especially during the solemn and sumptuous religious festivities of that remote era*—contrasting all with the utter solitude and desolation which now reign over the scene—it is impossible not to experience the most profound emotions of wonder and of awe.

* The engraving, p. 132, is intended to represent this temple, as it appeared in its original condition.

But however deep may be the feelings thus inspired, they are still enhanced when we come to enter the temple itself. The access was accomplished under the superintendence, and chiefly by the active, personal exertions, of the travelers, whose names will always be associated with Aboo-Simbel—amidst difficulties, threats, privations and excessive labor, “and continued,” says BELZONI, “during twenty-two days, besides eight days in 1816, after working eight hours a day, with the thermometer in the shade, at an average of 114° Fahrenheit.”

As soon as the sand had been cleared away three feet from the top of the door, these determined men entered, and enjoyed the reward of their labor in bringing again to human sight the finest and most extensive of the excavated temples of Nubia, after its concealment from the knowledge of mankind for probably 3,000 years.

“From what we could perceive at the first view,” says BELZONI, “it was evidently a large place, but our astonishment increased, when we found it to be one of the most magnificent temples, enriched with beautiful intaglios, paintings, colossal figures, &c. We entered at first into a large pronaos, fifty-seven feet long and fifty-two wide, supported by two rows of square pillars, in a line from the front door to the door of the sekos. Each pillar has a figure not unlike those of Medinet-Aboo, finely executed, and very little injured by time; the tops of their turbans reach the ceiling, which is about thirty feet high; the pillars are about five feet and a half square. Both these and the walls are covered with beautiful hieroglyphics, the style of which is somewhat superior, or at least bolder, than that of any others in Egypt, not only in the workmanship, but also in the subject. They exhibit battles, storming of castles, triumphs over the Ethiopians, sacrifices, &c. Some of the colors are much injured by the close and heated atmosphere, the temperature of which was so hot, that the thermometer must have risen to above 130°.”

Beyond the pronaos are two other chambers before reaching the adytum, or sanctuary; out of each of the central chambers of

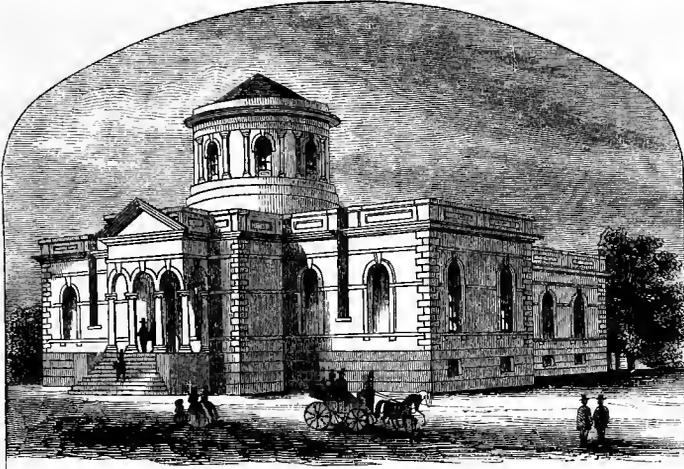
the temple, doors lead into lateral chambers; altogether, eight rooms open on the grand hall. The entire length excavated from the entrance to the adytum, is estimated at nearly two hundred feet, beside the colossi and the slope of the façade.

Mr. ROBERTS, the artist, who has painted such admirable sketches of the wonders of Egypt and the Holy Land, says, "On descending into the splendid hall, over the sand, which again almost reaches to the top of the door, a double row is seen of colossal figures, representing REMESES THE GREAT, attached to square pillars, which appear to support the roof; the placid expression of these statues is still finer than that of the colossi without. There are four on each side, their arms crossed on their breasts, and bearing in their hands the crook and the scourge—emblems of government or power; those on one side wear the high conical cap, and on the other, what is called the corn-measure. The walls and pillars are covered with the most interesting sculptured representations of the victories of REMESES, painted in vivid colors, and in excellent preservation; across the roof are repetitions of the sacred falcon.

"The principal decorations of the interior are the historical subjects, relating to the conquests of REMESES II, represented in the great hall. A large tablet, containing the date of his first year, extends over the great part of the north wall; another, between the two last pillars on the opposite side of this hall, of his thirty-fifth year, has been added long after the temple was completed."

Such is one of the scenes found in Nubia, a country almost hidden from the world for centuries, and even now only known to us by its crumbling ruins and fleeting traditions. What a striking contrast does this majestic antiquity, this imposing desolation, decay and death, present to the aspects of things around us here in America, where all is recent, youthful and progressive, yet cheerful as the hues of the rainbow! Who can venture to foretell what shall be the condition of things here, when four thousand years shall have rolled away? One point is certain, that whether

the nations shall live or die, no temple like that of Aboo-Simbel will here exist, to chronicle in rock-hewn architecture, a gigantic image like that of SESOSTRIS, which Time itself cannot destroy. Such things only belong to the past!



THE USES OF ASTRONOMY.

IN the 28th of August, 1856, the Dudley Observatory, at Albany,* was inaugurated with imposing ceremonies. The chief feature of the occasion, was the Oration by EDWARD EVERETT, which is not merely remarkable for its beauty of thought and expression, but its important historical facts, and admirable illustrations of discovery, art, and science. The tone of feeling, throughout the performance, is elevating, and not unfrequently rises into sublimity. We cannot, therefore, do a better service to our readers than to give it a place in these pages. The Oration is as follows :

* The Dudley Observatory stands a mile from the Capitol, in the city of Albany, on the crest of a steep hill: its form is that of a Latin cross. It is of two stories, and is quite the most elegant structure in the United States, devoted to a similar object. The astronomical instruments provided for the institution, are of the most recent and approved construction.

“Assembled as we are, under your auspices, in this ancient and hospitable city, for an object indicative of a highly-advanced stage of scientific culture, it is natural, in the first place, to cast a historical glance at the past. It seems almost to surpass belief, though an unquestioned fact, that more than a century should have passed away, after CABOT had discovered the coast of North America for England, before any knowledge was gained of the noble river on which your city stands, and which was destined by Providence to determine, in after times, the position of the commercial metropolis of the Continent. It is true that VERAZZANO, a bold and sagacious Florentine navigator, in the service of France, had entered the Narrows in 1524, which he describes as a very large river, deep at its mouth, which forced its way through steep hills to the sea; but though he, like all the naval adventurers of that age, was sailing westward in search of a shorter passage to India, he left this part of the coast without any attempt to ascend the river; nor can it be gathered from his narrative that he believed it to penetrate far into the interior.

Voyage of Hendrick Hudson.

“Near a hundred⁰ years elapsed before that great thought acquired substance and form. In the spring of 1609, the heroic but unfortunate HUDSON, one of the brightest names in the history of English maritime adventure, but then in the employment of the Dutch East India Company, in a vessel of eighty tons, bearing the very astronomical name of the *Half Moon*, having been stopped by the ice in the Polar Sea, in the attempt to reach the East by the way of Nova Zembla, struck over to the coast of America in a high northern latitude. He then stretched down southwardly to the entrance of Chesapeake Bay, of which he had gained a knowledge from the charts and descriptions of his friend, Captain Smith; thence returning to the north, entered Delaware Bay; standing out again to sea, arrived on the second of September in sight of the ‘high hills’ of Neversink, pronouncing it ‘a good

land to fall in with, and a pleasant land to see;' and, on the following morning, sending his boat before him to sound the way, passed Sandy Hook, and there came to anchor on the third of September, 1609; two hundred and forty-seven years ago next Wednesday. What an event, my friends, in the history of American population, enterprise, commerce, intelligence, and power—the dropping of that anchor at Sandy Hook!

Discovery of the Hudson River.

“Here he lingered a week, in friendly intercourse with the natives of New Jersey, while a boat's company explored the waters up to Newark Bay. And now the great question: shall he turn back, like VERAZZANO, or ascend the stream? HUDSON was of a race not prone to turn back, by sea or by land. On the eleventh of September he raised the anchor of the *Half Moon*, passed through the Narrows, beholding on both sides 'as beautiful a land as one can tread on;' and floated cautiously and slowly up the noble stream—the first ship that ever rested on its bosom. He passed the Palisades, nature's dark basaltic Malakoff; forced the iron gateway of the Highlands; anchored, on the fourteenth, near West Point; swept onward and upward, the following day, by grassy meadows and tangled slopes, hereafter to be covered with smiling villages; by elevated banks and woody heights, the destined site of towns and cities—of Newburg, Poughkeepsie Catskill: on the evening of the fifteenth arrived opposite 'the mountains which lie from the river side,' where he found 'a very loving people and very old men;' and the day following sailed by the spot hereafter to be honored by his own illustrious name. One more day wafts him up between Schodac and Castleton; and here he landed and passed a day with the natives—greeted with all sorts of barbarous hospitality—the land 'the finest for cultivation he ever set foot on,' the natives so kind and gentle, that, when they found he would not remain with them over night, and feared that he left them—poor children of nature!—because he

was afraid of their weapons—he, whose quarter-deck was heavy with ordnance—they ‘broke their arrows in pieces and threw them in the fire.’ On the following morning, with the early flood-tide, on the nineteenth of September, 1609, the *Half Moon* ‘ran higher up, two leagues above the Shoals,’ and came to anchor in deep water, near the site of the present city of Albany. Happy if he could have closed his gallant career on the banks of the stream which so justly bears his name, and thus have escaped the sorrowful and mysterious catastrophe which awaited him the next year.

Champlain's Voyage and the growth of Colonies.

“But the discovery of your great river and of the site of your ancient city, is not the only event which renders the year 1609 memorable in the annals of America and the world. It was one of those years in which a sort of sympathetic movement toward great results unconsciously pervades the races and the minds of men. While HUDSON discovered this mighty river and this vast region for the Dutch East India Company, CHAMPLAIN, in the same year, carried the lilies of France to the beautiful lake which bears his name on your northern limits; the languishing establishments of England in Virginia were strengthened by the second charter granted to that colony; the little church of ROBINSON removed from Amsterdam to Leyden, from which, in a few years, they went forth to lay the foundations of New England on Plymouth Rock; the seven United Provinces of the Netherlands, after that terrific struggle of forty years—the commencement of which has just been embalmed in a record worthy of the great event, by an American historian—wrested from Spain the virtual acknowledgement of their independence, in the Twelve Years’ Truce; and James the First, in the same year, granted to the British East India Company their first permanent charter—corner-stone of an empire destined in two centuries to overshadow the East.

Galileo's Discoveries.

“One more incident is wanting to complete the list of the memorable occurrences which signalize the year 1609, and one most worthy to be remembered by us on this occasion. Contemporaneously with the events which I have enumerated—eras of history, dates of empire, the starting-point in some of the greatest political, social, and moral revolutions in our annals—an Italian astronomer, who had heard of the magnifying glasses which had been made in Holland, by which distant objects could be brought seemingly near, caught at the idea, constructed a telescope, and pointed it to the heavens. Yes, my friends, in the same year in which HUDSON discovered your river and the site of your ancient town—in which ROBINSON made his melancholy hegira from Amsterdam to Leyden—GALILEO GALILEI, with a telescope, the work of his own hands, discovered the phases of Venus and the satellites of Jupiter; and now—after the lapse of less than two centuries and a half, on a spot then embosomed in the wilderness, the covert of the least civilized of all the races of men—we are assembled—descendants of the Hollanders, descendants of the Pilgrims—in this ancient and prosperous city, to inaugurate the establishment of a first-class Astronomical Observatory.

Early Days of Albany.

“One more glance at your early history. Three years after the landing of the Pilgrims at Plymouth, Fort Orange was erected, in the center of what is now the business part of the city of Albany; and, a few years later, the little hamlet of Beverswyck began to nestle under its walls. Two centuries ago, my Albanian friends, this very year, and I believe this very month of August, your forefathers assembled, not to inaugurate an observatory, but to lay the foundations of a new church, in the place of the rude cabin which had hitherto served them in that capacity. It was built at the intersection of Yonker's and Handelaar's, better

known to you as State and Market streets. Public and private liberality coöperated in the important work. The authorities at the Fort gave fifteen hundred guilders; the patroon of that early day, with the liberality coeval with the name and the race, contributed a thousand; while the inhabitants, for whose benefit it was erected, whose numbers were small and their resources smaller, contributed twenty beavers 'for the purchase of an oaken pulpit in Holland.' Whether the largest part of this subscription was bestowed by some liberal benefactress, tradition has not informed us.

New Amsterdam.

"Nor is the year 1656 memorable in the annals of Albany alone. In that same year your imperial metropolis, then numbering about three hundred inhabitants, was first laid out as a city, by the name of New Amsterdam. In eight years more, New Netherland becomes New York; Fort Orange and its dependent hamlet assumes the name of Albany. A century of various fortune succeeds; the scourge of French and Indian war is rarely absent from the land; every shock of European policy vibrates with electric rapidity across the Atlantic; but the year 1756 finds a population of 300,000 in your growing province. Albany, however, may still be regarded almost as a frontier settlement. Of the twelve counties into which the province was divided a hundred years ago, the county of Albany comprehended all that lay north and west of the city; and the city itself contained but about three hundred and fifty houses.

Two Hundred Years.

"One more century: another act in the great drama of empire; another French and Indian war beneath the banners of England; a successful Revolution, of which some of the most momentous events occurred within your limits; a union of States; a Consti-

tution of Federal Government; your population carried to the St. Lawrence and the great Lakes, and their waters poured into the Hudson; your territory covered with a net-work of canals and railroads, filled with life, and action, and power, with all the works of peaceful art and prosperous enterprise, with all the institutions which constitute and advance the civilization of the age; its population exceeding that of the Union at the date of the Revolution; your own numbers twice as large as those of the largest city of that day—you have met together, my friends, just two hundred years since the erection of the little church of Beverswyck, to dedicate a noble temple of science, and to take a becoming public notice of the establishment of an institution, destined, as we trust, to exert a beneficial influence on the progress of useful knowledge at home and abroad, and through that, on the general cause of civilization.

Scientific Progress.

“You will observe that I am careful to say, the progress of science ‘at home and abroad;’ for the study of Astronomy in this country has long since, I am happy to add, passed that point where it is content to repeat the observations and verify the results of European research. It has boldly and successfully entered the field of original investigation, discovery, and speculation; and there is not now a single department of the science, in which the names of American observers and mathematicians are not cited by our brethren across the water, side by side with the most eminent of their European contemporaries.

“This state of things is certainly recent. During the colonial period, and in the first generation after the Revolution, no department of science was, for obvious causes, very extensively cultivated in America—astronomy perhaps as much as the kindred branches. The improvement in the quadrant, commonly known as HADLEY’S, had already been made at Philadelphia, by GODFREY, in the early part of the last century; and the beautiful invention of the col-

limating telescope was made at a later period by RITTENHOUSE, an astronomer of distinguished repute. The transits of Venus of 1761 and 1769 were observed, and orreries were constructed in different parts of the country; and some respectable scientific essays are contained, and valuable observations are recorded, in the early volumes of the Transactions of the Philosophical Society, at Philadelphia, and the American Academy of Arts and Sciences, at Boston and Cambridge. But, in the absence of a numerous class of men of science to encourage and aid each other, without observatories and without valuable instruments, little of importance could be expected in the higher walks of astronomical life.

American Observations.

“The greater the credit due for the achievement of an enterprise commenced in the early part of the present century, and which would reflect honor on the science of any country and any age; I mean the translation and commentary on LAPLACE’S *Mécanique Céleste*, by BOWDITCH; a work of whose merit I am myself wholly unable to form an opinion, but which I suppose places the learned translator and commentator on a level with the ablest astronomers and geometers of the day. This work may be considered as opening a new era in the history of American science. The country was still almost wholly deficient in instrumental power; but the want was generally felt by men of science, and the public mind, in various parts of the country, began to be turned towards the means of supplying it. In 1825, President JOHN QUINCY ADAMS brought the subject of a National Observatory before Congress. Political considerations prevented its being favorably entertained at that time; and it was not till 1842, and as an incident of the exploring expedition, that an appropriation was made for a dépôt for the charts and instruments of the navy. On this modest basis has been reared the National Observatory at Washington; an institution which has already taken and fully sustains an honorable position among the scientific establishments of the age.

“Besides the institution at Washington, fifteen or twenty observatories have, within the last few years, been established in different parts of the country ; some of them on a modest scale, for the gratification of the scientific taste and zeal of individuals, others on a broad foundation of expense and usefulness. In these establishments, public and private, the means are provided for the highest order of astronomical observation, research, and instruction. There is already in the country an amount of instrumental power—to which addition is constantly making—and of mathematical skill on the part of our men of science, adequate to a manly competition with their European contemporaries. The fruits are already before the world, in the triangulation of several of the States, in the great work of the Coast Survey, in the numerous scientific surveys of the interior of the continent, in the astronomical department of the Exploring Expedition, in the scientific expedition to Chili, in the brilliant hydrographical labors of the Observatory at Washington, in the published observations of Washington and Cambridge, in the Journal conducted by the Nestor of American Science, now in its eighth lustrum ; in the *Sidereal Messenger*, the *Astronomical Journal*, and the *National Ephemeris* ; in the great chronometrical expeditions to determine the longitude of Cambridge, better ascertained than that of Paris was till within the last year ; in the prompt rectification of the errors in the predicted elements of Neptune ; in its identification with LALANDE'S missing star, and in the calculation of its ephemeris ; in the discovery of the satellite of Neptune, of the eighth satellite of Saturn, and of the innermost of its rings ; in the establishment, both by observation and theory, of the non-solid character of Saturn's rings ; in the separation and measurement of many double and triple stars, amenable only to superior instrumental power ; in the immense labor already performed in preparing star catalogues, and in numerous accurate observations of standard stars ; in the diligent and successful observation of the meteoric showers ; in an extensive series of magnetic observations ; in the discovery of an asteriod, and ten or twelve telescopic comets ;

in the resolution of nebulæ which had defied every thing in Europe but Lord Rosse's great reflector ; in the application of electricity to the measurement of differences in longitude ; in the ascertainment of the velocity of the electro-magnetic fluid, and its truly wonderful uses in recording astronomical observations. These are but a portion of the achievements of American astronomical science within fifteen or twenty years, and fully justify the most sanguine anticipations of its further progress.

“How far our astronomers may be able to pursue their researches, will depend upon the resources of our public institutions, and the liberality of wealthy individuals in furnishing the requisite means. With the exception of the observatories at Washington and West Point, little can be done, or be expected to be done, by the government of the Union or the States ; but in this, as in every other department of liberal art and science, the great dependence—and may I not add, the safe dependence?—as it ever has been, must continue to be upon the bounty of enlightened, liberal, and public-spirited individuals.

The Dudley Observatory.

“It is by a signal exercise of this bounty, my friends, that we are called together to-day. The munificence of several citizens of this ancient city, among whom the first place is due to the generous lady whose name has with great propriety been given to the institution, has furnished the means for the foundation of the Dudley Observatory at Albany. On a commanding elevation on the northern edge of the city, liberally given for that purpose by the head of a family in which the patronage of science is hereditary, a building of ample dimensions has been erected, upon a plan which combines all the requisites of solidity, convenience, and taste. A large portion of the expense of the structure has been defrayed by MRS. BLANDINA DUDLEY ; to whose generosity, and that of several other public-spirited individuals, the institution is also indebted for the provision which has been made for an adequate

supply of first-class instruments, to be executed by the most eminent makers in Europe and America ; and which, it is confidently expected, will yield to none of their class in any observatory in the world.

“ With a liberal supply of instrumental power ; established in a community to whose intelligence and generosity its support may be safely confided, and whose educational institutions are rapidly realizing the conception of a university ; countenanced by the gentleman who conducts the United States Coast Survey with such scientific skill and administrative energy ; committed to the immediate supervision of an astronomer to whose distinguished talent has been added the advantage of a thorough scientific education in the most renowned universities of Europe, and who, as the editor of the *American Astronomical Journal*, has shown himself to be fully qualified for the high trust : under these favorable circumstances, the Dudley Observatory at Albany takes its place among the scientific foundations of the country and the world.

Wonders of Astronomy.

“ It is no affected modesty which leads me to express the regret that this interesting occasion could not have taken place under somewhat different auspices. I feel that the duty of addressing this great and enlightened assembly, comprising so much of the intelligence of the community and of the science of the country, ought to have been elsewhere assigned ; that it should have devolved upon some one of the eminent persons, many of whom I see before me, to whom you have been listening the past week, who, as observers and geometers, could have treated the subject with a master’s power ; astronomers, whose telescopes have penetrated the depths of the heavens, or mathematicians, whose analysis unthreads the maze of their wondrous mechanism. If, instead of commanding, as you easily could have done, qualifications of this kind, your choice has rather fallen on one making no

pretensions to the honorable name of a man of science, but whose delight it has always been to turn aside from the dusty paths of active life for an interval of recreation in the green fields of sacred nature in all her kingdoms, it is, I presume, because you have desired on an occasion of this kind, necessarily of a popular character, that those views of the subject should be presented which address themselves to the general intelligence of the community, and not to its select scientific circles. There is, perhaps, no branch of science which to the same extent as astronomy exhibits phenomena which, while they task the highest powers of philosophical research, are also well adapted to arrest the attention of minds barely tinctured with scientific culture, and even to teach the sensibilities of the wholly un instructed observer. The profound investigations of the chemist into the ultimate constitution of material nature, the minute researches of the physiologist into the secrets of animal life, the transcendental logic of the geometer, clothed in a notation the very sight of which terrifies the uninitiated — are lost on the common understanding. But the unspeakable glories of the rising and the setting sun, the serene majesty of the moon, as she walks in full-orbed brightness through the heavens ; the soft witchery of the morning and the evening star ; the imperial splendors of the firmament on a bright, unclouded night ; the comet, whose streaming banner floats over half the sky — these are objects which charm and astonish alike the philosopher and the peasant, the mathematician who weighs the masses and defines the orbits of the heavenly bodies, and the untutored observer who sees nothing beyond the images painted upon the eye.

What is an Astronomical Observatory ?

“An astronomical observatory, in the general acceptance of the word, is a building erected for the reception and appropriate use of astronomical instruments, and the accommodation of the men of science employed in making and reducing observations of the heavenly bodies. These instruments are mainly of three

classes, to which I believe all others of a strictly astronomical character may be referred.

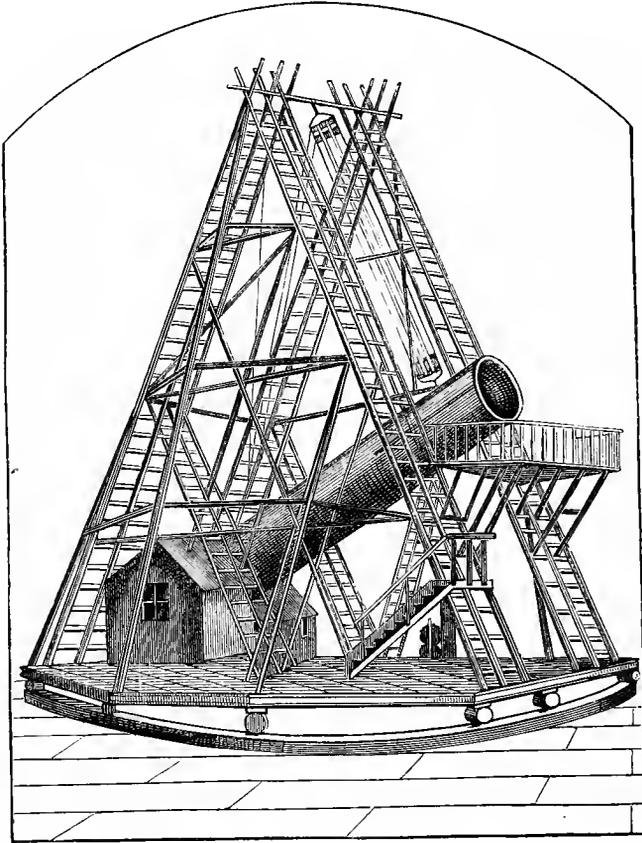
“1. The instruments by which the heavens are inspected, with a view to discover the existence of those celestial bodies which are not visible to the naked eye (beyond all comparison more numerous than those which are), and the magnitude, shapes, and other sensible qualities, both of those which are and those which are not thus visible to the unaided sight. The instruments of this class are designated by the general name of Telescope, and are of two kinds—the refracting telescope, which derives its magnifying power from a system of convex lenses; and the reflecting telescope, which receives the image of the heavenly body upon a concave mirror.

“2. The second class of instruments consists of those which are designed principally to measure the angular distances of the heavenly bodies from each other, and their time of passing the meridian. The transit instrument, the meridian circle, the mural circle, the heliometer, and the sextant, belong to this class. The brilliant discoveries of astronomy are, for the most part, made with the first class of instruments; its practical results are wrought out by the second.

“3d. The third class contains the clock, with its subsidiary apparatus, for measuring the time and making its subdivisions with the greatest possible accuracy—indispensable auxiliary of all the instruments, by which the positions and motions of the heavenly bodies are observed, and measured and recorded.

The Telescope.

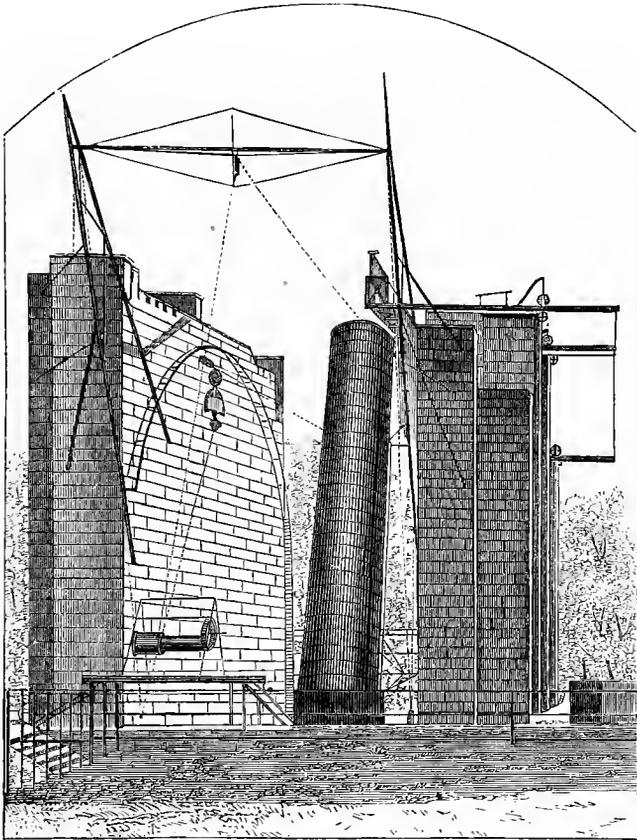
“The telescope may be likened to a wondrous cyclopean eye, endowed with superhuman power, by which the astronomer extends the reach of his vision to the further heavens, and surveys galaxies and universes compared with which the solar system is but an atom floating in the air. The transit may be compared to the measuring rod which he lays from planet to planet, and from star



HERSCHEL'S TELESCOPE.*

to star, to ascertain and mark off the heavenly spaces, and transfer them to his note-book ; the clock is that marvelous apparatus by which he equalizes and divides into nicely measured parts a portion of that unconceived infinity of duration, without begin-

* This is what is called a "reflecting telescope," which, until recently, had attained the greatest celebrity. The total length of the tube is 39 feet 4 inches, and its clear diameter 4 feet 10 inches. It is constructed entirely of iron. It contains 1050 lbs. of metal. The reflecting surface is 12'566 square feet. It is placed in the observatory of Slough, a village twenty-one miles west of London.



LORD ROSSE'S TELESCOPE.*

ning and without end, in which all existence floats as on a shoreless and bottomless sea.

“ In the contrivance and the execution of these instruments, the

* This is the largest and most powerful telescope ever constructed. The clear aperture is 6 feet: the reflecting surface is 28'274 square feet; being greater than that of *HERSCHEL'S* in the proportion of 7 to 3. It is used, at present, as a Newtonian telescope, but provision is made for using it as a Herschelian instrument. The great tube is of wood, hooped with iron; is 7 feet in diameter, and 52 in length. This noble instrument is at the seat of the Earl of Rosse, in Parsonstown, sixty-two miles W. S. W. of Dublin, Ireland.

utmost stretch of inventive skill and mechanical ingenuity has been put forth. To such perfection have they been carried, that a single second of magnitude or space is rendered a distinctly visible and appreciable quantity. 'The arc of a circle,' says SIR J. HERSCHEL, 'subtended by one second, is less than the 200,000th part of the radius, so that on a circle of six feet in diameter, it would occupy no greater linear extent than 1-5700 part of an inch, a quantity requiring a powerful microscope to be discerned at all.' The largest body in our system, the sun, whose real diameter is 882,000 miles, subtends, at a distance of 95,000,000 miles, but an angle of little more than 32'; while so admirably are the best instruments constructed, that both in Europe and America a satellite of Neptune, an object of comparatively inconsiderable diameter, has been discovered at a distance of 2,850 millions of miles.

Utility of Astronomical Observations.

"The object of an observatory, erected and supplied with instruments of this admirable construction, and at proportionate expense, is, as I have already intimated, to provide for an accurate and systematic survey of the heavenly bodies, with a view to a more correct and extensive acquaintance with those already known, and as instrumental power and skill in using it increase, to the discovery of bodies hitherto invisible, and in both classes to the determination of their distances, their relations to each other, and the laws which govern their movements.

"Why should we wish to obtain this knowledge? What inducement is there to expend large sums of money in the erection of observatories, and in furnishing them with costly instruments, and in the support of the men of science employed in making, discussing, and recording, for successive generations, these minute observations of the heavenly bodies?

"In an exclusively scientific treatment of this subject, an inquiry into its utilitarian relations would be superfluous — even wear-

some. But on an occasion like the present, you will not, perhaps, think it out of place if I briefly answer the question, What is the use of an observatory, and what benefit may be expected from the operations of such an establishment in a community like ours?

"1. In the first place, then, we derive from the observations of the heavenly bodies which are made at an observatory, our only adequate measures of time, and our only means of comparing the time of one place with the time of another. Our artificial time-keepers — clocks, watches, and chronometers — however ingeniously contrived and admirably fabricated, are but a transcript, so to say, of the celestial motions, and would be of no value without the means of regulating them by observation. It is impossible for them, under any circumstances, to escape the imperfection of all machinery the work of human hands; and the moment we remove with our time-keeper east or west, it fails us. It will keep home time alone, like the fond traveler who leaves his heart behind him. The artificial instrument is of incalculable utility, but must itself be regulated by the eternal clock-work of the skies.

. . .

Relations between Natural Phenomena and Daily Life.

"This single consideration is sufficient to show how completely the daily business of life is affected and controlled by the heavenly bodies. It is they — and not our main-springs, our expansion balances, and our compensation pendulums — which give us our time. To reverse the line of Pope :

“'Tis with our watches, as our judgements: none
Go just alike, but each believes his own.’

But for all the kindreds and tribes and tongues of men, each upon their own meridian, from the Arctic pole to the equator, from the equator to the Antarctic pole, the eternal sun strikes twelve at noon, and the glorious constellations, far up in the everlasting belfries of the skies, chime twelve at midnight :

twelve for the pale student over his flickering lamp ; twelve amid the flaming glories of Orion's belt, if he crosses the meridian at that fated hour ; twelve by the weary couch of languishing humanity ; twelve in the star-paved courts of the Empyrean ; twelve for the heaving tides of the ocean ; twelve for the weary arm of labor ; twelve for the toiling brain ; twelve for the watching, waking, broken heart ; twelve for the meteor which blazes for a moment and expires ; twelve for the comet whose period is measured by centuries ; twelve for every substantial, for every imaginary thing, which exists in the sense, the intellect, or the fancy, and which the speech or thought of man, at the given meridian, refers to the lapse of time.

“Not only do we resort to the observation of the heavenly bodies for the means of regulating and rectifying our clocks, but the great divisions of day and month and year are derived from the same source. By the constitution of our nature, the elements of our existence are closely connected with celestial times. Partly by his physical organization, partly by the experience of the race from the dawn of creation, man as he is, and the times and seasons of the heavenly bodies, are part and parcel of one system. The first great division of time, the day-night, with its primal alternation of waking and sleeping, of labor and rest, is a vital condition of the existence of such a creature as man. The revolution of the year, with its various incidents of summer and winter, and seed-time and harvest, is not less involved in our social, material, and moral progress. It is true that at the poles, and on the equator, the effects of these revolutions are variously modified or wholly disappear ; but as the necessary consequence, human life is extinguished at the poles, and on the equator attains only a languid or feverish development. Those latitudes only in which the great motions and cardinal positions of the earth exert a mean influence, exhibit man in the harmonious expansion of his powers. The lunar period, which lies at the foundation of the *month*, is less vitally connected with human existence and development ; but is proved by the experience of every age and race

to be eminently conducive to the progress of civilization and culture.

“But indispensable as are these heavenly measures of time to our life and progress, and obvious as are the phenomena on which they rest, yet owing to the circumstance that, in the economy of nature, the day, the month, and the year are not exactly commensurable, some of the most difficult questions in practical astronomy are those by which an accurate division of time, applicable to the various uses of life, is derived from the observation of the heavenly bodies. I have no doubt that, to the Supreme Intelligence which created and rules the universe, there is a harmony, hidden to us, in the numerical relation to each other of days, months, and years; but in our ignorance of that harmony, their practical adjustment to each other is a work of difficulty. The great embarrassment which attended the reformation of the calendar, after the error of the JULIAN period had, in the lapse of centuries, reached ten, or rather twelve, days, sufficiently illustrates this remark. It is most true that scientific difficulties did not form the chief obstacle. Having been proposed under the auspices of a Roman pontiff, the Protestant world, for a century and more, rejected the new style. It was in various places the subject of controversy, collision, and bloodshed. It was not adopted in England till nearly two centuries after its introduction at Rome; and in the country of STRUVE and the PULKOVA equatorial, they persist at the present day in adding eleven minutes and twelve seconds to the length of the tropical year.

Geographical Science.

“2. The second great practical use of an Astronomical Observatory is connected with the science of geography. The first page of the history of our Continent declares this truth. Profound meditation on the sphericity of the earth was one of the main reasons which led COLUMBUS to undertake his momentous voyage; and his thorough acquaintance with the astronomical science of

that day was, in his own judgement, what enabled him to overcome the almost innumerable obstacles which attended its prosecution. In return, I find that COPERNICUS in the very commencement of his immortal work *De Revolutionibus Orbium Cœlestium*, fol. 2, appeals to the discovery of America as completing the demonstration of the sphericity of the earth. Much of our knowledge of the figure, size, density, and position of the earth, as a member of the solar system, is derived from this science; and it furnishes us the means of performing the most important operations of practical geography. Latitude and longitude, which lie at the basis of all descriptive geography, are determined by observation. No map deserves the name, on which the position of important points has not been astronomically determined. Some even of our most important political and administrative arrangements depend upon the coöperation of this science. Among these I may mention the land system of the United States, and the determination of the boundaries of the country. I believe that till it was done by the Federal Government, a uniform system of mathematical survey had never in any country been applied to an extensive territory. Large grants and sales of public land took place before the Revolution, and in the interval between the peace and the adoption of the Constitution; but the limits of these grants and sales were ascertained by sensible objects, by trees, streams, rocks, hills, and by reference to adjacent portions of territory, previously surveyed. The uncertainty of boundaries thus defined, was a never-failing source of litigation. Large tracts of land in the western country, granted by Virginia under this old system of special and local survey, were covered with conflicting claims; and the controversies to which they gave rise formed no small part of the business of the Federal Court after its organization. But the adoption of the present land-system brought order out of chaos. The entire public domain is now scientifically surveyed before it is offered for sale; it is laid off into ranges, townships, sections, and smaller divisions, with unerring accuracy, resting on the foundation of base and meridian lines; and I have been

informed that under this system, scarce a case of contested location and boundary has ever presented itself in court. The General Land Office contains maps and plans, in which every quarter-section of the public land is laid down with mathematical precision. The superficies of half a continent is thus transferred in miniature to the bureau at Washington ; while the local Land Offices contain transcripts of these plans, copies of which are furnished to the individual purchaser. When we consider the tide of population annually flowing into the public domain, and the immense importance of its efficient and economical administration, the utility of this application of Astronomy will be duly estimated.

“I will here venture to repeat an anecdote, which I heard lately from a son of the late Hon. TIMOTHY PICKERING. Mr. OCTAVIUS PICKERING, on behalf of his father, had applied to Mr. DAVID PUTNAM of Marietta, to act as his legal adviser, with respect to certain land claims in the Virginia Military district, in the State of Ohio. Mr. PUTNAM declined the agency. He had had much to do with business of that kind, and found it beset with endless litigation. ‘I have never,’ he added, ‘succeeded but in a single case, and that was a location and survey made by General WASHINGTON, before the Revolution ; and I am not acquainted with any surveys, except those made by him, but what have been litigated.’

“At this moment, a most important survey of the coast of the United States is in progress ; an operation of the utmost consequence, in reference to the commerce, navigation, and hydrography of the country. The entire work, I need scarce say, is one of practical astronomy. The scientific establishment which we this day inaugurate, is looked to for important coöperation in this great undertaking, and will no doubt contribute efficiently to its prosecution.

“Astronomical observation furnishes by far the best means of defining the boundaries of States, especially when the lines are of great length and run through unsettled countries. Natural

indications, like rivers and mountains, however indistinct in appearance, are in practice subject to unavoidable error. By the treaty of 1783, a boundary was established between the United States and Great Britain, depending chiefly on the course of rivers and highlands dividing the waters which flow into the Atlantic Ocean from those which flow into the St. Lawrence. It took twenty years to find out which river was the true St. Croix, that being the starting point. England then having made the extraordinary discovery that the Bay of Fundy is not a part of the Atlantic Ocean, forty years more were passed in the unsuccessful attempt to re-create the highlands which this strange theory had annihilated; and just as the two countries were on the verge of a war, the controversy was settled by compromise. Had the boundary been accurately described by lines of latitude and longitude, no dispute could have arisen. No dispute arose as to the boundary between the United States and Spain, and her successor, Mexico, where it runs through untrodden deserts and over pathless mountains, along the 42d degree of latitude. The identity of rivers may be disputed, as in the case of the St. Croix; the course of mountain chains is too broad for a dividing line; the division of streams, as experience has shown, is uncertain; but a degree of latitude is written on the heavenly sphere, and nothing but an observation is required to read the record.

Questions of Boundary.

“But scientific elements, like sharp instruments, must be handled with scientific accuracy. A part of our boundary between the British Provinces ran upon the forty-fifth degree of latitude; and about forty years ago, an expensive fortress was commenced by the government of the United States, at Rouse’s Point, on Lake Champlain, on a spot intended to be just within our limits. When a line came to be more carefully surveyed, the fortress turned out to be on the wrong side of the line; we had been building an expensive fortification for our neighbor. But in the general

compromises of the Treaty of Washington by the Webster and Ashburton Treaty in 1842, the fortification was left within our limits.

“Errors still more serious had nearly resulted, a few years since, in a war with Mexico. By the treaty of Guadalupe Hidalgo, in 1848, the boundary line between the United States and that country was in part described by reference to the town of El Paso, as laid down on a specified map of the United States, of which a copy was appended to the treaty. This boundary was to be surveyed and run by a joint commission of men of science. It soon appeared that errors of two or three degrees existed in the projection of the map. Its lines of latitude and longitude did not conform to the topography of the region; so that it became impossible to execute the text of the treaty. The famous Mesilla Valley was a part of the debatable ground; and the sum of \$10,000,000, paid to the Mexican Government for that and for an additional strip of territory on the southwest, was the smart-money which expiated the inaccuracy of the map—the necessary result, perhaps, of the want of good materials for its construction.

“It became my official duty in London, a few years ago, to apply to the British Government for an authentic statement of their claim to jurisdiction over New Zealand. The official *Gazette* for the 2d of October, 1840, was sent me from the Foreign Office, as affording the desired information. This number of the *Gazette* contained the proclamations issued by the Lieutenant Governor of New Zealand, ‘in pursuance of the instructions he received from the Marquis of Normanby, one of Her Majesty’s principal Secretaries of State,’ asserting the jurisdiction of his government over the islands of New Zealand, and declaring them to extend ‘from 34° 30’ North to 47° 10’ South latitude.’ It is scarcely necessary to say that south latitude was intended in both instances. This error of 69° of latitude, which would have extended the claim of British jurisdiction over the whole breadth of the Pacific, had, apparently, escaped the notice of that government.

Commerce and Navigation.

“ It would be easy to multiply illustrations in proof of the great practical importance of accurate scientific designations, drawn from astronomical observations, in various relations connected with boundaries, surveys, and other geographical purposes; but I must hasten to

“ 3. A third important department, in which the services rendered by astronomy are equally conspicuous. I refer to commerce and navigation. It is mainly owing to the results of astronomical observation, that modern commerce has attained such a vast expansion, compared with that of the ancient world. I have already reminded you that accurate ideas in this respect, contributed materially to the conception in the mind of COLUMBUS of his immortal enterprise, and to the practical success with which it was conducted. It was mainly his skill in the use of astronomical instruments—imperfect as they were—which enabled him, in spite of the bewildering variation of the compass, to find his way across the ocean.

“ With the progress of the true system of the universe toward general adoption, the problem of finding the longitude at sea presented itself. This was the avowed object of the foundation of the observatory at Greenwich; and no one subject has received more of the attention of astronomers, than those investigations of the lunar theory on which the requisite tables of the navigator are founded. The pathways of the ocean are marked out in the sky above. The eternal lights of the heavens are the only pharos whose beams never fail, which no tempest can shake from its foundation. Within my recollection, it was deemed a necessary qualification for the master and the mate of a merchant-ship, and even for a prime hand, to be able to ‘work a lunar,’ as it was called. The improvements in the chronometer have in practice, to a great extent, superseded this laborious operation; but observation remains, and unquestionably will for ever remain the,

only dependence for ascertaining the ship's time, and deducing the longitude from the comparison of that time with the chronometer.

“It may, perhaps, be thought that astronomical science is brought already to such a state of perfection, that nothing more is to be desired, or at least that nothing more is attainable, in reference to such practicable applications as I have described. This, however, is an idea which generous minds will reject, in this, as in every other department of human knowledge. In astronomy, as in every thing else, the discoveries already made, theoretical or practical, instead of exhausting the science, or putting a limit to its advancement, do but furnish the means and instruments of further progress. I have no doubt we live on the verge of discoveries and inventions, in every department, as brilliant as any that have ever been made; that there are new truths, new facts, ready to start into recognition on every side; and it seems to me there never was an age, since the dawn of time, when men ought to be less disposed to rest satisfied with the progress already made, than the age in which we live; for there never was an age more distinguished for ingenious research, for novel result, and bold generalization.

“That no further improvement is desirable in the means and methods of ascertaining the ship's place at sea, no one, I think, will from experience be disposed to assert. The last time I crossed the Atlantic, I walked the quarter-deck with the officer in charge of the noble vessel, on one occasion, when we were driving along before a leading breeze and under a head of steam, beneath a starless sky at midnight, at the rate certainly of ten or eleven miles an hour. There is something sublime, but approaching the terrible, in such a scene: the rayless gloom—the midnight chill—the awful swell of the deep—the dismal moan of the wind through the rigging—the all but volcanic fires within the hold of the ship. I scarce know an occasion in ordinary life, in which a reflecting mind feels more keenly its hopeless dependence on irrational forces beyond its own control. I asked my companion

how nearly he could determine his ship's place at sea, under favorable circumstances. Theoretically, he answered, I think, within a mile; practically, and usually, within three or four. My next question was, how near do you think we may be to Cape Race? — that dangerous headland which pushes its iron-bound unlighted bastions from the shore of Newfoundland far into the Atlantic— first landfall to the homeward-bound American vessel. We must, said he, by our last observations and reckoning, be within three or four miles of Cape Race. A comparison of these two remarks, under the circumstances in which we were placed at the moment, brought my mind to the conclusion, that it is greatly to be wished that the means should be discovered of finding the ship's place more accurately, or that navigators would give Cape Race a little wider berth. But I do not remember that one of the steam packets between England and America was ever lost on that formidable point.

“It appears to me by no means unlikely that, with the improvement of instrumental power, and of the means of ascertaining the ship's time with exactness, as great an advance beyond the present state of art and science in finding a ship's place at sea may take place, as was effected by the invention of the reflecting quadrant, the calculation of lunar tables, and the improved construction of chronometers.

Babbage's Difference Machine.

“In the wonderful versatility of the human mind, the improvement, when made, will very probably be made by paths where it is least expected. The great inducement to Mr. BABBAGE to attempt the construction of an engine by which astronomical tables could be calculated, and even printed, by mechanical means and with entire accuracy, was the errors in the requisite tables. Nineteen such errors, in point of fact, were discovered in an edition of ‘Taylor's Logarithms,’ printed in 1796; some of which might have led to the most dangerous results in calculating a

ship's place. These nineteen errors, of which one only was an error of the press, were pointed out in the *Nautical Almanac* for 1832. In one of these *errata* the seat of the error was stated to be in cosine of $14^{\circ} 18' 3''$. Subsequent examination showed that there was an error of one second in this correction; and, accordingly, in the *Nautical Almanac* of the next year a new correction was necessary. But in making the new correction of one second, a new error was committed of ten degrees. Instead of cosine $14^{\circ} 18' 2''$, the correction was printed cosine $4^{\circ} 18' 2''$, making it still necessary, in some future edition of the *Nautical Almanac*, to insert an *erratum* in an *erratum* of the *errata* in 'Taylor's Logarithms.'

"In the hope of obviating the possibility of such errors, Mr. BABBAGE projected his calculating, or, as he prefers to call it, his difference machine. Although this extraordinary undertaking has been arrested, in consequence of the enormous expense attending its execution, enough has been achieved to show the mechanical possibility of constructing an engine of this kind, and even one of far higher powers, of which Mr. BABBAGE has matured the conception, devised the notation, and executed the drawings—themselves an imperishable monument of the genius of the author.

"I happened on one occasion to be in company with this highly distinguished man of science, whose social qualities are as pleasing as his constructive talent is marvelous, when another eminent *savant*, Count STRZELECKI, just returned from his Oriental and Australian tour, observed that he found among the Chinese a great desire to know something more of Mr. BABBAGE'S calculating machine, and especially whether, like their own *swampan*, it could be made to go into the pocket. Mr. BABBAGE good-humoredly observed that, thus far, he had been very much out of pocket with it.

Increased Command of Instrumental Power.

"Whatever advances may be made in astronomical science,

theoretical or applied, I am strongly inclined to think that they will be made in connection with an increased command of instrumental power. The natural order in which the human mind proceeds in the acquisition of astronomical knowledge, is minute and accurate observation of the phenomena of the heavens, the skillful discussion and analysis of these observations, and sound philosophy in generalizing the results.

“In pursuing this course, however, a difficulty presented itself, which for ages proved insuperable, and which, to the same extent, has existed in no other science, viz.: that all the leading phenomena are in their appearance delusive. It is indeed true, that, in all sciences, superficial observation can only lead, except by chance, to superficial knowledge; but I know of no branch in which, to the same degree as in astronomy, the great leading phenomena are the reverse of true; while they yet appeal so strongly to the senses, that men who could foretell eclipses, and who discovered the precession of the equinoxes, still believed that the earth was at rest in the center of the universe, and that all the host of heaven performed a daily revolution about it as a center.

“It usually happens in scientific progress, that when a great fact is at length discovered, it approves itself at once to all competent judges. It furnishes a solution to so many problems, and harmonizes with so many other facts, that all the other *data*, as it were, crystallize at once about it. In modern times, we have often witnessed such an impatience, so to say, of great truths to be discovered, that it has frequently happened that they have been found out simultaneously by more than one individual; and a disputed question of priority is an event of very common occurrence. Not so with the true theory of the heavens. So complete is the deception practiced on the senses, that it failed more than once to yield to the suggestion of the truth; and it was only when the visual organs were armed with an almost preternatural instrumental power, that the great fact found admission to the human mind.

The Copernican System.

“It is supposed that in the very dawn of science, PYTHAGORAS, or his disciples, explained the apparent motion of the heavenly bodies about the earth, by the diurnal revolution of the earth on its axis. But this theory, though bearing so deeply impressed upon it the great seal of truth, *simplicity*, was in such glaring contrast with the evidence of the senses, that it failed of acceptance in antiquity or the middle ages. It found no favor with minds like those of ARISTOTLE, ARCHIMEDES, HIPPARCHUS, PTOLEMY, or any of the acute and learned Arabian or mediæval astronomers. All their ingenuity and all their mathematical skill were exhausted in the development of a wonderfully complicated and ingenious, but erroneous theory. The great master truth, rejected for its simplicity, lay disregarded at their feet.

“At the second dawn of science, the great fact again beamed into the mind of COPERNICUS. Now, at least, in that glorious age which witnessed the invention of printing, the great mechanical engine of intellectual progress, and the discovery of America, we may expect that this long-hidden revelation, a second time proclaimed, will command the assent of mankind. But the sensible phenomena were still too strong for the theory; the glorious delusion of the rising and the setting sun could not be overcome. TYCHO DE BRAHE furnished his observatory with instruments superior in number and quality to all that had been collected before; but the great instrument of discovery, which, by augmenting the optic power of the eye, enables it to penetrate beyond the apparent phenomena, and to discern the true constitution of the heavenly bodies, was wanting at Uranienburg. The observations of TYCHO, as discussed by KEPLER, conducted that most fervid, powerful, and sagacious mind, to the discovery of some of the most important laws of the celestial motions; but it was not till GALILEO, at Florence, had pointed his telescope to the sky that the Copernican system could be said to be firmly established in the scientific world.

The Home of Galileo.

“ On this great name, my Friends, assembled as we are to dedicate a temple to instrumental Astronomy, we may well pause for a moment.

“ There is much, in every way, in the city of Florence to excite the curiosity, to kindle the imagination, and to gratify the taste. Sheltered on the north by the vine-clad hills of Fiesoli, whose cyclopean walls carry back the antiquary to ages before the Roman, before the Etruscan power, the flowery city, Fiorenza, covers the sunny banks of the Arno with its stately palaces. Dark and frowning piles of mediæval structure ; a majestic dome, the prototype of St. Peter's ; basilicas which enshrine the ashes of some of the mightiest of the dead ; the stone where DANTE stood to gaze on the Campanile ; the house of MICHAEL ANGELO, still occupied by a descendant of his lineage and name ; his hammer, his chisel, his dividers, his manuscript poems, all as if he had left them but yesterday ; airy bridges, which seem not so much to rest on the earth as to hover over the waters they span ; the loveliest creations of ancient art, rescued from the grave of ages again to enchant the world ; the breathing marbles of MICHAEL ANGELO, the glowing canvas of RAPHAEL and TITIAN, museums filled with medals and coins of every age from CYRUS the younger, and gems and amulets and vases from the sepulchres of Egyptian Pharaohs coëval with JOSEPH, and Etruscan LUCUMONS that swayed Italy before the Romans — libraries stored with the choicest texts of ancient literature — gardens of rose, and orange, and pomegranate, and myrtle — the very air you breathe languid with music and perfume — such is Florence. But among all its fascinations, addressed to the sense, the memory, and the heart, there was none to which I more frequently gave a meditative hour during a year's residence, than to the spot where GALILEO GALILEI sleeps beneath the marble floor of Santa Croce ; no building on which I gazed with greater reverence, than I did upon the modest mansion at

Arcetri, villa at once and prison, in which that venerable sage, by command of the Inquisition, passed the sad closing years of his life. The beloved daughter on whom he had depended to smooth his passage to the grave, laid there before him; the eyes with which he had discovered worlds before unknown, quenched in blindness:

Ahime! quegli occhi si son fatti oscuri,
Che vider più di tutti i tempi antichi,
E luce fur dei secoli futuri:

That was the house, 'where,' says MILTON, another of those of whom the world was not worthy, 'I found and visited the famous GALILEO, grown old — a prisoner to the Inquisition, for thinking on astronomy otherwise than as the Dominican and Franciscan licensers thought.' Great Heavens! what a tribunal, what a culprit, what a crime! Let us thank God, my friends, that we live in the nineteenth century. Of all the wonders of ancient and modern art, statues and paintings, and jewels and manuscripts — the admiration and the delight of ages — there was nothing which I beheld with more affectionate awe than that poor, rough tube, a few feet in length, — the work of his own hands — that very 'optic glass,' through which the 'Tuscan Artist' viewed the moon,

"At evening, from the top of Fesolé,
Or in Valdarno, to descry new lands,
Rivers, or mountains, in her spotty globe:"

that poor little spy-glass, for it is scarcely more, through which the human eye first distinctly beheld the surface of the moon — first discovered the phases of Venus, the satellites of Jupiter, and the seeming handles of Saturn — first penetrated the dusky depths of the heavens — first pierced the clouds of visual error, which, from the creation of the world, involved the system of the Universe.

"There are occasions in life in which a great mind lives years of rapt enjoyment in a moment. I can fancy the emotions of GALI-

LEO, when, first raising the newly-constructed telescope to the heavens, he saw fulfilled the grand prophecy of COPERNICUS, and beheld the planet Venus crescent like the moon. It was such another moment as that when the immortal printers of Mentz and Strasburg received the first copy of the Bible into their hands, the work of their divine art ; like that when COLUMBUS, through the gray dawn of the 12th of October, 1492—COPERNICUS, at the age of eighteen, was then a student at Cracow—beheld the shores of San Salvador ; like that when the law of gravitation first revealed itself to the intellect of NEWTON ; like that when FRANKLIN saw by the stiffening fibers of the hempen cord of his kite, that he held the lightning in his grasp ; like that when LEVERRIER received back from Berlin the tidings that the predicted planet was found.

“ Yes, noble GALILEO, thou art right. *E pur si muove.* ‘ It does move.’ Bigots may make thee recant it ; but it moves, nevertheless. Yes, the earth moves, and the planets move, and the mighty waters move, and the great sweeping tides of air move, and the empires of men move, and the world of thought moves, ever onward and upward to higher facts and bolder theories. The Inquisition may seal thy lips, but they can no more stop the progress of the great truth propounded by COPERNICUS, and demonstrated by thee, than they can stop the revolving earth.

“ Close now, venerable sage, that sightless, tearful eye ; it has seen what man never before saw—it has seen enough. Hang up that poor little spy-glass—it has done its work. Not HERSCHEL nor ROSSE have, comparatively, done more. Franciscans and Dominicans deride thy discoveries now ; but the time will come when, from two hundred observatories in Europe and America, the glorious artillery of science shall nightly assault the skies, but they shall gain no conquests in those glittering fields before which thine shall be forgotten. Rest in peace, great COLUMBUS of the heavens—like him scorned, persecuted, broken-hearted !—in other ages, in distant hemispheres, when the votaries of science, with solemn acts of consecration, shall dedicate their stately edi-

fices to the cause of knowledge and truth, thy name shall be mentioned with honor.

New Periods in Astronomical Science.

“It is not my intention, in dwelling with such emphasis upon the invention of the telescope, to ascribe undue importance, in promoting the advancement of science, to the increase of instrumental power. Too much, indeed, cannot be said of the service rendered by its first application in confirming and bringing into general repute the COPERNICAN system; but for a considerable time, little more was effected by the wondrous instrument than the gratification of curiosity and taste, by the inspection of the planetary phases, and the addition of the rings and satellites of Saturn to the solar family. NEWTON, prematurely despairing of any further improvement in the refracting telescope, applied the principle of reflection; and the nicer observations now made, no doubt, hastened the maturity of his great discovery of the law of gravitation; but that discovery was the work of his transcendent genius and consummate skill.

“With BRADLEY, in 1741, a new period commenced in instrumental astronomy, not so much of discovery as of measurement. The superior accuracy and minuteness with which the motions and distances of the heavenly bodies were now observed, resulted in the accumulation of a mass of new materials, both for tabular comparison and theoretical speculation. These materials formed the enlarged basis of astronomical science between NEWTON and SIR WILLIAM HERSCHEL. His gigantic reflectors introduced the astronomer to regions of space before unvisited—extending beyond all previous conception the range of the observed phenomena, and with it proportionably enlarged the range of constructive theory. The discovery of a new primary planet and its attendant satellites was but the first step of his progress into the labyrinth of the heavens. Contemporaneously with his observations, the French astronomers, and especially LA PLACE, with a

geometrical skill scarcely, if at all, inferior to that of its great author, resumed the whole system of NEWTON, and brought every phenomenon observed since his time within his laws. Difficulties of fact, with which he struggled in vain, gave way to more accurate observations; and problems that defied the power of his analysis, yielded to the modern improvements of the calculus.

Herschel's Nebular Theory.

“But there is no *Ultima Thule* in the progress of science. With the recent augmentations of telescopic power, the details of the nebular theory, proposed by SIR W. HERSCHEL with such courage and ingenuity, have been drawn in question. Many—most—of those milky patches in which he beheld what he regarded as cosmical matter, as yet in an unformed state—the rudimental material of worlds not yet condensed—have been resolved into stars, as bright and distinct as any in the firmament. I well recall the glow of satisfaction with which, on the 22d of September, 1847, being then connected with the University at Cambridge, I received a letter from the venerable director of the Observatory there, beginning with these memorable words: ‘You will rejoice with me that the great nebula in Orion has yielded to the powers of our incomparable telescope! * * * It should be borne in mind that this nebula, and that of Andromeda, which has been also resolved at Cambridge, are the last strongholds of the nebular theory.’

“But if some of the adventurous speculations built by SIR WILLIAM HERSCHEL on the bewildering revelations of his telescope have been since questioned, the vast progress which has been made in sidereal astronomy, to which, as I understand, the Dudley Observatory will be particularly devoted, the discovery of the parallax of the fixed stars, the investigation of the interior relations of binary and triple systems of stars, the theories for the explanation of the extraordinary, not to say fantastic, shapes discerned in some of the nebulous systems—whirls and spirals

radiating through spaces as vast as the orbit of Neptune ; the glimpses at systems beyond that to which our sun belongs ; these are all splendid results, which may fairly be attributed to the school of *HERSCHEL*, and will for ever insure no secondary place to that name in the annals of science.

Relationship of the Liberal Arts.

“In the remarks which I have hitherto made, I have had mainly in view the direct connection of astronomical science with the uses of life and the service of man. But a generous philosophy contemplates the subject in higher relations. It is a remark as old, at least, as *PLATO*, and is repeated from him more than once by *CICERO*, that all the liberal arts have a common bond and relationship. The different sciences contemplate as their immediate object the different departments of animate and inanimate nature ; but this great system itself is but one, and its parts are so interwoven with each other, that the most extraordinary relations and unexpected analogies are constantly presenting themselves ; and arts and sciences seemingly the least connected, render to each other the most effective assistance.

“The history of electricity, galvanism, and magnetism, furnishes the most striking illustration of this remark. Commencing with the meteorological phenomena of our own atmosphere, and terminating with the observation of the remotest heavens, it may well be adduced, on an occasion like the present. *FRANKLIN* demonstrated the identity of lightning and the electric fluid. This discovery gave a great impulse to electrical research, with little else in view but the means of protection from the thunder-cloud. A purely accidental circumstance led the physician *GALVANI*, at Bologna, to trace the mysterious element, under conditions entirely novel, both of development and application. In this new form it became, in the hands of *DAVY*, the instrument of the most extraordinary chemical operations ; and earths and alkalies, touched by the creative wire, started up into metals that float on water and

kindle in the air. At a later period, the closest affinities are observed between electricity and magnetism, on the one hand; while, on the other, the relations of polarity are detected between acids and alkalis. Plating and gilding henceforth become electrical processes. In the last applications of the same subtle medium, it has become the messenger of intelligence across the land and beneath the sea; and is now employed by the astronomer to ascertain the difference of longitudes, to transfer the beats of the clock from one station to another, and to record the moment of his observations with automatic accuracy. How large a share has been borne by America in these magnificent discoveries and applications, among the most brilliant achievements of modern science, will sufficiently appear from the repetition of the names of FRANKLIN, HENRY, MORSE, WALKER, MITCHELL, LOCK, and BOND.

Versatility of Genius.

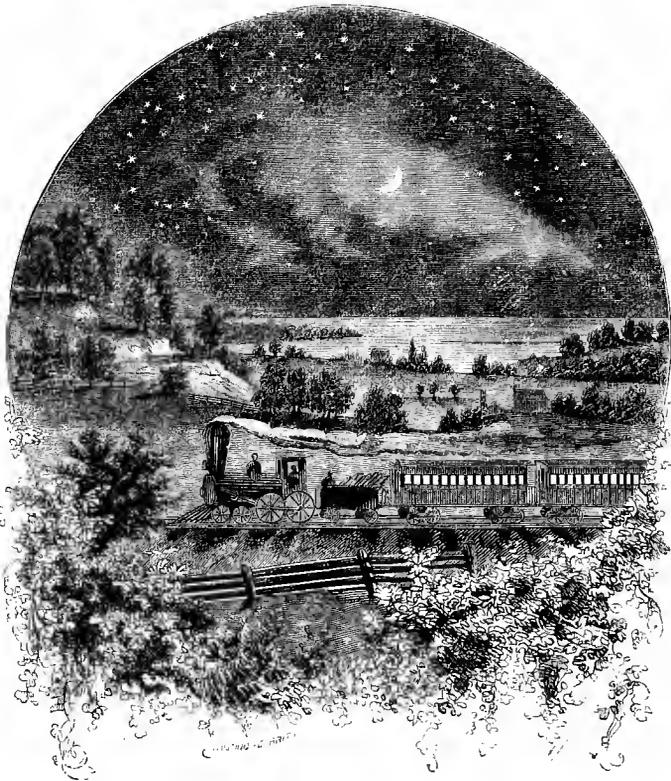
“It has sometimes happened, whether from the harmonious relations to each other of every department of science, or from rare felicity of individual genius, that the most extraordinary intellectual versatility has been manifested by the same person. Although NEWTON’S transcendent talent did not blaze out in childhood, yet as a boy he discovered great aptitude for mechanical contrivance. His water-clock, self-moving vehicle, and mill, were the wonder of the village; the latter propelled by a living mouse. SIR DAVID BREWSTER represents the accounts as differing, whether the mouse was made to advance ‘by a string attached to its tail,’ or by ‘its unavailing attempts to reach a portion of corn placed above the wheel.’ It seems more reasonable to conclude that the youthful discoverer of the law of gravitation intended, by the combination of these opposite attractions, to produce a balanced movement. It is consoling to the average mediocrity of the race, to perceive in these sportive essays that the mind of NEWTON passed through the stage of boyhood. But emerging from boyhood, what a bound it made, as from earth to heaven! Hardly com-

mencing bachelor of arts, at the age of twenty-four, he untwisted the golden and silver threads of the solar spectrum; simultaneously, or soon after, conceived the method of fluxions; and arrived at the elemental idea of universal gravity before he had passed to his master's degree. Master of Arts, indeed! That degree, if no other, was well bestowed. Universities are unjustly accused of fixing science in stereotype. That diploma is enough of itself to redeem the honors of academical parchment from centuries of learned dullness and scholastic dogmatism.

“But the great object of all knowledge is to enlarge and purify the soul, to fill the mind with noble contemplations, to furnish a refined pleasure, and to lead our feeble reason from the works of nature up to its great Author and Sustainer. Considering this as the ultimate end of science, no branch of it can surely claim precedence of Astronomy. No other science furnishes such a palpable embodiment of the abstractions which lie at the foundation of our intellectual system—the great ideas of time, and space, and extension, and magnitude, and number, and motion, and power. How grand the conception of the ages on ages required for several of the secular equations of the solar system; of distances from which the light of a fixed star would not reach us in twenty millions of years; of magnitudes compared with which the earth is but a foot-ball; of starry hosts—suns like our own—numberless as the sands on the shore; of worlds and systems shooting through the infinite spaces, with a velocity compared with which the cannon-ball is a way-worn, heavy-paced traveler!

The Spectacle of the Heavens.

“Much, however, as we are indebted to our observatories for elevating our conceptions of the heavenly bodies, they present, even to the unaided sight, scenes of glory which words are too feeble to describe. I had occasion, a few weeks since, to take the early train from Providence to Boston; and for this purpose rose at two o'clock in the morning. Every thing around was



NIGHT.

wrapped in darkness and hushed in silence, broken only by what seemed at that hour the unearthly clank and rush of the train. It was a mild, serene midsummer's night; the sky was without a cloud, the winds were whist. The moon, then in the last quarter, had just risen, and the stars shone with a spectral luster but little affected by her presence; Jupiter, two hours high, was the herald of the day; the Pleiades, just above the horizon, shed their sweet influence in the east; Lyra sparkled near the zenith; Andromeda veiled her newly discovered glories from the naked eye in the south; the steady Pointers, far beneath the Pole, looked meekly up from the depths of the north to their sovereign.



MORNING.

“Such was the glorious spectacle as I entered the train. As we proceeded, the timid approach of twilight became more perceptible; the intense blue of the sky began to soften; the smaller stars, like little children, went first to rest; the sister-beams of the Pleiades soon melted together; but the bright constellations of the west and north remained unchanged. Steadily the wondrous transfiguration went on. Hands of angels, hidden from mortal eyes, shifted the scenery of the heavens; the glories of night dissolved into the glories of the dawn. The blue sky now turned more softly gray; the great watch-stars shut up their holy eyes; the east began to kindle. Faint streaks of purple soon

blushed along the sky; the whole celestial concave was filled with the inflowing tides of the morning light, which came pouring down from above in one great ocean of radiance; till at length, as we reached the Blue Hills, a flash of purple fire blazed out from above the horizon, and turned the dewy tear drops of flower and leaf into rubies and diamonds. In a few seconds, the everlasting gates of the morning were thrown wide open, and the lord of day, arrayed in glories too severe for the gaze of man, began his course.

“I do not wonder at the superstition of the ancient Magians, who, in the morning of the world, went up to the hill-tops of Central Asia, and, ignorant of the true God, adored the most glorious work of his hand. But I am filled with amazement when I am told, that in this enlightened age, and in the heart of the Christian world, there are persons who can witness this daily manifestation of the power and wisdom of the Creator, and yet say in their hearts, ‘There is no God.’

Undiscovered Bodies.

“Numerous as are the heavenly bodies visible to the naked eye, and glorious as are their manifestations, it is probable that in our own system there are great numbers as yet undiscovered. Just two hundred years ago this year, HUYGHENS announced the discovery of one satellite of Saturn, and expressed the opinion that the six planets and six satellites then known, and making up the perfect number of *twelve*, composed the whole of our planetary system. In 1729, an astronomical writer expressed the opinion that there might be other bodies in our system, but that the limit of telescopic power had been reached, and no further discoveries were likely to be made. The orbit of one comet only had been definitively calculated. Since that time, the power of the telescope has been indefinitely increased: two primary planets of the first class, ten satellites, and forty-three small planets revolving between Mars and Jupiter, have been discovered; the orbits of six or seven hundred comets, some of brief period, have been ascertained; and it has been computed that hundreds of thousands of these

mysterious bodies wander through our system. There is no reason to think that all the primary planets which revolve about the sun, have been discovered. An indefinite increase in the number of asteroids, may be anticipated; while outside of Neptune, between our sun and the nearest fixed star, supposing the attraction of the sun to prevail through half the distance, there is room for ten more primary planets, succeeding each other at distances increasing in a geometrical ratio. The first of these will, unquestionably, be discovered as soon as the perturbations of Neptune shall have been accurately observed; and with maps of the heavens, on which the smallest telescopic stars are laid down, it may be discovered much sooner.

The Vastness of Creation.

“But it is when we turn our observation and our thoughts from our own system, to the systems which lie beyond it in the heavenly spaces, that we approach a more adequate conception of the vastness of creation. All analogy teaches us that the sun which gives light to us, is but one of those countless stellar fires which deck the firmament; and that every glittering star in that shining host, is the center of a system as vast and as full of subordinate luminaries as our own. Of these suns—centers of planetary systems—thousands are visible to the naked eye, millions are discovered by the telescope. Sir JOHN HERSCHEL, in the account of his operations at the Cape of Good Hope, calculates that about five and a half millions of stars are visible enough to be *distinctly counted* in a twenty-foot reflector, in both hemispheres: He adds, ‘that the actual number is much greater, there can be little doubt.’ His illustrious father estimated on one occasion, that 125,000 stars passed through the field of his forty-foot reflector in a quarter of an hour. This would give 12,000,000 for the entire circuit of the heavens in a single telescopic zone; and this estimate was made under the assumption that the nebulae were masses of luminous matter not yet condensed into suns.

“These stupendous calculations, however, form but the first

column of the inventory of the universe. Faint white specks are visible, even to the naked eye of a practiced observer, in different parts of the heavens. Under high magnifying powers, several thousands of such spots are visible—no longer, however, faint white specks, but many of them resolved by powerful telescopes into vast aggregations of stars, each of which may with propriety be compared with the milky way. Many of these nebulae, however, resisted the power of Sir WILLIAM HERSCHEL'S great reflector, and were, accordingly, still regarded by him as masses of unformed matter, not yet condensed into suns. This, till a few years since, was perhaps the prevailing opinion; and the nebular theory filled a large space in modern astronomical science. But with the increase of instrumental power, especially under the mighty grasp of Lord Rosse's gigantic reflector, and the great refractors at Pulkova and Cambridge, the most irresolvable of these nebulae have given way; and the better opinion now is, that every one of them is a galaxy, like our own milky way, composed of millions of suns. In other words, we are brought to the bewildering conclusion that thousands of these misty specks, the greater part of them too faint to be seen with the naked eye, are, not each a universe like our solar system, but each a 'swarm' of universes of unappreciable magnitude. The mind sinks overpowered by the contemplation. We repeat the words, but they no longer convey distinct ideas to the understanding.

Conceptions of the Universe.

"But these conclusions, however vast their comprehension, carry us but another step forward in the realms of sidereal astronomy. A proper motion in space, of our sun, and of the fixed stars, as we call them, has long been believed to exist. Their vast distances only prevent its being more apparent. The great improvement of instruments of measurement, within the last generation, has not only established the existence of this motion, but has pointed to the region in the starry vault around which our whole solar and

stellar system, with its myriad of attendant planetary worlds appears to be performing a mighty revolution. If, then, we assume that outside of the system to which we belong, and in which our sun is but a star like Aldebaran or Sirius, the different nebulae of which we have spoken—thousands of which spot the heavens—constitute a distinct family of universes, we must, following the guide of analogy, attribute to each of them also, beyond all the revolutions of their individual attendant planetary systems, a great revolution, comprehending the whole; while the same course of analogical reasoning would lead us still further onward, and in the last analysis, require us to assume a transcendental connection between all these mighty systems—a universe of universes, circling round in the infinity of space, and preserving its equilibrium by the same laws of mutual attraction which bind the lower worlds together.

“It may be thought that conceptions like these are calculated rather to depress than to elevate us in the scale of being; that, banished as he is by these contemplations to a corner of creation, and there reduced to an atom, man sinks to nothingness in this infinity of worlds. But a second thought corrects the impression. These vast contemplations are well calculated to inspire awe, but not abasement. Mind and matter are incommensurable. An immortal soul, even while clothed in ‘this muddy vesture of decay,’ is, in the eye of God and reason, a purer essence than the brightest sun that lights the depths of heaven. The organized human eye, instinct with life and soul, which, gazing through the telescope, travels up to the cloudy speck in the handle of Orion’s sword, and bids it blaze forth into a galaxy as vast as ours, stands higher in the order of being than all that host of luminaries. The intellect of NEWTON, which discovered the law that holds the revolving worlds together, is a nobler work of God than a universe of universes of unthinking matter.

“If, still treading the loftiest paths of analogy, we adopt the supposition—to me, I own, the grateful supposition—that the countless planetary worlds which attend these countless suns, are

the abodes of rational beings like man, instead of bringing back from this exalted conception a feeling of insignificance, as if the individuals of our race were but poor atoms in the infinity of being, I regard it, on the contrary, as a glory of our human nature, that it belongs to a family which no man can number of rational natures like itself. In the order of being they may stand beneath us, or they may stand above us; *he* may well be content with his place, who is made 'a little lower than the angels.'

Contemplation of the Heavens.

"Finally, my friends, I believe there is no contemplation better adapted to awaken devout ideas than that of the heavenly bodies—no branch of natural science which bears clearer testimony to the power and wisdom of God than that to which you this day consecrate a temple. The heart of the ancient world, with all the prevailing ignorance of the true nature and motions of the heavenly orbs, was religiously impressed by their survey. There is a passage in one of these admirable philosophical treatises of CICERO composed in the decline of life, as a solace under domestic bereavement and patriotic concern at the impending convulsions of the state, in which, quoting from some lost work of ARISTOTLE, he treats the topic in a manner which almost puts to shame the teachings of Christian wisdom.

"Nobly does Aristotle observe, that if there were beings who had always lived under ground, in convenient, nay, in magnificent dwellings, adorned with statues and pictures, and every thing which belongs to prosperous life, but who had never come above ground; who had heard, however, by fame and report, of the being and power of the gods; if, at a certain time, the portals of the earth being thrown open, they had been able to emerge from those hidden abodes to the regions inhabited by us; when suddenly they had seen the earth, the seas, and the sky; had perceived the vastness of the clouds and the force of the winds; had contemplated the sun, his magnitude and his beauty, and still more his

effectual power, that it is he who makes the day, by the diffusion of his light through the whole sky ; and, when night had darkened the earth, should then behold the whole heavens studded and adorned with stars, and the various lights of the waxing and waning moon, the risings and the settings of all these heavenly bodies, and the courses fixed and immutable in all eternity ; when, I say, they should see these things, truly they would believe that there were gods, and these so great things are their works.'

"There is much by day to engage the attention of the Observatory ; the sun, his apparent motions, his dimensions, the spots on his disc—to us the faint indications of movements of unimagined grandeur in his luminous atmosphere—a solar eclipse, a transit of the inferior planets, the mysteries of the spectrum ; all phenomena of vast importance and interest. But night is the astronomer's accepted time ; he goes to his delightful labors when the busy world goes to its rest. A dark pall spreads over the resorts of active life ; terrestrial objects, hill and valley, and rock and stream, and the abodes of men disappear ; but the curtain is drawn up which concealed the heavenly hosts. There they shine and there they move, as they moved and shone to the eyes of NEWTON and GALILEO, of KEPLER and COPERNICUS, of PTOLEMY and HIPPARCHUS ; yea, as they moved and shone when the morning stars sang together, and all the sons of GOD shouted for joy ! All has changed on earth ; but the glorious heavens remain unchanged. The plow passes over the site of mighty cities, the homes of powerful nations are desolate, the languages they spoke are forgotten ; but the stars that shone for them are shining for us ; the same eclipses run their steady cycle ; the same equinoxes call out the flowers of spring, and send the husbandman to the harvest ; the sun pauses at either tropic as he did when his course began ; and sun and moon, and planet and satellite, and star, and constellation, and galaxy, still bear witness to the power, the wisdom, and the love, which placed them in the heavens and uphold them there !"



MEMOIRS OF THE BAT FAMILY.

THOUGH the bats are, upon the whole, useful, rather than hurtful to man, they are creatures to which poetry and superstition have in all ages had recourse, to deepen the feelings of loathing and horror. The bats are things of the doubtful light—the dim twilight—which, in ages of ignorance, converts white stones into ghosts, and bushes into spectres. They dwell in the ruined wall or riven earth, and they also often find their way into the sepulchres and catacombs of the ancients. They were thus dwellers with desolation and death; and it was but stretching the imagination a little further, to suppose that they were in league with these loathed and dreaded powers.

The rapacity of the bats in their feeding during the twilight

gloom, and the miscellaneous nature of their food, gave still further color to the supposition. Hovering about the temples, they ate greedily the blood and other remains of the sacrifices; when famine or pestilence, which were then of frequent occurrence, though fortunately known to us chiefly by name, strewed the earth with the bodies of the dead, and when night closed upon the horrors of the battle-field, the bats came to the nocturnal feast. As in all cases they came fluttering, and apparently formless, with wing, most unlike any organ bearing the same name which is spread to the light of day or the sun of heaven, they perfected their claim of poetical alliance with the infernal regions, and the powers which held dominion there. As the peacock was the bird sacred to Juno, the queen of heaven, so the bat was the creature sacred, or accursed, if the word is better liked, to Proserpine, the empress of hell.

The use of bats for these purposes, is as old as HOMER, who very skillfully manages them in heightening the graphic effect of the splendid passage in which he describes the shrieks and wailings of the ghosts in the regions of woe; and after HOMER, all poets and painters who have ventured upon similar delineations, have made use of the bats for the purposes of effect. Even to this day, painters must borrow the wings of bats for their devils, in the same way that they borrow the wings of doves for their angels; and one has only to throw a deep REMBRANDT shade over a piece of canvas, and shew a bat's wing partly displayed from a cave, in order to give an infernal air to it, and make it, with very little painting, a good poetical representation of the gates of hell. It is easy to see how a race which is linked with such associations, should have had but a scanty measure of justice meted out to it by the half-superstitious naturalists of the Middle Ages; and a remnant of the same superstition is, no doubt, the cause of much of the horror which is still associated with some of the larger species of warm countries.

When we come to study the family of bats in the light of natural history, not only does the traditional horror to which we

have alluded, vanish, but in their structure and habits we find much that is exceedingly curious. Their organs of sense are variously developed. The ears are in general large, and in some of the species they have a duplicature, or second concha, as if there were one ear within another. It is hence presumed that the sense of hearing is acute; and it may be that those which have the duplicature to the ears, have thus the means of closing up the auditory passage, so that they may not be disturbed in their repose during the day. The nostrils and mouth are also sometimes surrounded by produced membranes, the use of which is not very well known. Perhaps they aid the sense of smelling, which is generally acute in nocturnal feeders; perhaps they assist in the capture of the insect prey, and perhaps they are in some measure organs of touch.

The eyes are very small, and deeply imbedded, something like the eyes of moles, and though they must have the power of vision, it does not appear that they are essential to the animal in finding its way, even when that is intricate. The well-known experiments of SPALLANZANI, which were verified by others, proved that when blindfolded, or even blinded, bats can find their way between obstacles of which they could have had no previous knowledge; and indeed, though we, reasoning from ourselves as the example, are very apt to suppose that what we call the caution of animals is a matter of experience, yet, prejudice and false analogy apart, experience appears to have little or nothing to do in the matter. SPALLANZANI suspended willow rods in the room in which he turned the blind bats loose to fly; but though he frequently shifted these so as to make the passage between them as varied and as intricate as possible, the bats never struck against one of them, though they kept flying about in all directions!

A question has hence been raised, as to the means by which bats contrive to avoid obstacles; and the same question may be extended to very many other animals. A horse, in the dark, pauses when he comes to a closed gate, though he never was on

the road before ; nocturnal beasts do not more frequently fall into pits and over precipices, than beasts which are abroad during the day, and have their eyes to guide them, and nocturnal birds do not fly against trees, any more than day-light birds. People, too, will keep a well-known path, though the night be pitch dark.

In the last case, we are in the habit of saying that "the feet know the road," and the saying is probably not very wide of the truth. "Feet" or "head," we know that which we have learned. Animals need no learning in the performance of their natural functions ; they know all ways, instinctively, which their habits lead them to ; the nocturnal ones have no more difficulty in the dark, than the diurnal ones have in the brightest sunshine.

This, it will naturally be said, is not an answer to the question ; but though it would be easy enough to write more, it is, in truth, all that can philosophically be given. That the animals feel a different resistance in the air, in time to avoid the obstacle, the pit, or the precipice, is evident ; but how they feel it, or even what name we are to give it as a sense, is another matter. Of sensation we have no knowledge beyond the experience of our own senses ; what is said respecting them, even by those who are accounted "authorities" in matters of physiology, is vague enough. The most rational theory on the subject is, that as the sentient animal is one ; all the senses are essentially one also, only modified by different organs ; and if modified by different organs in the same body, much more may they be modified by bodies which are specifically different, so that the sense which has apparently a similar organ, and to which, on that account, we give the same name, may be very different in two different animals. We are accustomed to say that a blood-hound which follows on the "slot," has a very exquisite sense of smell ; but the hound cares nothing for roses or mignonnette, or all the perfumes in the world ; and the eye of the eagle, much as it has been descanted on in respect to its powers of vision, has no perception of beauty either in forms or colors. The flying membranes of bats, thin as they are, contain a beautifully reticulated plexus, or net-work of nerves, and the

texture of these, externally, is of that description with which we usually associate a very delicate sense of touch. But still we cannot say that such a surface is absolutely necessary; for it appears that the whiskers of cats, the delicate fringes in which the wing feathers of owls terminate, and many other surfaces and substances in which there do not immediately appear to be any nerves, give indications equally delicate and certain. A blow on the horn of an ox appears to pain the animal even more than a similar blow on the hide; and treading on the toe is none the less painful for its being fortified with the mail of a corn.

The breeding of bats takes place at the very hottest time of the year; the young, which are usually two in number, are naked and helpless at their birth, capable only of clinging to the teats of their mother, which, however, they do with the greatest firmness and pertinacity. This habit in them is necessary, for the mother does not lie down, or even stand on the ground, when she suckles her young, as is the case with most of the mammalia. She hangs suspended by the nails of her thumbs, or more generally by those of her hind feet, to the branch of a tree, or some cranny or irregularity in a ruin or a cavern. There is no nest in which she can leave the young ones when she goes out to feed, and thus she must bear them about, attached to her body, till they are capable of flight. The female has no marsupium, but this habit resembles somewhat that of the marsupial animals. The young are very immature when produced, and their nest, and place of safety and repose, is the body of their mother.

Some of the species occasionally fly during the day, but that practice is by no means common, and is confined to some of the foreign species which are in part vegetable feeders. In temperate climates they conceal themselves during the day, even in the season of their greatest activity. Caverns, holes of trees and walls, and ruined buildings, are their retreats, and from these they issue forth as dusk begins to set in, flutter about in their laborious flight, and capture such insects as are then on the wing — gnats, mosquitoes, moths and beetles — their wide gape, with its formi-

dable teeth, being an excellent trap for the capture of such prey.

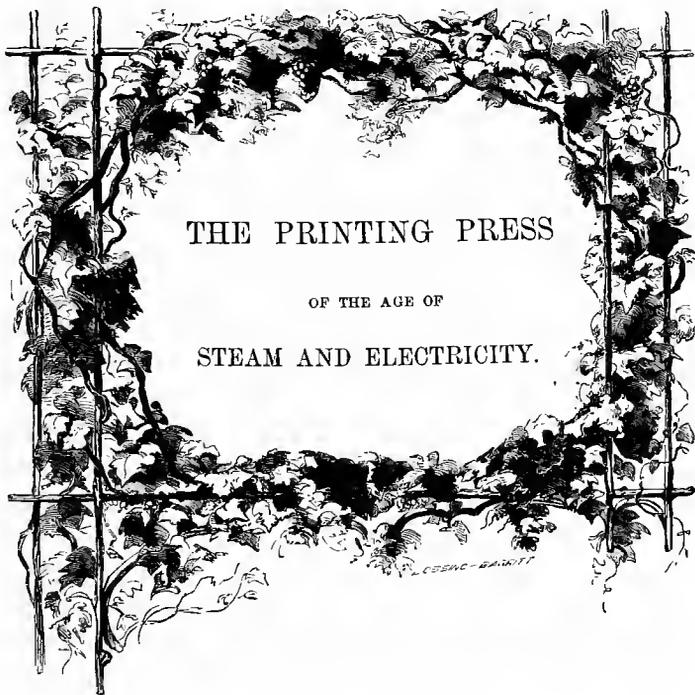
The service which they render to vegetation by the destruction of insects, which in the larva state prey upon it, is very considerable, even in temperate climates ; some of the hot countries in which these swarm by myriads, could not, but for them, be inhabited. In humid places on the margins of tropical forests, mosquitoes are troublesome enough as it is, but if the bats did not reduce their numbers they would be utterly unbearable. Those species, too, which frequent the towns and settlements, are useful in other respects. Most of the race are miscellaneous in their feeding, and not very delicate in their taste. They devour, indiscriminately, all animal substances, whether raw or dressed, and whether in a fresh or putrid state, thus removing a great deal of noxious and dangerous matter.

So far, our account having reference to the bats with which we are acquainted in temperate countries, we have spoken of them as a gentle and useful race ; but truth compels us to declare, that there are, in far-off tropical countries, larger and more formidable creatures of this family. In the Island of Java, there is a species known by the name of Rousette, of which a portrait is given at the head of this article. They are very abundant, hanging in black rows or groups during the day, with their heads down and wings folded, on the trees. At evening, they take to their wings, and, guided by unerring instinct, resort to the gardens and plantations, where they seek the delicate fruits, such as melons, oranges, and even cocoa-nuts. In this way, they do immense damage. So troublesome are they, that the inhabitants, in some places, are obliged to protect their fruit by loose nets or baskets of split bamboo.

In South America, there is a species of bat, which has acquired the horrid name of Vampire. It lives on the blood of animals, and usually sucks while its victim is asleep. It is said to fan the unconscious sufferer with its wings, so as to lull him into more profound repose, by a soothing coolness. The ears of horses and

cattle, the combs and wattles of fowls, and the toes of men, are said to be its favorite points of attack. Nevertheless, neither the body of this, nor that of the rousette bats, exceed six inches in length, though their wings stretch out to two feet; therefore, all the legends of their dangerous and destructive character are to be regarded as idle exaggerations.

It is probable that these larger bats, however, have given rise to some of the superstitions which appear in classical literature. The harpies, which were flying creatures, with the faces of women and the bodies, wings and claws of birds, and at the same time emitting a noisome stench and polluting whatever they touched, might very easily have been framed by popular imagination out of the more formidable species, which, no doubt, once inhabited the southern portions of Europe, as well as the contiguous countries of Asia and Africa. The still more terrible myth of a demon, which sucked the blood of persons during the night, and which acquired the name of Vampire, is very likely to have sprung from the stealthy performances of bats resembling those of South America. By a similar process, no doubt, the dragons, basilisks, wiverns, and griffins, which figure in the legends of the middle ages, were created from the crocodiles, serpents, and other animals, which the Crusaders saw, for the first time, in their visits to the East. In a rude age, the imagination needs little encouragement to convert objects so really curious and strange as those we have been describing, into hideous monsters, endowed with supernatural powers. It is the province of education and enlightened reason, to reduce these horrid creations of fancy to the comparatively simple and innocent dimensions of truth.



IN the 27th September, 1855, the "Publishers' Association" of New York, held a "Fruit Festival," at the Crystal Palace in that city, in compliment to the Authors and Booksellers assembled from various parts of the United States, Mr. WILLIAM APPLETON presiding. There were present many of the most distinguished literary men of the country, and the occasion was, in various aspects, one of the most gratifying that has ever occurred in this country. Many eloquent and instructive addresses were made: among these was the following, by the Rev. E. H. CHAPIN:

"SIR: There are some things which overwhelm opposition, and disdain alliance. The man who tries to drown the thunder of
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Niagara with his voice, appears not much more insignificant than the poet or orator who undertakes to illustrate and eulogize it. It is very much so, with 'the Printing Press of the Age of Steam and Electricity.' As it far outruns the rivalry of human speech, and delivers its messages to millions in a day, so it is, in itself, much more eloquent than anything that can be said about it. At least, sir, as it stands before us, harnessed to those twin powers of Might and Swiftmess, and, more like an intelligent being than a machine, with its slim fingers picks up and scatters into the world its burden of thought to go abroad 'noiseless as snow-flakes, but potent as thunder'—it is quite certain that the profoundest suggestions which it excites are inexpressible, and that what can be spoken is very obvious.

"And so, sir, as you have invited me to speak upon this theme, if I merely reiterate that which has been thought and spoken many times over, I must refer you for my apology to the theme itself.

"Mr. President, the printing press of the age of steam and electricity, stands before us in a three-fold aspect—as an indicator of mechanical and general progress; as an actual power; and as an agent of great and beneficent uses. A few words upon each of these 'very obvious points.'

"I doubt whether we can select an illustration of the mechanical progress of the last four hundred years, that is so obvious and tangible as the printing press. For, in the first place, within that period there has been no other mechanical agent of such direct and momentous importance. We divide time into epochs and crises perhaps too much, forgetting that there is no period or event which is sudden and complete in itself, but that historical changes work in sublime unity and silence, like the elements which filter among the ribs of the earth. But if ever, out of uninspired history, there was palpable sign and embodied symbol of crisis and change for the world, it appeared in that creaking, clumsy machine of FAUST and GUTTENBERG.

"Yes, that was a queer, portentous creature, that rickety thing

of wood and iron, that came stalking into the world among kings and priests, thrones and castles, and other feudal respectabilities. There was a revolutionist, there was a troublesome democrat, there was a voice for the groaning people, there was a prophet of free and beautiful thought, there was a working-preacher that should tear the chained Word of God from the pillars of monasteries, and scatter it all over the world, and kindle the light to read it by!

“And if the printing press was thus important, both as an agent and a symbol of improvement, it is equally true that the greatest inventions and discoveries since that time have been allied with it, and in some way brought to serve its vast ends.

“Surely, the applications of steam-power are not more splendidly illustrated even in the rail-car and the steamship—great instruments of civilization as they are—than in the working of a hundred marvelous pieces of machinery, to publish and multiply those vehicles of intelligence out of which all genuine civilization flows.

“Surely, the electric telegraph—and the man* is here to-night whose name is imperishably linked with it, and who, if he lives but a few years longer, will see its living nerve stretching around the globe, and feel the heart of China heating against his own—surely, the electric telegraph demonstrates its capacity in no way so wonderfully as in the capacity of a reporter for the daily paper; bringing the last word from fusion conventions and confusion caucuses, telling us that Sebastopol is at length taken, revealing the midnight interior of senates, touching our sympathies with a glimpse of poor fever-smitten Norfolk, and daguerreotyping the passing life and interest of a world upon our breakfast table!

“I say, then, that the printing press, through all stages of its improvement, may be taken as the fitting symbol of the mechanical progress of the last four hundred years.

“And now, in order that you may realize the marvel of that progress, I only ask you to go back in imagination to the work-

* This was an allusion to Professor MORSE, who was present.

shop of GUTTENBERG, striking off that very copy of the Bible which is lodged scarcely more than a mile from this spot ; or into the presence of CAXTON, holding up a damp sheet of the 'Histories of Troy,' or the 'Golden Legend ;' and then just take a walk through the vast manufactories of our HARPERS and APPLETONS. Begin down cellar, with the best hand they have in the shop—the old fire-eater that tugs away there with forty or fifty horse power, and keeps everything moving and all hands busy ; and then go on and go up, through Chinese walls of printing paper, and catacombs of type, and armies of well-employed men, and healthy, happy girls, each with an appointed task ; and look at the iron arms lifting and folding ; the whizzing wheels, the enormous slabs of pressure, the delicate stamps—the countless agents that, with inconceivable quickness, work between the manuscript and the printer's book, turning brains—where they do not themselves furnish the original material—into lead, and lead into print, and print into folded sheets, and sheets into volumes, and volumes into influences of diffused and illimitable power !

“ Now, certainly, this is a vast sweep of mechanical improvement ; but you will observe that it is not *mechanical* improvement merely, for it is absurd to talk of 'mere mechanical improvement' as though it involved every thing else. It presupposes a prior improvement, a development and enlightenment of the common mind that is represented in these marvelous agents ; and it argues a coexistent improvement in the public intelligence which creates the demand for those productions.

“ But, sir, the printing press of the age of steam and electricity, is likewise an actual and mighty power. Let its tendencies balance which way they may, for good or for evil, here it stands, and no man, with half a soul in him, would chain it if he could. I suppose there is no agent of our time that has so much power as the printing press, considering all the influences that are involved with it.

“ I do not say that it is the most excellent power ; that it is better in quality or mightier in proportion to its area than some

others. I think that the human voice has a greater power within the sphere of its influence, and that nothing can equal the living utterance of truth, the effect of a magnetic personality. Nor do I speak of it as especially an independent power. Perhaps it is full as much the organ as the guide of public opinion — a barometer compressed by the air, and not always a reflector of the pure daylight ; so that we can tell, from this or that newspaper, how low down or in what social stratum it hangs, and learn by a book, as well as a bottle, what currents are running.

“ But even as the concentrated force of public opinion or the expression of live thought, it is an incalculable power. From its iron lips, thousands take truth or error. It lines the humblest cottages with its cheap libraries. Men will as soon go without their breakfast as without the daily paper ; and so wide is its scope and so rapid its movements, that people half way up to Albany will read a report of this meeting to-morrow morning, before we are half out of bed. And if it engenders evil, it is the only vehicle through which the remedy can be poured into the world. And then, sir, just consider its power as a money interest. We are hardly aware, many of us, of the amount of capital which is employed ; of the amount of wealth imbedded in stereotype and electrotype plates alone, crowded in the vaults of our great publishers as a merchant crowds the hold of his ship.

“ Why, sir, in this very city there is buried treasure, treasure under ground ; not diamonds, not ingots, but treasure worth far more than any said to have been hidden by Captain Kidd ; geni, imprisoned in little boxes, that at the beck of the publisher start out with a power more potent than that of the spirit described in the Arabian tale. Surely, then, the press does indeed constitute the ‘fourth estate ;’ and if it were not, as I have observed, so democratic, I should say that to it belongs one of the great diamonds of the world.

“ And thus, Mr. President, the third phase of the printing press of the age of steam and electricity assumes the most momentous interest ; for nobody can study this wonderful instrument without

discovering that mainly, that on the whole, it is an agent of great and beneficent uses.

“I shall not enter, now, into any abstract argument to prove that this is the case, by showing that freedom and intelligence, and virtue and religion are linked indissolubly together; and that old MILTON was right in what he said about truth being left free to combat with error. But, *à priori*, I should believe that the printing press, in the age of steam and electricity, must be the agent of the highest uses—the best ends, because, sir, I believe that there is no great action of the natural or social world *permitted* by Providence, without these ends. There was truth in the old conceit that the stars are mated with human destiny, and that distant planets reflect aspects of this earth. There is truth in the conception that every great movement of being and of power involves the purposes of GOD in regard to humanity.

“Do you think all these splendid vehicles of communication were matters of pleasure and profit, of commerce and the custom-house, only? I see a Providential purpose levying on these railroads and telegraphs to do *its* work, and far out on lonely seas *it* hangs its signal-lanterns on the bows of your steamships. And almost the first thought—the comprehensive and most glorious thought—which the printing press awakens in your mind and my mind, and in the mind of every man, is that of great and beneficent uses. All its appurtenances are quickly translated into this meaning. Human measures are defeated, methods fail, but GOD’S own purposes never; and the processes of his eternal righteousness and truth run in the iron grooves of the printing press.

“And so, Mr. President, it is the moral interest of the great power that is represented here to-night, that lends to the occasion its most suggestive aspect. It is the fact that the power wielded by this Publishers’ Association is so much power working, on the whole, against the wrong and the falsehood that are in the world. I look upon these great printing-offices and factories of books as so many moral encampments, and upon these ranks of working-men and working-women as indeed a vast army, arrayed against huge

Redans and Malakoffs of evil. Gentlemen of the New York Publishers' Association, I thank you for those munitions of war, those embattled hosts and yonder glittering signals of success. Women, bending over your work, toil on, for it leads to a result well worthy the spirit and the true mission of woman. And you, my brethren, with rolled-up sleeves, remember it is a world-wide, a final conflict in which you are engaged. The rumble of the power-press is better than the rattle of artillery. The click of composing-sticks is more inspiring than the clank of armor, and every type, more sure than a bullet, and shooting noiseless as the summer air, shall hit the mark, though it be a thousand years ahead. Advance, battalions! for with every forward step the old wrong and falsehood of the world grows weaker, and is made ready to pass away!"



MOUNT ETNA .

THIS volcano, situated near the sea-coast in the north-eastern part of the island of Sicily, has been longer known to history, and is of vastly greater extent, than Vesuvius; in comparison with it, the latter is indeed only a hill. Its eruptions are recorded nearly a thousand years before CHRIST, and thus we know it to have mustered its energies, and poured forth its flames at intervals, for nearly three thousand years. It rises to a height of about 11,000 feet, and its base occupies a surface ninety miles in circumference. The lava streams of Vesuvius do not exceed seven miles in length; while those of Etna extend to eighteen miles in length, five in width, and from fifty to a hundred feet in thickness.

The mountain, which is a single elevation, separate from every

other, appears to be a natural elevation covered with a mass of volcanic materials—stone, earth, ashes, and lava—thrown out at different periods, doubtless reaching back for long ages prior to the first records of history.

From the earliest times, it has attracted the attention of mankind. In remote periods, before science had scattered the specters of superstition, it was the imaginary workshop where VULCAN, and his assistants, the Cyclops, forged the thunderbolts of JUPITER, and performed the other marvels attributed to these giant blacksmiths.

The mountain can be ascended to the top of the crater, though it is a matter of some difficulty. The lower parts are fertile, and are teeming with vineyards, oranges, olives, and other fruits. Then, as you ascend, comes a wooded region, and finally a cone—pierced with one grand crater in the center, and sixty or seventy lesser ones at the sides—absolutely destitute of vegetation, and for six months of the year covered with snow and ice. These latter constitute some of the chief articles of commerce for the adjacent country.

The eruptions of Etna seem to be less frequent than those of Vesuvius; about sixty, however, being recorded. One of the most terrible eruptions was that of 1669, in which fourteen towns and villages, some having a population of three or four thousand inhabitants, were overwhelmed by the enormous flood of lava. This at last reached the walls of Catania, situated at the foot of the mountain, yet at a point nearly fifteen miles from the crater. These walls were of great height, and had been constructed to protect the city. The lava was arrested for a time; but it gradually rose, and at last poured into the town, destroying a great part of it. In one place, the lava was sixty feet thick, and was eight years in cooling! Thirty thousand people perished in this fearful convulsion of nature.

In 1792, an eruption commenced, which continued, almost without cessation, for a whole year. It began by a tree-shaped mass of black smoke, rising to the clouds; then were heard loud

rumblings in the bosom of the mountain, with occasional sounds like the discharges of artillery. After a few days, lava began to flow forth from several mouths in the sides of the mountain, and the streams, rushing forward, broke over the old beds of lava with loud crackling sounds, and at the same time swept the ground, carrying along with them the earth, stones, trees, and other substances which they found in their passage. They also filled up valleys, overwhelmed vineyards, and even approached the walls of towns. When flowing freely, these currents of lava were almost thirty feet thick; but in some places they accumulated to the depth of three hundred feet!

The city of Catania, situated, as we have said, at the foot of the mountain, is one of the most beautiful places in the world. It is of high antiquity, and has frequently suffered from earthquakes and volcanic eruptions; yet it seems always to rise, like the phoenix, more beautiful from its ruins. The very substance which at various periods ravaged its plains has, by its own decomposition, covered them with a soil fertile as that of the fabled Hesperides. The lava which formerly brought death and destruction to the city and all within it, now converted into stone, is the great building material for houses, palaces, churches, convents, and other public edifices; thus contributing to the restoration and embellishment of that which it before overwhelmed.

MORNING, NOON, AND NIGHT.



WAS morn, and, wending on its way,
Beside my path a stream was playing ;
And down its banks, in humor gay,
A thoughtless hoyden boy was straying.

Light as the breeze, they onward flew —
That joyous youth and laughing tide —
And seemed each other's course to woo,
For long they bounded side by side.

And now the dimpling water stayed,
And glassed its ripples in a nook ;
And on its breast a bubble played,
Which won the boy's admiring look.

He bent him o'er the river's brim,
And on the radiant vision gazed ;
For lovelier still, it seemed to him
That, in its breast, *his* image blazed.

With beating heart, and trembling finger,
He stooped the wondrous gem to clasp,
But, spell-bound, seemed a while to linger,
Ere yet he made th' adventurous grasp.

And still a while the glittering toy,
Coquettish, seemed to shun the snare ;
And then more eager grew the boy,
And followed with impetuous air.

Round and around, with heedful eyes,
He chased it o'er the wavy river :
He marked his time, and seized his prize ;
But, in his hand, it burst forever !

Upon the river's marge he sate,
The tears adown his young cheek gushing ;
And long—his heart disconsolate—
He heeded not the river's rushing.

But tears will cease : and now the boy
Once more looked forth upon the stream ;
'Twas morning still ; and lo ! a toy,
Bright as the lost one, in the beam.

He rose—pursued—the bubble caught ;
It burst—he sighed—then others chased ;
And as I parted, still he sought
New bubbles in their downward haste.

My onward path I still pursued,
Till the high noon-tide sun was o'er me ;
And now, though changed in form and mood,
That youth and river seemed before me.

The deepened stream more proudly swept,
Though chafed by many a vessel's prow ;
The youth in manhood's vigor stepped,
But care was chiseled on his brow.

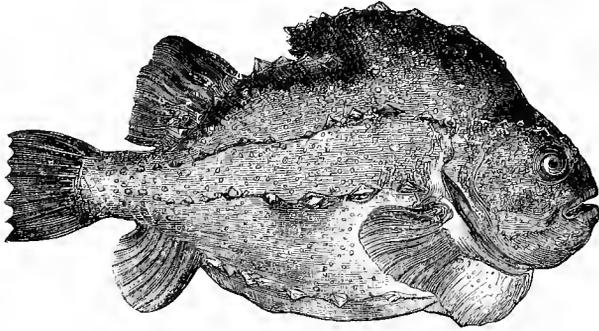
Still on the stream he kept his eye,
And wooed the bubbles to the shore,
And snatched them as they circled by,
Though bursting as they burst before.

Once more we parted. Yet again
We met, though now 'twas evening dim ;
Onward the waters rushed amain
And vanished o'er a cataract's brim.

Though fierce and wild the raging surge,
The bubble-chaser still was there,
And, bending o'er the cataract's verge,
Clutched at the gaudy things of air.

With staff in hand, and tottering knee,
Upon the slippery brink he stood,
And watched, with doting ecstasy,
Each wreath of foam that rode the flood.

"One bubble more!" I heard him call,
And saw his eager fingers play :
He snatched, and down the roaring fall,
With the lost bubble, passed away!



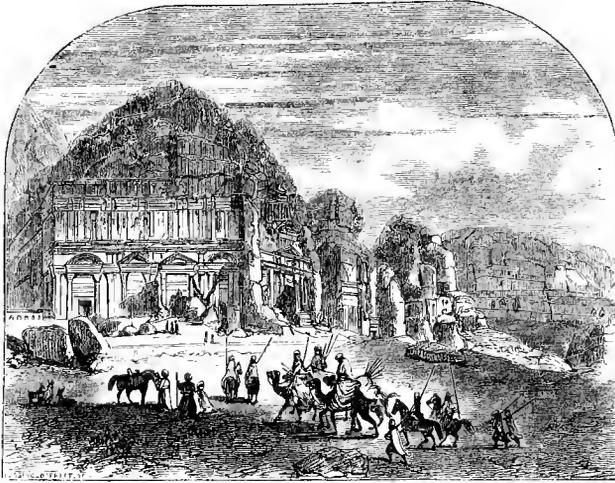
THE LUMP-SUCKER.

NO person can look upon the portrait of this fish without a smile; and yet, if a reason for this were demanded, it might not be easy to give it. Perhaps the explanation lies in that expression of gruff dignity and stupid importance which belongs to its countenance and its form, suggesting a striking resemblance to individuals we have occasionally seen in life. No person of observation can fail to have met with human lump-suckers, men resembling this burly fish, which is noted for its swelling body and pompous face, while its little fins evidently show it to be comparatively slow and feeble in its movements. The various names given to it, of "sea-owl," "lump-sucker," and "cock-paddle," show the ludicrous associations which its appearance has excited.

Nevertheless, the lump-fish is not without its points of interest. It is as variable in the colors of its dress as a city belle, being arrayed in brilliant crimson, mingled with orange, purple, and blue, before the spawning season; afterwards assuming the matronly hues of the dove. When very young, like youth in general, it is smooth and beautiful, and is adorned with a coat of many colors; but as it grows old, like man himself, its skin

becomes rough, and warty, and repulsive. In its old age, too, it acquires an obstinacy which has its parallel, no doubt, in the animals of our race, though its mode of exhibition may be peculiar to this inhabitant of the sea. It has under its throat a powerful sucker, composed of the pectoral and ventral fins; and such is its force, in an old fish, that when put into a pail with several gallons of water, it has been known to adhere so firmly to the bottom that the whole was lifted up by the tail, and still the creature refused to let go his hold. What a reflection is this of many an old land lump-sucker that everybody has seen!

In order to complete our account of this curious member of the finny tribe, we must add that, when full grown, it is about sixteen inches long and eight deep. Its burly appearance arises in part from its projecting under jaw, its elevated crest or ridge running along its back, its bulky disproportion of form to its fins, and its rows of tubercles running along its body. It is seldom served up on the table, and owes its chief celebrity to the eccentricity of its appearance.



THE EASTERN END OF THE VALLEY.

THE ROCK-BUILT CITY OF PETRA.

THE country called Edom in the Scriptures, and Idumea by the Greeks, is situated at the north-eastern angle of Arabia, being about a hundred miles south of Jerusalem, and two hundred east of Memphis, the ancient capital of Egypt. Its original boundaries were of narrow extent, being confined within that portion of Arabia Petraea which lies around the range of Mount Seir, and of which Mount Hor is the principal peak. Rocks, deserts, and mountains, constitute the general features of this country, although, amidst these barren tracts, there are scattered many patches of fertile soil.

The first historical notices of this country occur in the Hebrew Scriptures. While the Israelites were detained in bondage in Egypt, the Edomites, or descendants of ESAU, became a rich and powerful nation. The dukes of Edom, as we learn from the book of Genesis, were famous long before there reigned any king over Israel, and they refused MOSES a passage through their territories

to the land of Canaan. The Edomites first settled in the rocky fastnesses of Mount Seir, which commanded the great road traversed by the commercial caravans of the early ages. Their capitals were Bozrah and Petra. The latter was situated at the foot of Mount Hor, in a deep valley, and the only access to it was through a narrow defile, partly natural and partly cut through the solid rock, which hung over the passage, and in some places interrupted the view of the heavens. The sides of the rock were excavated into numerous dwellings; and to this circumstance the prophet JEREMIAH probably alludes in his denunciation of God's vengeance against Edom. "Thy terribleness hath deceived thee, and the pride of thine heart, O thou that dwellest in the clefts of the rock, that holdest the height of the hill. Though thou shouldst make thy nest as high as the eagle, I will bring thee down from thence, saith the LORD." This prophecy, as we shall see, was fearfully fulfilled.

It is not our purpose to give in detail the history of Edom: it will be sufficient for our present purpose to say, that under a race of native princes, the Edomites long maintained their independence: they were, however, at length divided into two portions, those who occupied the city of Petra and the vicinity taking the name of Nabatheans, while those who dwelt along the borders of Judca still held the name of Idumeans. The latter ceased to exist as an independent people about the year 146 B. C., and their name gradually faded from history: the former continued for two hundred and fifty years later as a distinct nation, but at last were overwhelmed by the Romans.

The city of Petra, the capital of the Nabatheans, as well in its history as its present aspect, is an object of the most intense interest. The time of its foundation is unknown; but it appears to have been coeval with the birth of Eastern commerce, and there is full evidence that it was a flourishing mart of trade seventeen hundred years before the Christian era. It was the point to which all the commerce of Northern Arabia originally tended, and where the first merchants of the earth stored the

precious commodities of the East. It formed the great emporium of mercantile exchange between Palestine, Syria, and Egypt. The famous soothsayer, BALAAM, was a native of this place, and its inhabitants, in his time, were renowned for their learning, their oracular temple, and their skill in augury. During the whole period of the history of Edom, this city appears to have been a seat of wealth and commerce. STRABO, at the commencement of the Christian era, describes it from the account of his friend ATHENODORUS, the philosopher, who spoke with great admiration of the civilized manners of its inhabitants, of the crowds of Roman and foreign merchants there, and of the excellent government of its kings. The city, he says, was surrounded with precipitous cliffs, but was rich in gardens, and supplied with an abundant spring, which rendered it the most important fortress in the desert. PLINY, somewhat later, describes it, more correctly, as a city nearly two miles in extent, with a river running through the midst of it, and situated in a vale inclosed with steep mountains to which all natural access was cut off.

With the decline and fall of the Roman power in the East, the name of Petra, for a time, almost vanishes from the page of history. About the period of the crusades, however, it was held in such esteem by the sultans of Egypt, on account of its great strength, that they made it the depository of their choicest treasures. During the whole of these religious wars, Petra formed an object of earnest contention between the Christians and the Mussulmans, who regarded it as the key to Palestine. After the cessation of the crusades, its once crowded market ceased to be the emporium of nations. Gradually it faded from notice, became forgotten, and was a lost city to the rest of the world. The obscurity of a thousand years covered its ruins, and the very place where it stood was a subject of controversy.

At length, Petra, after being for a series of ages as completely hidden, in its solitude, from the knowledge of mankind, as the Island of Atlantis or the fabled Paradise of Irem, was suddenly and unexpectedly brought to light. For this discovery we are

indebted to the traveler BURCKHARDT, who visited Petra in 1812. Since that time, other travelers have resorted to the spot, and by their picturesque and accurate drawings, have done, for the temples and catacombs of Petra, what the splendid illustrations of WOOD and DAWKINS performed for the ruins of Palmyra. The first emotion in the minds of all these visitors, was that of astonishment at the utter desolation which now reigns over those once celebrated regions. It is scarcely possible to imagine how a wilderness so dreary and repulsive could ever have been adorned with walled cities, or inhabited for ages by a powerful and opulent people. The aspect of the surrounding country is singularly wild and fantastic. On one side stretches an immense desert of shifting sand, the surface of which is covered with black flints, and broken by hillocks into innumerable undulations. On the other side are rugged and insulated precipices, among which rises Mount Hor, with its dark summits; near it lies the ancient Petra, in a plain or hollow of unequal surface, enclosed on all sides with a vast amphitheater of rocks.

The entrance to this celebrated metropolis is from the east, through a deep ravine; and it is not easy to conceive anything more awful or sublime than the sight here presented. Its width, in general, is not more than sufficient for the passage of two horsemen abreast, and through the bottom winds the stream that once watered the city. On the sides of the ravine rise perpendicular walls of rock, from four hundred to seven hundred feet high, which often overhang to such a degree as almost to touch each other at the top, leaving scarcely more light than in a cavern. The sides of this romantic chasm, from which several small streams of water issue, are clothed with the tamarisk, the wild fig, the oleander, and other trees, which sometimes hang down from the cliffs and crevices in beautiful festoons. Near the entrance of the pass, a bold arch of masonry is seen springing over the yawning abyss, at a great height, and apparently inaccessible. For nearly two miles, the sides of the chasm continue to increase in height as the path descends. The solitude is disturbed by the incessant

screaming of eagles. Farther onward, a stronger light begins to break through the somber perspective, until, at length, the ruins of the city burst on the view of the astonished traveler, in their full grandeur, shut in on every side by barren, craggy precipices.

Safety and protection, in an age when nations and tribes were little better than brigands, appear to have been the only objects that could induce a wealthy people to make choice of so remarkable a site for a capital. The whole face of the cliffs and all the sides of the mountains are covered with an endless variety of excavated tombs, private dwellings, and public buildings, presenting altogether a spectacle without a parallel in any part of the world. The rocks are tinted with the most extraordinary hues. They are generally of a dark color, with veins of white, blue, purple, and orange, in rainbow streaks. Their summits present an aspect of nature in her most savage and romantic form, while their bases are worked out in all the symmetry and regularity of art, with colonnades, and pediments, and ranges of corridors adhering to the perpendicular surface. The inner and wider extremity of the circuitous defile by which the city is approached, is sculptured and excavated in a singular manner; and these works become more frequent on both sides, until at last it has the appearance of a continued street of tombs.

About midway in this passage is a spot abrupt and precipitous, where the area of the natural chasm spreads a little, and sweeps into an irregular circle. Here is to be seen the most singular of all these architectural monuments: the natives call it the *Castle of Pharaoh*, though it more resembles a sepulchre than the residence of a prince. The front rises in several stories to the height of sixty or seventy feet, ornamented with columns, rich friezes, pediments, and huge figures of horses and men. On the summit is a large vase, supposed by the Arabs to be full of coins; hence they give to this mysterious urn the name of the *Treasury of Pharaoh*. Its height and position seem to have baffled every approach of avarice or curiosity. From above it, is rendered inaccessible by the bold projection of the rough rocks, and from

below, by the smoothness of the polished surface. The interior of this mausoleum or castle consists of a large, square chamber, with walls and ceiling, perfectly smooth. The surprising effect of the exterior is heightened by the situation and singular character of the approach to it. Half seen, at first, through the dim and narrow opening, columns, statues, and cornices, gradually appear, as if fresh from the chisel, without the tint and weather-stains of age, and executed in stone of a pale rose color. This splendid architectural elevation has been so contrived, that a statue with expanded wings just fills the center of the aperture in front, which, being closed below by the ledges of the rock folding over each other, gives to the figure the appearance of being suspended in the air at a considerable height. No part of this stupendous temple is *built*, properly speaking; the whole is hewn from the solid rock; and its minutest embellishments, wherever the hand of man has not effaced them, are so perfect, that it may be doubted whether any work of the ancients, except in Egypt, has survived, with so little injury from the lapse of time.

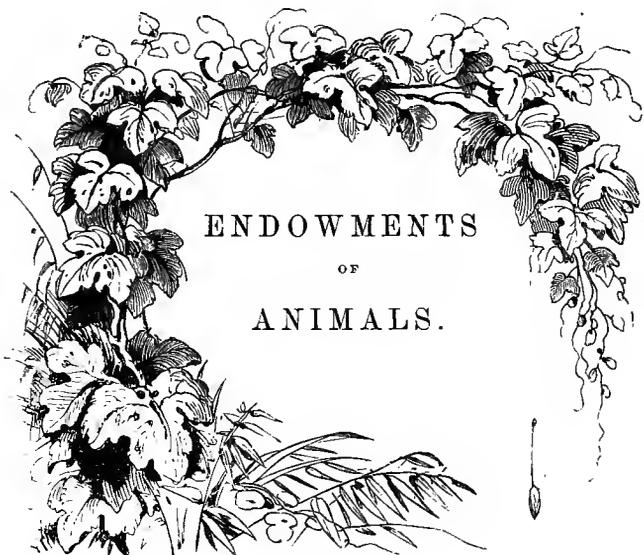
The ruins of the city itself open on the view with singular effect. After winding two or three miles through the dark ravine, tombs present themselves, not only in every avenue within it, and on every precipice that surrounds it, but even intermixed with the public and domestic edifices; so that Petra has been truly denominated one vast necropolis. It contains above two hundred and fifty sepulchres, which are occasionally excavated in tiers, one above the other, and in places where the cliff is so perpendicular, that all access to the uppermost seems impossible. There are, besides, numerous mausoleums of colossal dimensions, in a state of wonderful preservation. Toward the middle of the valley are two large truncated pyramids, and a theater, cut out of the solid rock, with complete rows of benches, capable of containing above three thousand spectators. The ground is covered with heaps of hewn stones, foundations of buildings, fragments of pillars, and vestiges of paved streets—the sad memorials of departed greatness.

The immense number of these stupendous ruins corroborates

the accounts given, both by sacred and profane writers, of the kings of Petra—their courtly grandeur, and their ancient and long-continued royalty. Great must have been the wealth of a city that could dedicate such monuments to the memory of its rulers. Its magnificence can be explained only by the immense trade of which it seems to have been the common center from the very dawn of civilization. The fashion of many of these edifices denotes, pretty nearly, the age to which they belong. Their relics exhibit a mixture of Grecian and Roman architecture, although the ground is strewn with others of a more ancient date. On one of the tombs is a Latin inscription, with the name of a magistrate who died in the city, being governor of Palestina Tertia, in the second century after CHRIST.

These magnificent remains can now be regarded only as the grave of Idumea, in which its former wealth and splendor lie interred. The state of desolation into which it has fallen is not only the work of time, but the fulfillment of prophecy, which foretold that wisdom and understanding should perish out of Mount Seir; that Edom should be a wilderness, and its cities a perpetual waste, the abode of every unclean beast. The prediction of ISAIAH is literally verified—"Thorns shall come up in her palaces, nettles and brambles in the fortresses thereof: the cormorant and the bittern shall possess it, and it shall be a habitation of dragons and a court for owls."

These ghastly vestiges of ancient wealth and splendor are not confined to Petra and the immediate vicinity. In various parts of the country are immense ruins, testifying its former magnificence. But for these, which, in their present state of desolation, bespeak the glory of former ages, the traveler could scarcely believe that a region absolutely divested of inhabitants, blasted by the scorching sun, and chiefly tenanted by scorpions, could once have been covered with waving fields of corn, rich vineyards, pastures teeming with cattle, and cities filled with people, busy in the arts and cares of husbandry, commerce, and manufactures! How strange, how fearful are the mutations of human fortune!



ENDOWMENTS
OF
ANIMALS.

THE more we examine into the vast mystery of Creation, the more wonderful does it appear to our senses. Under whatever aspect we consider it, new features constantly present themselves, thus not only proving that the subject is inexhaustible, but that some of the most startling points have either escaped us altogether, or have only been casually and carelessly noticed. In illustration of this fact, we may mention the various faculties of the animal creation, which at first we are apt to refer to a single gift, denominated instinct; but on further examination we find nearly every mental and moral quality in man, represented, in a greater or less degree, by some of the animal tribes. That in these respects man still stands at an unapproachable distance above each and all of these races, in mind and soul, is manifest; but yet it is alike curious and instructive to trace out the infinitely diversified forms in which creative wisdom, and power,

and goodness, has bestowed its gifts upon the innumerable creatures which it has endowed with life. A few observations upon this subject, will place it in a clear light.

The Sense of Touch.



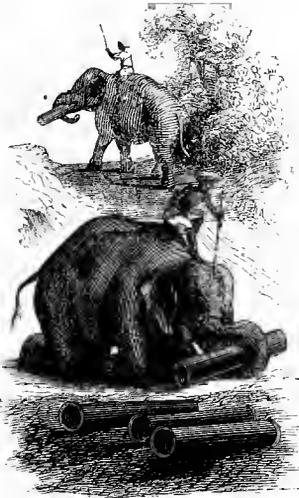
This is the lowest, but the most extensively diffused of the senses. In the absence of every other, it still holds its place, and may, in fact, be considered as the universal sense. By its means the animal is made aware of the nature of space, size, form, extent, of hard and soft, of even and uneven, and ascertains both the weight and temperature of foreign bodies. But besides this universal quality of the skin, in which, among

the higher classes of animals, a net-work of the minutest blood-vessels and nerves spreads itself, forming in places little prominences, or papillæ, we often find separate parts—tentacula—which, like an elongated membrane of the skin, are endowed with the most delicate sense of perception, and in which a higher power of sensibility seems to reside.

Thus, the eyelashes, the proboscis, the neck-shaped and lip-like extension of the dorsal parts in the infusoria; the tentacula or feelers, in the polypi, the sea anemones, the star and cuttle fishes; the tube-like feet in the star-fish and sea-hedgehogs, and the horns and feelers in certain worms, snails, spiders, crabs, and insects, become peculiar organs of sensation. These organs play a most important part as regards the means of perception and intercourse among insects. LATREILLE relates that having deprived several honey-bees of their antennæ, he placed them close to their hive, and that they crawled about in all directions, as if unconscious where they were, or what they were about.

The lips and snouts of fishes are furnished with numerous nerves. Snakes, from their peculiar bodily construction, have the perception of touch highly developed, for, from the great flexibility of the spine, they can seize and wind themselves round all objects, and make themselves acquainted with their nature; and hence, doubtless, arose the saying, that "their body is their hand." The prehensile tail of the lizard tribe, of the chameleons and geckos, and of some species of monkeys, is a powerful instrument of this sense. Even the thick and apparently insensible skin of the former has a clear perception of touch; and it has been remarked that the lizard, notwithstanding its scales, is immediately aware of a fly settling upon it.

Among birds, the point of the bill is a delicate organ of touch, but it is most strongly developed in the waders and swimmers. Their bill is covered with a fine membrane, which possesses the nicest power of discrimination and sensation, and enables them to seek their food deep in the mud, where its presence is alone detected by the touch. The toes, also, furnished with a kind of wart-like process, possess the same property to a great extent.



Among the mammalia, the lips, the extremity of the nose, and the bristles surrounding it, exercise the principal functions of the touch. The shrew-mouse and the mole, to suit their peculiar habits, have the nose singularly elongated, with the power of moving it; and as the eyes of the latter are extremely small, the nose

is a substitute for those organs. But among the pachydermata, the nose possesses even a more exquisite degree of power. In the swine and the tapir it begins to assume the character of the proboscis which presently, in the elephant, becomes so perfect an organ,

that it is equal to all the functions of the hand. Its sensibility is so refined, and its perception so nice, that it can discriminate between objects by the merest touch; and the preservation of this faculty by the animal seems to be of such vital importance, that its constant care, in moments of exposure or danger, is to guard the organ from injury. In tiger-hunting especially, when urged to the charge, or anticipating an attack, it curls its proboscis backwards over its head, as a protection.

The rhinoceros has a soft, hook-shaped apophysis on the upper lip, which, being always moist, is endowed with the keenest susceptibility. The whiskers of the Rodentia, the feline tribe, and the seals, possess a most remarkable degree of sensibility, particularly at their roots. A rabbit, deprived of these and having its eyes bound, could not extricate itself from a passage formed of books piled together, without coming in contact with them; and the same animal, uncurtailed of these necessary appendages, pursues its course in its burrow with unchecked rapidity. Cats, also, lose the faculty of mousing, from the same cause, every separate hair being a feeler of the most delicate power of sense. Bats have an equally surprising degree of consciousness in their membranaceous wings and ears. One, which SPALLANZINI deprived of its sight, as we have elsewhere related, pursued its flight without interruption, keeping in the middle of narrow crooked places, avoiding strings stretched across the room, and selecting places to settle on; but deprived also of its ears, it flew about without having the power of directing itself.

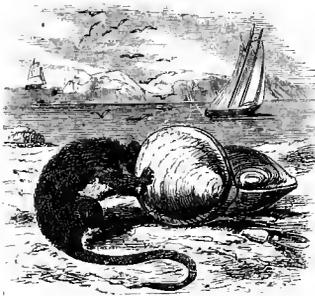
The prehensile tail of the American monkeys is very similar in its use to that of the tree-climbing lizard. The surface is abundantly furnished with little wart-like excrescences, covered with a skin as fine as that of the hollow of the hand, and which is as susceptible of touch and the nature of objects, as the hand itself.

The organs of touch serve, in many instances, equally for the purposes of motion as for the catching of food. In the polypi and cephalopods, the many-jointed tentacula, placed in conjunction with the organs of digestion, seize the food, nourish the body, and

assist its motion. The connection between the organs of deglutition and touch in snakes, is an additional phenomenon; for it has been ascertained by HELLMAN, that their forked tongue is peculiarly serviceable for the latter purpose. They reconnoitre things by a brandishment or vibration of the tongue, without immediately touching them; and come to the perception of stationary objects most probably by the pressure of the air, for their sight and smell are extremely weak.

The tongue of the woodpecker, elongated and furnished at the tip with a kind of bristly process, is remarkably sensitive; for when thrust into a hole in a tree, it is instantly aware of its contact with an insect, however small, and is withdrawn with the insect cleaving to the point.

The Sense of Taste.



By means of the organs of taste and smell, animals discriminate between the properties of bodies, especially of those which partake of the nature of food. They are situated in the spongy, moist skin, which surrounds the mouth and the nostrils, parts which are so exquisitely tender that any application of force to them is sufficient to subjugate the most intractable animal. A ring passed through the nose of a fierce bull, and checked by a cord, coerces him at once; the twitch twisted round that of a vicious horse, compels it to remain quiet; and the wire riveted through the snout of a pig, prevents it from grubbing up the earth.

That the sense of taste is conducive to the enjoyment of animals, is obvious from the eagerness with which they seek after and devour some things, while they pass by others, or only touch them when driven by hunger, and positively refuse others altogether. Their sense of perception is so acute, that with the

exception of the leaves of the yew, which apparently have some attraction, and are fatal in their effects, they never touch anything of a poisonous or baneful nature. But it is highly probable that the sense is the most highly developed in those animals furnished with a tongue and salivary glands, although a great discrimination is shown by some of the inferior classes, as the leech, which sucks greedily sweetened water, and in medical cases, operates more efficaciously on healthy than unhealthy patients.

Insects which are furnished with either salivary glands, a tongue, or a proboscis, have probably the faculty of taste in one of these parts; but many have, besides, a pair of short horns or feelers immediately behind the antennæ, which are in perpetual motion, in feeling and examining the substance on which the insect may be feeding, and hence many entomologists have decided that they are the actual organs of taste.

The tongue and gums of fishes are gristly and hard, the latter being generally densely crowded with teeth, and are, as in reptiles, hardly capable of all the refinement of taste; in fact, where food is swallowed whole, as with fish, and in an entire state, by convulsive efforts, as with serpents, the power of taste must be extremely limited. Ruminating animals, although they show a stronger partiality for some roots and grasses than for others, and thus have a præ-taste for them, experience the greater gratification of the taste, in the second process of chewing the cud.



The Sense of Smell,

As we have seen, is in close connection with, and indispensable to, the foregoing sense; but its power and utility, far from being limited to that one end, are so essential to the existence and necessities of animals, that its development, exceeding by so much that of any other sense in delicacy and susceptibility, is among the greatest

phenomena of animal life. Its object is to distinguish effluvia—evaporation or particles of the minutest description—which, light as the air itself, spread themselves with instantaneous rapidity over an extensive range of atmosphere.

It is most probable that all animal and vegetable bodies give out these infinitesimal particles to a most abundant degree, but our organs are too blunt to detect them, although the savage races and animals perceive them immediately. The American Indians can not only detect the presence of man at a great distance, but can distinguish with certainty between white men and those of their own race. Camels passing through the desert can scent water at the distance of two or three miles, and rush to it in the straightest direction; and the cattle in Paraguay wind it even still further.

HUMBOLDT says that travelers in South America, when in extremity for water, abandon their mules to their own guidance, which immediately go even in a direction against the wind, stopping from time to time and sniffing the air, till they have satisfied themselves of the point where water is to be found, towards which they hurry, snorting and neighing with impatience.

Although no distinct organs of smell have been discovered in the lower scales of life, as in snails, crabs, carrion beetles, bees, and other insects, yet it is evident that they scent their food at an amazing distance. LEFEBRE declares his experiments to prove conclusively that the faculty of smell in bees and wasps lies in their feelers, for on the removal of only the last joint of them, it is entirely lost.

The edible snail, which is kept in vast quantities in Italy and other parts of Southern Europe, comes forth to feed directly upon herbs being thrown into its pits. LENZ says that the wood-snail may be attracted by fat, and that as it withdraws its horns previously to touching any strong smelling substance, these are susceptible of smell, and consequently are the organs of that sense. SCHMARDA made various experiments with the edible snails, and ascertained that the lower pair of feelers are keenly sensible of

odorous substances. He placed near them camphor; oils of juniper, turpentine and petroleum, ether, &c., when they immediately drew in their horns; and if the scents were particularly strong, the action of withdrawal was more instantaneous.

As it is beyond all doubt that insects are attracted to and distinguish their food by the power of smell, it is also most probable that they select the proper objects on which to deposit their eggs, by the same faculty. No sooner is a dead mouse thrown into the garden, than the various carrion-beetles are busy in burying their prey. LEURET states that not being able to discover under the flooring of a room a dead rat, whose effluvium was most offensive, it occurred to him to put some flesh flies into the room, which flying direct to the spot, discovered its position. Honey exposed in an open place, will attract bees from a considerable distance.

Fish are quickly decoyed together by strong smelling matters thrown into the water, and fishermen are often in the habit of making their bait more attractive by steeping it in essential oil, and other powerfully smelling ingredients. According to BELL, the fatty glandular substance from the under jaw of the crocodile, which is strongly impregnated with musk, is a very effective bait for fish. People bathing in the ocean, far from the sight of land, and out of all soundings, have often been surprised at the speedy appearance of sharks, when none had been visible previously from the mast-head of the vessel.

Among birds, the predatory classes are endowed with a keener sense of smell than the granivorous tribes; but still it has been satisfactorily proved that it is not so exquisite as has been supposed, and that they are more dependent on the sight for the discovery of their prey. AUDUBON stuffed a deer's skin with hay, and placed it in an open field in the attitude of a dead animal. A vulture soon made its appearance, and perching on the stuffed skin, began to tear it open with all its force, but finding that it only drew forth grass, after continuous efforts, it abandoned its attempts with evident reluctance. Young vultures in confinement

give no signs of perceiving the presence of their food, however near it may be placed to them, unless they actually see it, as was proved by BACHMAN ; and thus also herons and other waders are guided by the sight to the selection of the best supplied fishing places.

Most animals, on the contrary, have a most extraordinary faculty of smell. A dog traces his master and pursues game entirely by the scent ; a horse winding a lion, at the distance of a hundred paces, plunges and becomes unmanageable ; and in a wild state, jealous of the least intrusion on its haunts, it posts a sentinel for the protection of the herd, which, scenting the approach of man from far, gives the signal for flight. Horses accustomed to one groom, and refusing to be attended to by a substitute, have been deceived by a stranger dressing himself in the clothes of his predecessor. They smell at each object with which they are brought in contact, and regulate themselves with respect to it, according to the impression they thus receive.

Herbivorous animals distinguish in the same manner those plants which are their appropriate food, and the faculty of perceiving animal substances by the smell is peculiarly powerful in the carnivorous classes, which is exactly the reverse with birds of prey. AUDUBON concealed the carcass of a hog, in the month of July, at the bottom of a deep ravine in one of the southern states, where corruption is almost instantaneous ; several vultures passed over the spot without perceiving it, although the effluvium was so strong that he found it unbearable at a distance of forty yards ; but the dogs soon winded it, and consumed a great portion of the flesh. Dogs, like pigs, scent truffles in the earth, and such as know their taste, from having had them mixed in their food, seek for them and scratch them up with avidity. Cats are attracted by the smell of valerian, and rats by essential oil, particularly by rhodium.

Animals, in general, perceive their most dangerous enemies by the smell, and thus a fox will not go near its earth for many days, if a terrier has been in it. Sheep, when fresh shorn, are not

recognized by their lambs, which run hither and thither, attracted by the well-known bleat, in confusion at not seeing the accustomed form, till they identify it by the smell. Bloodhounds, if put on a scent, will follow it with unerring certainty; if of a man, through the crowd and confusion of a market-town; and if of an animal, particularly a wounded one, into the herd in which it may have taken shelter, without being baffled by the scent of the surrounding beasts.

Animals follow in pursuit, either by the power of the actual scent itself, or by the trail left on the earth in the passage of the flying object. Thus hounds run breast-high when the scent is hot, and puzzle anxiously along the ground when the surrounding air no longer supports it. The exercise consists in the attempt to distinguish the various essences floating in the atmosphere, to which end the animal turns his nose to the wind and inhales strongly: it would seem to be a sense of enjoyment, as in the case of the pointer, notwithstanding education has brought all his powers into subjection, yet the inflation of the nostrils and the tremulous movement of the jowls, when he is in the act of setting game, are highly remarkable. The stag can scent a man at the distance of several hundred paces, and SCORESBY relates that the polar bear climbs the icebergs and winds a dead whale, and even a lump of the cooked flesh, many miles away.

The trail is peculiarly that scent which is communicated to the earth or other substance by the touch of the animal passing over it, and was supposed to have been discernible only by animals of the carnivorous species; but it has been satisfactorily proved that most of the other families possess the faculty. Hares have been seen to track each other by the scent. Hounds running with their noses to the ground are led on only by the trail, and often pass close to their game, which has doubled back almost on its former track: the gazehound, on the contrary, is guided entirely by the view, which once lost is not to be recovered. THOMPSON, from whose work on the "Passions of Animals," we borrow the greater part of this article, tells us that in coursing once with a pair of

very fine dogs which had gained several prizes at Swaffham, the hare, being hard-pushed, took a maze through a strong quick-set hedge, which the dogs topped almost at the same instant and together. The narrator was close at their heels, and found them at fault, straining their sight in every possible direction, instead of being in full chase. He was as much at fault as the dogs, as it was not possible for the hare to have distanced them ; and, on examination of the spot, he found the hare dead in a wire which had been set in the maze in question, with its neck broken by the violence of its impetus. Had the dogs possessed the least nose, they would have scented the hare, which lay within two or three yards of them.

The Sense of Hearing

Is the conscious sensibility of the vibration of the air ; a sense of perception different from that of the touch, inasmuch as it does not operate by a strong, visible, and continuous effect, but by a gentle and rapid impression on a certain organ, which is the peculiar seat of the sense, although the whole body possesses the same sensibility to a limited extent. Thus, partially deaf people are conscious of sound by bringing some part of their body in immediate contact with that emitting the sound, as by placing the hand on a musical instrument ; but that faculty, as proved by SWAN, is destroyed by tying a bandage tight round the arm, and thus deadening the nerve. Deaf and dumb people are aware of the approach of a carriage, and even of a footstep, by a slight vibration of the nervous system, occasioned by the earth serving as a conductor to the sound ; in the same way, they feel the slamming of a door in a distant part of the house : many, also experience a strong palpitation of the heart at any sudden and violent concussion of the air.

It appears that among the lower orders of animals, whether aquatic or otherwise, the sense of touch is a substitute for hearing. In ascending the scale, the first trace of an apparatus of this kind is found in animals of the crab species. The lobster

has at the root of its feelers small holes, which terminate in a purse, thickly furnished with a quantity of fine thread-like nerves, constituting the organ; this approach is guarded by the shell on all sides, excepting at one spot where it is protected by a membrane. Spiders hear with great acuteness, and it is affirmed that they are attracted by music. DISJONVAL relates the instance of a spider which used to place itself on the ceiling of a room over the spot where a lady played the harp, and which followed her if she removed to another part. He also says that the celebrated violinist BERTHOME, when a boy, saw a spider habitually approach him as soon as he began to play, and which eventually became so familiar that it would fix itself on his desk, and even on his arm. BETTINA noticed the same effect with a guitar, on a spider, which accidentally crossed over it as she was playing.

SPRY and others state that the snake-catchers in the East Indies have the art of enticing snakes from their concealment, by a kind of song or humming sound. NEALES affirms that he tamed rattle snakes by music, and, however dangerous they might be, he completely subdued them, which is confirmed by CHATEAUBRIAND, who saw the anger of one of these reptiles entirely soothed by the tones of a flute. LENZ cites the instance of a goose which followed a harp-player whenever he performed. BECHSTEIN says, that mice are attracted by music, and BETTINA noticed the same in running up the gamut. An elephant in Paris, within hearing of a concert, expressed, by its gestures, its pleasure at some pieces, while others did not affect it. Some dogs are singularly excited by music, and accompany it with a distressing kind of howl. It is known to sportsmen that the deer and roe listen to music; and, according to OBSONVILLE, monkeys are attracted by it, and exhibit marked delight.

HAYDN relates the following anecdote with regard to the power of music: "In my early youth I went with some other young people, equally devoid of care, one day during the extreme heat of summer, to seek for coolness and fresh air on one of the lofty mountains which surround the Lago Maggiore, in Lombardy.

Having reached by day-break the middle of the ascent, we stopped to contemplate the Borromean isles, which were displayed under our feet, in the middle of the lake, when we were surrounded by a large flock of sheep, which were leaving their fold to go to their pasture.

“ One of our party, who was no bad performer on the flute, and who always carried his instrument along with him, took it out of his pocket. ‘ I am going,’ said he, ‘ to turn CORYDON ; let us see whether VIRGIL’s sheep will recognize their pastor.’ He began to play. The sheep and goats, which were following one another towards the mountain, with their heads hanging down, raised them at the first sound of the flute, and all, with a general and hasty movement, turned to the side from whence the agreeable sounds proceeded. Gradually they flocked round the musician, and listened with motionless attention. He ceased playing ; still the sheep did not stir. The shepherd with his staff obliged those nearest to him to move on. They obeyed ; but no sooner did the flutist begin to play again, than his auditors again returned to him.

“ The shepherd, out of patience, pelted them with clods of earth ; but not one would move. The flutist played with additional skill ; the shepherd fell into a passion, whistled, scolded, and pelted the mutinous amateurs with stones. Such as were hit by them, began to march, but the others still refused to stir. At last, the shepherd was obliged to entreat our ORPHEUS to stop his magic sounds ; the sheep then moved off, but continued to stop at a distance, as often as our friend resumed the agreeable instrument. The tune he played was nothing more than the favorite air of the opera at that time performing at Milan. As music was our continual employment, we were delighted with our adventure ; we reasoned upon it the whole day, and concluded that physical pleasure is the basis of all music.”

BINGLEY gives a singular anecdote of the effect of music on a pigeon, as related by JOHN LOCKMAN, in some reflections concerning operas, prefixed to his musical drama of Rosalinda. He was

staying at a friend's house, whose daughter was a fine performer on the harpsichord, and observed a pigeon, which, whenever the young lady played the song of "Speri-si," in HANDEL's opera of Admetus—and this only—would descend from an adjacent dove-house to the room-window, where she sat, and listen to it apparently with the most pleasing emotions; and when the song was finished, it always returned immediately to the dove-house.

It is certain that insects are sensible of sound; for crickets and grasshoppers answer to each other's chirpings, and they may be even enticed and caught by the imitation of their note. In Italy, the noise made by the chirpings of the Cicada is almost deafening, and it has been noticed that a beginning made by one individual, has been immediately responded to by hundreds.

Bees, it is alleged, recognize the voice of their keeper; and as the queen has the power of uttering a sharp note, which can be distinctly heard by a bystander, before the swarming of the hive, it is natural to conclude that it is made for some object, and that it is also perceptible by the whole community. As regards the absurdity of the country practice of ringing a bell, or of striking two pieces of metal together, when a swarm is in the air, under the impression that the sound attracts the bees to the spot, it is hardly to be wished that it should be discontinued, for, however discordant it may be, it is yet an honest piece of rural life. Its real object, long since lost sight of, was to advertise the neighbors, in the event of the swarm taking a distant flight; for, by the bee-law of England, a man was allowed to follow his swarm on another person's property, and to secure that which, without a notice, the other might appropriate as a lucky windfall.

The organ of hearing in insects is most probably situated in the antennæ.

Fish can hear very distinctly: carp distinguish the sound of a bell, and the voice of their keeper, when called to be fed, which the author witnessed at a pond containing some carp of an amazing size, in the Imperial gardens at Peterhof, near St. Petersburg: a similar circumstance is also mentioned with regard to the trunk-

fish, in the island of Mauritius. Guana lizards are said to be enticed into traps by whistling to them.

Birds are endowed with a most susceptible power of hearing ; provided most wisely as a means of preservation, with regard to their peculiar habits. Obstructed, as their sight must often be, by the intervention of branches and long grass, they would otherwise fall an easy prey ; but the sound of a footstep, or the snapping of a twig, excites their immediate alarm, and they insure safety by flight. Some birds not only recognize the voice of their master, but distinguish its intonation, whether as coaxing them, or as calling them to feed. But however keen the faculty in general, song-birds must yet possess a much greater development ; for they not only show an ear for melody, by rising and falling in their notes, but they will even pick up an air from a flageolet or an organ. The mocking-bird of America is undoubtedly the most extraordinary proof of this faculty ; for it will imitate as well the songs and cries of other birds, as the sounds of different animals.

Of all birds, the owl has probably the most exquisite sense of hearing. The mere examination of the outward part of the organ is sufficient to prove that fact with certainty. Dependent on it for its means of subsistence—as enabling it to perceive its prey in the shades of evening, when its sight, however piercing, can only enable it to seize the object, whose slightest motion announces its presence—it sails along on its noiseless silken wing, exciting no alarm in other things, though it receives it from them.

Among mammalia, the formation of the ear varies in very many cases, according to the habits and peculiar nature of the animal. The portion of the ear of the mole assigned for the cognizance of sounds passing in the air, is less perfect than those which, deeper seated, receive the impression of any sound or vibration proceeding from the earth. The beaver has the power, when diving, to fold its ear backwards on its head ; and the water-shrew, for the same purpose, has three distinct flaps, which close the orifice, in the same manner that many diving and burrowing animals are

furnished with flaps to the nose, by which they close the entrance to all injurious bodies.

The hippopotamus, which remains for lengthened periods beneath the surface of the water, is also provided with a valve-like apparatus. Hares and rabbits, which squat close on the ground, and which might be more readily discovered were any projecting point of their bodies to be visible, fold their ears flat backwards. In all, this sense is remarkably keen, and with horses it is only exceeded by that of the smell : they hear sounds and are restless long before the rider can perceive an animal or a human being in the distance. The carrier horses in Switzerland hear the fall of an avalanche, and warn their masters of the danger, by their terror, and by refusing to advance, and even by turning in an opposite direction. The acute sensibility of this organ is somewhat obstructed by the bushy hairs which grow in the outer sheath, and thus horse-dealers cut them out from horses they have for sale, in order that sounds, striking on the nerves with greater force, may, by exciting the animals, give them a more lively appearance.

The flight of the bat, like that of the owl, is perfectly noiseless ; and its ear, equally acute, detects the slightest humming of an insect, at a distance of several feet ; and while it catches such as are in flight, it touches none which have settled or are silent.

The soft and noiseless tread of all the feline race, so beautifully adapted to their peculiar habits and wants, enables them to steal on their prey without a sound or rustle to disturb their sense of security.

In all animals, the outward membrane, or sheath of the ear, is most wonderfully adapted to their natures in its construction and defences, varying in every race, and perfect in all.

Sound affects animals in different ways : birds and herbivorous animals are alarmed or fly at the rustle of a branch ; and the same circumstance only excites the attention of the carnivorous species, as proceeding probably from some unwary object of their

prey. By night, the ear exercises the most important functions, giving warning of approaching danger, and governing many of the actions of the body. The least sound breaking upon the stillness of the night, under whose mysterious gloom the feelings of doubt and fear are doubly excitable, strikes with increased force on the ear, which, in its sense of perception, compensates to the mind for the withdrawal of sight.

The dog, keenly alive to the merest rustle, distinguishes between the familiar footstep and that of intrusion, however distant. His ferocity increases with his vigilance, and he constitutes himself the guardian of the house of his master, who, confident of his sagacity, passes the hours of sleep in conscious security. It is recorded of a dog, that in the dead of night it heard a cry for help, and flying to the spot, succeeded in extricating his own master, then in a state of intoxication, from a pool of water into which he had fallen. The distance was so great that there was no other means of accounting for the sound reaching the animal, than by supposing that the earth acted as a conductor to the cries which were uttered on a level with its surface, and that the ear of the dog lay close to the ground; but there is yet the remarkable point of the power of perception, which enabled the animal, perhaps, to recognize his master's voice, and certainly to distinguish the nature of the cry.

A bird-catcher, wishing to increase his stock of bullfinches, took out his caged bird and his limed twigs, and placed them in such a situation of hedge and bush as he judged favorable to his success. It so happened that his own bird was one of education, such as is usually termed a *piping* bullfinch. In the first instance, a few accidentally thrown-out natural notes, or calls, had attracted three or four of his kindred feather, which had now taken their station not far distant from the cage. There they stood in doubt and curiosity, and presently, moving inch by inch, and hop by hop towards him and the fatal twigs, they again became stationary and attentive. It was in this eager and suspended moment that the piping bullfinch set up the old country-dance of *Nancy Dawson*.

Away flew every astounded bullfinch as fast as wings could move, in such alarm and confusion as bullfinches could feel and they only can venture to describe.

CAPTAIN ALEXANDER, in his "Transatlantic Sketches," says: "I have seen the cobra di capello, or hooded snake of India, caught in my garden; have watched the snake-charmer, with feathered turban, sitting beside a hole, under the hedge of prickly pear, and piping on a rude musical instrument made from a gourd, and a bit of looking-glass in front of it; unlike 'the deaf adder,' the head of the cobra would soon appear above the ground, as if listening to the wild strains, and his eye attracted by the dazzling glass. An assistant would be ready to catch him behind the neck, would draw forth his yellow and writhing length, and, without extracting the poisonous fangs, would slip him into a covered basket, muttering the usual curse of 'Hut teré!' Next day the snake-charmer would return, place his basket on the ground, sit on his haunches before it, and pipe; the lid would rise, and the subdued snake come forth, partly coil himself up, and move his head to the music, and ever and anon display his spectacled hood, or hiss when the charmer put forward his hand. The assistant would go behind and hold the reptile by the tail, when he could do no injury; but if a fowl were thrown to him, he killed it in a moment."

A piano-forte having been sent for the purpose to the menagerie in Exeter 'Change, the higher notes hardly attracted the elephant's notice, but the low notes roused his attention. The effect of the higher notes upon the lion in the same place, was only to excite his attention, which was very great; he remained silent and motionless: but no sooner were the flat notes sounded, than he sprang up, attempted to break loose, lashed his tail, and seemed so furious and enraged as to frighten many of the spectators. This was attended with the deepest yells, which ceased with the music.

At Paris, some curious experiments, almost of the same nature, were made, of the power of music on the sensibility of the elephant.

A band of music was sent to play in a gallery extending round the upper part of the stall in which two elephants were kept. A perfect silence was procured. Some provisions of which they were fond were given them to engage their attention, and the musicians began to play. The music no sooner struck their ears, than they ceased from eating, and turned in surprise to observe whence the sounds proceeded. At the sight of the gallery, the orchestra, and the assembled spectators, they discovered considerable alarm, as though they imagined there was some design against their safety; but the music soon overpowered their fears, and all other emotions became completely absorbed in their attention to it. Music of a bold and wild expression excited in them turbulent agitation, expressive either of violent joy or of rising fury. A soft air, performed on the bassoon, evidently soothed them to gentle and tender emotions, while a gay and lively air moved them to demonstrations of highly sportive sensibility; and other variations in the music produced corresponding changes in their emotions.

The Sense of Sight.



That beautiful instrument, the eye, so artistically contrived that the most ingenious workman could not imagine an improvement of it, becomes still more interesting and more wonderful, when we find that its conformation is varied with the different necessities of each animal. If the animal prowls by night, we see the opening of the pupil, and the power of concentration in the eye increased. If an amphibious animal has occasionally to dive into the water—with the change of the medium through which the rays pass, there is an accommodation in the condition of the humors, and the eye partakes of that both of the quadruped and the fish. Again, in fishes

whose eye is washed by the element in which they move, all the exterior apparatus is unnecessary, and is dismissed; but in the crab, and especially in that species which lies in mud, the very peculiar and horny prominent eye would be quite obscured were it not for a peculiar provision. There is a little brush of hair above the eye, against which the eye is occasionally raised to wipe off what may adhere to it. The form of the eye, and the particular mode in which it is moved, and the coarseness of the instrument, compared with the parts in the same organ in the higher class of animals, make the mechanism of eyelids and of lachrymal glands unsuitable.

The first traces of the perception of light are found in the lowest scale of animal life, as in the infusoria and polypi. In these, the power of sight, or rather the sense of perception, seems to be spread over the whole surface of the body, as is the case with many blind persons, who, by some peculiar properties of the skin, can distinguish between a dazzling and a gloomy light. COLHOUN has remarked, that on the eyes being fully closed, the sensation of light is experienced by the skin of the face, particularly in the region of the forehead; and indeed, if we turn our faces to the light, and pass the hand up and down before the closed eyes, a remarkable difference is perceptible; and, as if by an adaptation to the circumstance, or that really a greater degree of sensibility is thrown over the body when the eyes are closed, people moving about or groping their way in the dark, commonly shut their eyes. The skin is not absolutely opaque; for the gleam of the sun penetrates through the closed eyelids, and even the sides and joints of the fingers.

Sight is here at its lowest point—a mere perception or consciousness of light, similar in every respect to that which exists in snails, as has been proved experimentally by MIELZYNSKY. He held a pointed instrument in the direction of their feelers, but they paid no attention to it, whether bright or dark, till they ran against it, and yet they are capable of seeing. He shut a number of them into a tin box, in the lid of which two tubes were inserted,

the one covered with tin on the top, and the other with glass ; and, having compelled the snails to climb upwards by pouring water into the box, they all crawled up the tube pervious to the light ; but if he deprived them of their feelers, they took to either tube indiscriminately. Thus, snails can distinguish light and dark, but not objects.

The proteus and the mole, which live in darkness, have such imperfect organs of sight, that, instead of seeking the light, their great object is to avoid it ; but yet they possess the power of distinguishing objects and of moving towards them. The proteus, for instance, will snap at a small fish passing within its reach, but will leave untouched matters which do not concern it for food. It is most probable that in this and similar instances, the deficiency in the powers of one sense is compensated for by an additional organ in others. Leeches, notwithstanding their imperfect vision, perceive people bathing ; and a species inhabiting the land in the island of Ceylon, comes forth in wet seasons and attacks any one who may remain stationary for only a few minutes.

The form of the eye is globular : it varies considerably in its disposition, being chiefly more or less protected by the adjoining parts, and often, as in the snail and some other of the crustacea, attached to a stalk or pedicle. The eyes of the chameleon are extremely prominent, and are capable of moving in different and separate directions at the same time, so that the animal can command a large range on either side ; a remarkable provision, which, compensating for its natural inertness and slowness of motion, enables it to seize any insect coming within its reach. Many insects have a plurality of eyes, disposed in such various directions that they are warned of danger from all sides.

Most birds, particularly those of prey, are furnished with a nictating membrane, which, in time of need, closes over the eye, like a veil, subduing equally the dazzling rays of the sun, and its powerful reflections from other objects. Their eyes take in a great portion of the foremost part of the head, and, by their size, their position, and their strongly arched horny tunicle, they are

able, as is peculiarly the case with the predatory classes, to embrace an immense range of vision, and even to distinguish their prey from a considerable height. The majestic eagle sweeps along with daring flight, braves the rays of the unclouded sun, and soars in the highest regions of the atmosphere; from thence his piercing eye commands a vast expanse, and descries from afar, in the profundity of the valley, perched upon the tree, or hovering in the air, the victim he has marked for his prey: he darts upon it like the lightning, seizes it with irresistible talons, and, exulting in his victory, transports it to the retired rock or deserted plain, tears it in pieces and devours it.

It is not possible to look upon him without discerning in his external form the supreme force, the energetic springs, the fiery rage of formidable majesty. Has not his sparkling eye all the fire of a flash of lightning? Who but he dares to fix a steady look on the dazzling orb of day? Examine every eye downward to that of the mole. Where is to be found that penetrating, firm, and rapid glance which seizes the whole horizon at once? How admirable is this relation between the eyes and the light!

The aquatic birds have a small eye, and in the divers it is even still more reduced, and protected by a movable film. These distinctions are remarkable, and most appropriately contrived; for, unlike the land bird, which either has to discover its food from afar, or to distinguish it among other substances covering the earth's surface, it readily perceives objects moving and floating in the water, and requires only a means of shielding the organ from the action of the water.

The eyes of birds which fly abroad and seek their prey by night, are so incapable of confronting the light, that they have only the full power of sight at twilight, and the pupil is then so distended that it admits an unusual proportion of the rays of light; a construction precisely similar to that which is found among animals of the feline species. In these as well as among the other carnivores, the pupil appears like a perpendicular line, by which means the sight is more concentrated, and is remarkably keen in moments

of excitement and when the animal collects itself for the fatal spring upon its prey.

Sight assumes a higher rank in the scale, as soon as it is susceptible of color. It is supposed that serpents distinguish their keepers by the color of their clothing. Oxen and turkeys have a violent antipathy against anything red, and sometimes it excites them to fury. It is highly probable that all the higher orders of animals distinguish between, and have preference for, certain colors, and it is certain that in their younger age they are attracted by bright ones.

Memory.



That many animals have recollection and memory, is without doubt. Bees revisit their old haunts, the trees and the flowers where they have been used to find honey; they recognise their own hive among many others, returning to it in their homeward flight in a direct line, and never hesitating between it and the surrounding ones. It is highly remarkable that they know their hive more from its

locality than from its appearance, for if it be removed during their absence, and a similar one be substituted, they enter the strange one. If the position of a hive be changed, the bees for the first day take no distant flight till they have thoroughly scrutinized every object in its neighborhood; and it is asserted by KIRBY and SPENCE, that the queen bee does the same thing, making several probationary flights before the swarming of the hive, as if to select the proper spot. They also mention the circumstance of a number of bees having been attracted in the autumn to some honey which had been placed in a window, and of their visiting the same spot in the ensuing spring in search of it again. The mason-bee contrives holes as receptacles for its

young, in which it lays up their food ; and if a hole be closed up during its absence, it searches for some time along the wall, after its return, without noticing other holes, and having found it, it removes the obstruction and continues its work ; a clear proof that these bees can distinguish between their own holes and those of others.

STICKNEY relates a remarkable instance of memory in some bees, which, having taken possession of a hollow place beneath a roof, and being removed into a hive, continued for several years to return and occupy the same hole with their swarms. Bees certainly recognise those persons who feed them and attend to them, and the same thing has been noticed in spiders. Some ants, which had been turned out of a sugar-case, through whose key-hole they had found an entrance, returned again in the same manner. Swallows and storks, on their return in the spring, reoccupy their old nests ; and birds which have been fed during severe weather, will present themselves for the same purpose in the ensuing year.

Pigeons, cats, dogs, and horses return to their former homes from the greatest distances. Goats, sheep, and swine find their way to their respective enclosures, and horses select their individual stalls from a hundred others ; they recognise their former comrades, their grooms, their riders, and the inns they had been fed at, after an interval of years ; they distinguish between those who have attended or misused them, and, remembering the pain of an operation, they strike out at the farrier who performed it. Thus, also, the poodle dog conceals itself from the person who has clipped it.

The dog remembers his master and the members of his family after an absence of years, and the persons of those who have ill-treated it. I have seen a mastiff shrink habitually from an old hen that had once inflicted a tweak upon his nose. It is related of a dog which M. D'OBSONVILLE took with him from Pondicherry on a journey of upwards of three hundred miles, through a country hardly intersected by a road, and which occupied three weeks to

traverse, that, having lost its master, it returned at once to Pondicherry.

Similar instances of the power of memory, and of finding their way through strange districts, are of daily occurrence, and it is astonishing with what speed they return to their homes from remote distances. The dog of an officer who fell in battle in Poland, found its way back to his estate near Leipzig in an inconceivably short space of time. The dog of a little Savoyard being sold and carried to Rome, was shut up for safety; but it soon succeeded in making its escape, and reached its former home after a few days, in a most emaciated state. The hunted fox, driven by the chase far beyond its accustomed haunts, finds its way back to them in the course of a few hours.

LINDLEY MURRAY states in his Memoirs, that, on visiting, as a boy, the elephants which were then kept at the Queen's stables, Buckingham House, he withdrew from one of them, with his cane, a part of the hay which it was collecting on the floor with its proboscis. The animal was displeased, and the keeper told him it would never forget the injury. Returning in about six weeks after with some friends, he found that though some hundreds of people had been there since his first visit, the animal soon recognised him. He made no attempt to tease it, and had no conception of any concealed resentment. On a sudden, however, when he was within the supposed reach of its proboscis, it threw it towards him with such violence, that had he not by an active effort thrown himself aside, he would probably have been killed, or have received some material injury.

Mr. HARTLEY narrates that, passing by a flock of sheep in the Isle of Egina, he asked the shepherd if he gave names to his sheep, and if they obeyed him when he called them by their names. He bade him call one; he did so, and it instantly left its pasturage and its companions, and ran up to him with signs of pleasure, and with a prompt obedience which he had never before witnessed in any other animal. Mr. WILDERSPIN says he frequently witnessed in Cumberland, and other mountainous districts,

an illustration of the parable that the sheep know the good shepherd's voice. When the sun is about to set, the shepherd's boy advances along the foot of a chain of mountains, and, giving a signal by a peculiar call or whistle, the flocks, which were scattered like spots of snow over those stupendous heights, begin to move simultaneously, and, collecting as they pour down the steep descent, approach him in order, without leaving one solitary straggler.

How wonderful is that instinct by which the bird of passage performs its annual migration! But still more wonderful is it, when the bird, after its voyage of thousands of miles has been performed, and new lands visited, returns to the precise window or eaves where the summer before it first enjoyed existence. And yet such is unquestionably the fact. Four brothers had watched with indignation the felonious attempt of a sparrow to possess itself of the nest of a house-martin, in which lay its young brood of unfledged young ones. They attempted to take summary vengeance with blowguns, but their well-meant endeavors brought destruction on the hapless nest, and the young birds came to the ground. Being placed in the open window of an unoccupied room, the parent birds, after their first terror was over, did not appear disconcerted by the change of situation, but hourly fed them as usual, and testified, by their unwearied twitter of pleasure, the satisfaction and confidence they felt. There the young birds were duly fledged, and from that window began their flight, and entered upon life for themselves. The next spring, with the reëpearance of the martins, came four, which familiarly flew into the chamber, visited all the walls, and expressed their recognition by the most clamorous expressions of joy. They were without question the very birds that had been bred there the preceding year!

Imagination — Dreams.

Imagination is the ideal representation of circumstances or objects, making them to pass before the mind as if reflected in a mirror with all the force of reality, and enabling it to form immediate conclusions, and to act upon them. This power is shared by animals, and, if analysed, will be found to be the instigator and exciting cause of many of their actions and impulses. Thus, the yearning for former homes, and the longing for the chase, are feelings or desires raised by the recollection of pleasures enjoyed, acting on the mind, or seat of intelligence. It also shows itself in many of the minor occurrences of life. A dog, which refused dry bread, and was in the habit of receiving from his master little morsels dipped in the gravy of the meat remaining in the plate, snapped eagerly after dry bread if he saw it rubbed round the plate; and as, by way of experiment, this was repeatedly done till its hunger was satisfied, it was evident that the imagination of the animal conquered, for the time, its faculties of smell and taste. It is even thus with the enjoyments which man acquires to himself, where the imagination seasons and exalts them, and even in many instances actually produces them. It shows itself, however, in the most marked and spontaneous form, in dreams, in playfulness, and in the home-sickness.



The organs of sense and motion are at rest when sleep asserts its power over the frame; the doors of communication with the outward world are closed, and the soul, cut off from all communion with material things, is, as it were, isolated, and in a state of passive existence. The powers of the soul remain without the necessary consciousness of outward things; and it is only incited by them, through the medium of its own activity, when the senses themselves are sunk in the deepest sleep.

It is impossible to say at what stage of organized matter, dreams, as the creations of the thus isolated soul, begin. Comparisons are abundant; the lower animals are dreamers, and their lives somnambulism. If we consider this proposition as a metaphor, it is still a comparison. Life, in the lower order of animals, is different in character to that of the upper. The limited development of the nervous system, and of the organs of sense, proclaims a more confined and benighted range of perception, a feeble sensibility, and dimly-shadowed wants. The consciousness of outward things is faint, the feeling of self-identity obscure, and the power of observation is restricted to the recognition of its own species. The principle of life is monotonous, without rhythm or action, and sleeping and waking are almost identical. Dreaming is, therefore, the consequence of the inward principle without the agency of the dormant senses and the organs of motion.

Crocodiles dream; and in birds, and the mammiferous animals, the phenomenon is remarkably perceptible. When the impressions of the dream assume a particularly vigorous and distinct character, they affect the slumbering voice and limbs, and thus prove most satisfactorily and clearly that animals really do dream, besides affording the strongest grounds for the assertion that animals possess an inward sense, analogous to the faculty of the soul.

Among birds, the stork, the canary, the eagle, and the parrot; and among the mammalia, the elephant, the horse, and the dog, are excited in their dreams. The hound betrays his dream by a hoarse, suppressed bark, and by a convulsed movement of the limbs. Dogs are prone to dream; and then they may be observed to move their feet; they make efforts to bark, agitate themselves as if they were hunting, or become excited till the hair rises on their flanks, and the skin becomes clammy; yet when awake they scarcely ever sweat, but cool themselves by panting and hanging out their tongue.

BENNET noticed that water-birds moved their legs in their sleep, as if in the act of swimming; and HENNAH heard the hyrax utter a faint cry.

Playfulness.

In the waking hours the influence of the imagination manifests itself by a playfulness of manner, and an exuberance of the animal spirits. The animal in its sportive moments abandons itself to a feeling in which its whole being seems to be concentrated in the performance of some



one of its passions, whether of joy or mischief, defiance or fear. ERDL, who has bestowed great attention to the habits of the crustacea, says that he has seen a species of crab play with little round stones, and empty shells, as cats do with a cork, or small ball. Dogs, particularly young ones, are carried away with the impulse, rolling over, and chasing each other in circles, seizing and shaking objects as if in anger, and enticing even their masters to join in their games.

Horses, in freedom, gallop hither and thither, snort and paw the air, advance to their groom, stop suddenly short, and again dash off at speed. A horse belonging to one of the large brewing establishments in London, at which a great number of pigs were kept, used frequently to scatter the grains on the ground with his mouth, and as soon as a pig came within his reach, he would seize it, without injury, and plunge it into the water-trough.

The hare will gambol round in circles, tumble over, and fly here and there. BREHN witnessed one which played the most singular antics with twelve others, coursing round them, feigning death, and again springing up, seemed to illustrate the old saying of "mad as a March hare." The same thing occurs with rabbits, and many others of the rodentia; and on warm days fish may be seen gamboling about in shoal water. Carp, in early morning, while the mist still hangs on the water, wallow in the shallows,

exposing their broad backs above the surface. Whales, as described by SCORESBY, are extremely frolicsome, and in their play leap twenty feet out of the water.

Small birds chase each other about in play, but perhaps the conduct of the crane and the trumpeter is the most extraordinary. The latter stands on one leg, hops about in the most eccentric manner, and throws somersets. On account of these drolleries it is sometimes called the mad bird. The crane expands its wings, runs round in circles, leaps, and throwing little stones and pieces of wood in the air, endeavors to catch them again, or pretends to avoid them as if afraid. Water-birds, such as ducks and geese, dive after each other, and cleave the surface of the water with outstretched neck and flapping wings, throwing an abundant spray around.

Deer often engage in a sham battle, or a trial of strength, by twisting their horns together, and pushing for the mastery. All animals that pretend violence in their play, stop short of exercising it. The dog takes the greatest precaution not to injure by his bite; and the ourang outang, in wrestling with his keeper, attempts to throw him, and makes feints of biting him. Some animals carry out in their play the semblance of catching their prey; young cats, for instance, leap after every small and moving object, even to the leaves strewed by the autumn wind; they crouch, and steal forward ready for the spring, the body quivering and the tail vibrating with emotion, they bound on the moving leaf, and again watch, and again spring forward at another. Not only young cats romp with each other, but young lions do the same. RENGGER saw young jaguars and cuguars playing with round substances like kittens. Young bears sport with each other, and are said to play hide and seek with their dams.



Young lambs, as well as birds, collect together on the little hillocks and eminences in their pastures, racing and sporting with each other in the most interesting manner.

Birds of the Pie kind, are the analogues of monkeys, full of mischief, play, and mimicry. There is a story told of a tame magpie, which was seen busily employed in a garden, gathering pebbles, and with much solemnity, and a studied air, dropping them into a hole, about eighteen inches deep, made to receive a post. After dropping each stone, it cried, Currack! triumphantly, and set off for another. On examining the spot a poor toad was found in the hole, which the magpie was stoning for his amusement.



Home-Sickness.

This feeling is undoubtedly shared by animals in its fullest intensity, both as regards locality and companionship of its own species, as well as in the love for their masters, or old protectors. Perhaps it is strongest and most observable in the higher orders of animals, but there is hardly a class which cannot be pointed to as not possessing it in some degree.

Pigeons, dogs, cats, and horses, when removed from their former homes, give repeated and daily instances of the fact. It crushes



and overwhelms the faculties of the mind, and prostrates the energies of the body. Thus many birds, when encaged, become so entirely spirit-broken, that they refuse all nourishment, pine for a few days, and die.

This is particularly the case with song-birds ; and the nightingale, if caught late in the spring, and when it has already paired, is hardly ever known to survive. The rapacious birds, though of bolder tempers, become equally sullen and indifferent to food, and, but for their extraordinary powers of endurance, would also soon perish. If the howling monkey is caught when full-grown, it becomes melancholy, refuses all food, and dies in a few weeks ; it is also the same with the puma ; and BURDACH states that death sometimes ensues so immediately, that it can only arise from a sudden and violent pressure on the mind.

At the periods of migration, imprisoned birds become extremely restless, although they are supplied with abundance of food, and are secluded from any influence of the temperature ; but they resign themselves and become contented when the time has passed. In multitudes of instances where identity has been clearly established, it has been proved that these wanderers return every year to the same neighborhood, nay, even to the same spot in it, which they had before haunted. We have almost daily instances brought before us of dogs and cats being taken away in carriages at night, to a very considerable distance from their homes, to which they nevertheless find the means of returning. There is the well-known story of the ass, which swam ashore from a vessel shipwrecked at the Point de Gal, and finding its way back to Gibraltar, a distance of more than two hundred and fifty miles, in a few days, sought out immediately its former stall, from which it had been embarked.

The desire of remaining constant to one neighborhood is spread through the whole animal kingdom, and there are but few species which pass a life of continuous movement and change. They change their quarters with reluctance, and never undertake a distant journey but in company with many others of their own

species, which seems to reconcile them to the necessity. But these migrations are only periodical, and they return to their former homes in immense numbers, as soon as their instinct teaches them that the necessity which drove them forth, no longer exists. It is thus with the reindeer, in Lapland, which, tormented by flies, pass off in herds from the interior down to the coast.

This attachment to a peculiar locality is remarkably conspicuous in fish, which, at the spawning season, return to the same spots where they themselves were produced. Salmon have been caught and marked, and for many recurring years have been found again in the same waters; facing obstacles almost insurmountable in order to achieve their purpose.

The wearied horse pricks its ears, and seems to gain new energies as it advances towards its home; and if ill or injured, it recovers much sooner in its own stall, and with its accustomed companions, than in a strange place, where it becomes restless and cheerless. Draught-horses, which, besides standing in neighboring stalls, have been in the habit of working together, possess the greatest attachment for each other, and if one be fixed in its traces by its driver, the other spontaneously places itself by its side, and they willingly share their work; but if separated, they lose their appetite, work less freely, and make efforts to get together. Such and similar affections characterise domesticated animals, which can only be reconciled to change by kindness and gentle usage.

LORD MONBODDO relates the following singular anecdote of a serpent: "I am well informed of a tame serpent in the East Indies, which belonged to the late DR. VIGOT, once kept by him in the suburbs of Madras. This serpent was taken by the French, when they invested Madras, in the late war, and was carried to Pondicherry in a close carriage. But from thence, he found his way back again to his old quarters, though Madras was above one hundred miles distant from Pondicherry."



Experience.

The expectation of the recurrence of an event is the impression of a former circumstance, which, from certain causes and a resemblance of certain points, we are again led to entertain and to expect to see fulfilled; the former is caused by the memory, and the latter by the understanding; for the imagination, by a comparison of the past with the present, prepares the mind to receive a certain conclusive result.

This application of experience is traceable in the lowest orders of life. The razor shell-fish buries itself deep in the sand when left by the ebbing tide, and is attracted to the surface by a little salt being dropped into its hole. A movement in the sand immediately follows, and presently half the fish becoming visible, the fisherman draws it out with an iron prong; but should he fail in seizing it or relax his hold, the fish rapidly disappears, and will not rise again, although more salt be thrown to it. It seems thus to be aware of its danger, for it will come forth on the fresh application of salt, should it not have been touched in the first instance.

BORLASE says that he saw the attack of a lobster on an oyster. Lobsters, like most other crustacea, feed principally on shell-fish, which they extract with their claws, and in the instance in question the oyster closed its shell as often as the lobster attempted to insert itself; after many failures, the lobster took a small stone, which it placed between the shells as soon as they were separated, and then devoured the fish. Monkeys in the West Indies have been seen to resort to the same device. Crickets, if disturbed, withdraw quickly into their holes, and reappear again soon; but if the disturbance be repeated, they remain altogether within them.

A fox escaped from a trap in which it may have been caught, remembers the danger, and is not again to be deceived. Birds are equally suspicious. The quail which has once been enticed into the net by the call-pipe, will not allow itself to be caught again; but some, like the redbreasts and titmice, are not so readily alarmed.

A wasp, encumbered by the struggles of a large fly, which it had caught, bit its wings off, and then bore it away with ease: the same with a sand wasp, which attempted to draw a small moth into its hole, but being prevented by the wings of the insect, it separated them and the legs from the body, and thus secured it.

DUGES saw a spider which had seized a bee by the back and effectually prevented it from taking flight; but the legs being at liberty, it dragged the spider along, which presently suspended it by a thread from its web, leaving it to dangle in the air till it was dead, when it was drawn up and devoured.

The use of experience becomes more marked and extensive with age, the higher we ascend in the scale of life. Thus old birds are not so easily approached within gun-shot as young ones; old foxes are less easily caught in traps, and old stags show more cunning. On newly-discovered islands, the birds and animals have no fear of man, and the seals and other amphibia do not move at his approach; but a very short experience teaches them in what their safety consists. In tracts where the art of trapping has never been practised, the animals are at first caught in numbers, but by degrees they become more wary, and the hunter is compelled to use greater stratagems. In woods which are much hunted, the game is more shy and vigilant, while it seems fully to comprehend the sanctity of a preserve.

It appears that animals place in a reasonable connection things which take place at stated periods and in regular succession. Pigeons, poultry, and even carp will flock to an accustomed spot at the sound of a bell, because food has always been thrown to them at such a signal. The pigeons at Venice are a remarkable instance of this, and, indeed, go a step further, for they anticipate.

The square of ST. MARK is the resort of a large number of these birds, which occupy every hole and corner of the ornamental architecture of the cathedral and the Doge's palace, owning no master, and picking up their living on the square and the adjoining quay, the only open spots in the city. Some individual living in the square has been in the habit, for a length of time, of scattering grain at a particular spot at two o'clock, previous to which hour the birds assemble in one place on the cathedral; and as the clock strikes, they all take wing and hover round his window in small circles, till he appears and distributes a few handfulls of food.

The pointer is wild with joy when it sees the sportsman reach his gun, and the little house-dog frolics round his master as he takes his hat. The dog which has been punished once for a fault, will either slink away or hide itself if it finds itself detected in the repetition of it. Sometimes, from force of habit, an animal will take that for granted of which the form only has been apparently gone through; thus, if we pretend to fasten a horse to an accustomed post, he will remain quietly by its side; or if we go through the action of throwing a stick into the water, a dog will plunge in as if to fetch it.

Animals are prompt at using their experience in reference to things from which they have suffered pain or annoyance. GRANT mentions an ourang-outang which, having had, when ill, some medicine administered to it in an egg, could never be induced to touch one afterwards, notwithstanding its previous fondness for them. A tame fox has been cured from stealing eggs and poultry, by giving them to him scalding hot from the saucepan. LE VAILLAIN's monkey was extremely fond of brandy, but could never be prevailed on to touch it again after a lighted match had been applied to some it was drinking.

Two carriage-horses which made a point of stopping at the foot of every hill, and refused to proceed in spite of every punishment, were considered beyond cure, but it was suggested at last that several horses should be attached to the back of the carriage, and,

being put into a trot, be made to pull the refractory horses backwards. The result was perfectly successful, for thenceforth they faced every hill at speed, and were not to be restrained till they reached the summit.

A dog which had been beaten while some musk was held to its nose, always fled away whenever it accidentally smelled the drug, and was so susceptible of it, that it was used in some physiological experiments to discover whether any portion of musk had been received by the body through the organs of digestion. Another dog, which had been accidentally burned with a lucifer match, became angry at the sight of one, and furious if the act of lighting it was feigned.

There are so many instances recorded of even higher degrees of intelligence, that it is impossible to deny that animals arrive at a knowledge of cause and effect. STREND, of Prague, had a cat on which he wished to make some experiments with an air-pump; but as soon as the creature felt the exhaustion of the air, it rapidly placed its foot on the valve, and thus stopped the action. A dog, having a great antipathy to the music of a violin, always sought to get the bow and to conceal it. The well-known story recorded by PLUTARCH proves the application of accidentally acquired experience: he says, that a mule, laden with salt, fell accidentally into a stream, and having perceived that its load became thereby sensibly lightened, adopted the same contrivance afterwards purposely; and that to cure it of the trick, its panniers were filled with sponge, under which when fully saturated it could barely stagger.

Animals turn to account also the experience they derive from matters in which they individually have had no share. The more wary, which may have seen others either caught or shot, keep carefully out of the reach of all risk, as in the well-known case of the crows, which avoid the field in which a dead or wounded one is fastened, although in the latter case they hover about, attracted by its cries, but still out of harm's reach. Mice, again, however numerous, cannot be caught for any length of time in the same

description of trap, which they seem to understand and to shun ; and where one has been allowed to remain too long, no other will enter. Where experience does not exist, suspicion exercises great influence, and is not lulled till familiarity with strange objects removes the ground of fear. Strings stretched on little sticks over new-sown land will keep it free from birds ; and feathers hung along gaps in preserves will deter the game from passing through them.

The intelligence is the most remarkable where experience seems to lead to the formation of a future plan, and to suit itself to circumstances, as in the case of the cow which, having strayed into a carelessly open granary, continued its visits by contriving to draw the bolt with its horn, till it was found necessary to change the fastening. Such newly-excited actions of the mind amount almost to invention. The arctic foxes undermine and throw down the poles on which flesh is hung to keep it out of their reach. GLEDITSCH saw a burying-sylph engaged in burying the body of a frog through which a stick had been thrust, and finding the stick to interfere with the process, set to work and buried the stick also. A large garden spider which was constructing its web between two fruit-trees, having failed in repeated efforts to attach one of the main threads as it wished, made it at last fast to a small stone, which it raised so high from the ground that ordinary-sized people could pass under it without touching.

HALLIDAY mentions a mason-bee, which had built its nest on a wall close to a window generally closed with a shutter, but which, when thrown back, lay so close to the wall that the nest was completely shut in ; to prevent this occurrence, it formed a little lump of clay, which hindered the shutter from fitting tight to the wall, and which it renewed as often as it was removed. JESSE recounts the circumstance of some rats destroying the bladder fastened over the nose of an oil-bottle, and making free with the oil by dipping their tails into it and licking it off. DR. PELICAN saw some rats engaged in the same manner round the bung-hole of a cask of wine.

The same principle of adapting a means to arrive at an end, was carried a degree further, because of a foreign agency being employed, by the dog which threw stones into a well, and the fox which dropped them into the neck of a pitcher, in order to get at the water. Thus also with the monkey which DEGRANDPRE put to the proof, by leaving on a table an open bottle of aniseed-brandy, from which the monkey extracted with its fingers and tongue as much as it could manage to reach, and then poured sand into the bottle till the liquor ran over.

CUVIER relates the anecdote of an ourang-outang in the Menagerie at Paris, which was in the habit of opening the door leading to a dining-room, the lock of which was out of its reach, by lowering itself from a rope fastened to the ceiling; to stop which the cord was shortened by means of several knots, but the animal seeing the reason, and at the same time perceiving that by hanging beneath them he drew them tighter by his weight, he climbed above them and loosened them with ease. It also unlocked a door by trying every key in a bunch till it found the right one; and if the lock was too high, it fetched a stool and mounted on it. LEURET saw a monkey escape from its cage, run through a gallery and bolt the door after it, and then conceal itself in a closet from which it first took the key. CUVIER, again, describes a monkey that drew out the claws of a cat which had scratched it. BURDACH had a cat which, when it wished to leave his room, sprung on a table standing near the door, and pressing on the handle, managed to open it.

Animals often shape their conduct according to the experience they have learned from the acts of other animals. LE VAILLANT'S monkey, when tired, used to jump on the backs of his dogs for a ride; but one of them, objecting to this mode of horsemanship, stood still as soon as the monkey had taken its seat, knowing that from fear of being left behind and of losing the caravan, it would immediately run off to overtake it, when the dog itself followed behind to prevent any fresh attempt. The marten will not go near a trap if it sees the impression of a man's footstep on the

surrounding soil; and the fox, which recognises a trap, is not to be enticed by the bait, but if it sees another animal caught in it, it consumes the bait as well as the animal itself. An elephant employed in the artillery service in India, perceiving that a soldier had fallen from his gun in such a position that the wheels must infallibly pass over and crush him, raised them with its trunk till the piece had gone over the man without injury. Another elephant that was exhibited in London, was made to go through a variety of tricks, and among them that of picking up a sixpence with its trunk; but on one occasion the coin rolled near a wall beyond its reach. As the animal was still ordered to get it, it paused for a moment as if for consideration, and then, stretching forth its trunk to its greatest extent, blew with such force on the money that it was driven against the wall, and was brought within reach by the recoil.

An officer in the Bengal army had a very fine and favorite elephant, which was supplied daily in his presence with a certain allowance of food; but being compelled to absent himself on a journey, the keeper of the beast diminished the ration of food, and the animal became daily thinner and weaker. When its master returned, the elephant exhibited the greatest signs of pleasure; the feeding time came, and the keeper laid before it the former full allowance of food, which it divided into two parts, consuming one immediately, and leaving the other untouched. The officer, knowing the sagacity of his favorite, saw immediately the fraud that had been practiced, and made the man confess his crime.

A servant-maid, whose duty it was to wash a little lap-dog, walking in her sleep, set about the task; but the dog not liking the untimely bath, escaped into its mistress's room, and, pulling her by the clothes, at last induced her to follow it into the kitchen, where she found the maid with the tub and water intended for the dog.

Computation of Time.

The cases in which animals have shown a distinct appreciation of the lapse of time, are abundant. Poultry, like the pigeons at Venice, before mentioned, know the exact moment of feeding time; and domestic animals return of their own accord at the stated period from their pasture. Robins, and other little birds, will come regularly at the hour of breakfast to receive their crumbs from the window. An ostrich, at Paris, rang a bell at the door of its enclosure when its food was not brought at the usual hour.

We are so accustomed to the presence of our dogs, that we almost cease to notice their actions; but the least intelligent of them seem to be perfectly conscious of the arrival of certain periods of time. There is the well-recorded story of the Newfoundland dog which took daily a basket with sundry pence in it to the baker's, and brought back the rolls for the family's breakfast, but on the Sundays made no effort to move. The race of turnspits is almost extinct, as their services have been superseded by machinery, but in some places this has not been of long date. These dogs knew the roasting-day most distinctly.

At the Jesuits' college at Flèche, the cook took one of these dogs out of its turn to put it into the wheel of the spit; but the animal, giving him a severe bite, ran away, and drove in from the yard the dog whose turn it really was. ARAGO describes something similar; he saw several dogs at an inn, whose duty it was to turn the spit in regular rotation, one of which skulked away, and obstinately refused to work, because its turn had not come round, but went willingly enough into the wheel after his comrade had turned for a few minutes. A dog, which was in the habit of accompanying its master from Paris to Charenton, where he spent the Sunday with a friend, having been locked up on two successive occasions, ran off alone to Charenton on the Saturday evening, and waited there for its master.

A gentleman writing from Edinburgh, and speaking of the Scotch shepherd's dog, describes it as one of the most intelligent of the canine family, as a constant attendant on his master, and never leaving him except in the performance of his duty. In some districts of Scotland, these animals always accompany them to church; some of them are even more regular attendants than their masters, for, by an extraordinary computation of time, they never fail resorting thither, unless employed in attending their charge. To a stranger, their appearance is somewhat remarkable in such a spot; and the propriety with which they conduct themselves during the service is remarkably singular.

On one occasion, towards its close, one of the dogs showed an anxiety to get away, when his master, for this unmannerly conduct, very unceremoniously gave him a kick, which caused him to howl and break the peace of the assembly, and, to add to his distress, some of his fellow dogs attacked him, as dogs are wont to do when they hear one of their species howl. The quarrel became so alarming that the precentor was forced to leave his seat and use his authority in restoring peace, which was done by means of a few kicks. All the time of this disturbance the minister seemed very little discomfited, continuing his preaching without intermission, which showed that such occurrences were not rare.

In one parish, great complaints were made against the disturbances occasioned during divine service by the quarreling or otherwise unmannerly conduct of the dogs, when it was agreed that all those who had dogs should confine them, and not allow them to come to church. This did very well for the first Sunday or so; but the dogs, not at all relishing to be locked up on a day when they were wont to enjoy themselves, were never to be found on the Sunday mornings, to be tied up: they, by some instinct, knew the Sunday as well as their masters, and set off before them whither they had been in the habit of going on that day.

It was now evident to the members of the congregation, that this plan would not do; and another scheme was laid before

them, which was, to erect a house close to the church, in which they might be confined during divine service. This was adopted, and a kennel was accordingly built, in which the dogs were imprisoned; but the animals, being more accustomed to freedom than to confinement, took this restraint upon their liberty in ill part, and set up a most dreadful howling, to the great annoyance of the people in the church. They, however, persevered in confining them for a considerable time, thinking the animals would get accustomed to their incarceration; but in this they were mistaken, for instead of the howling diminishing, it got worse and worse. So it was agreed they should again be set at liberty, and have freedom of access to the place of public worship; but their manners had been so corrupted that they were with difficulty brought even to their former discipline.

Calculation of Number.

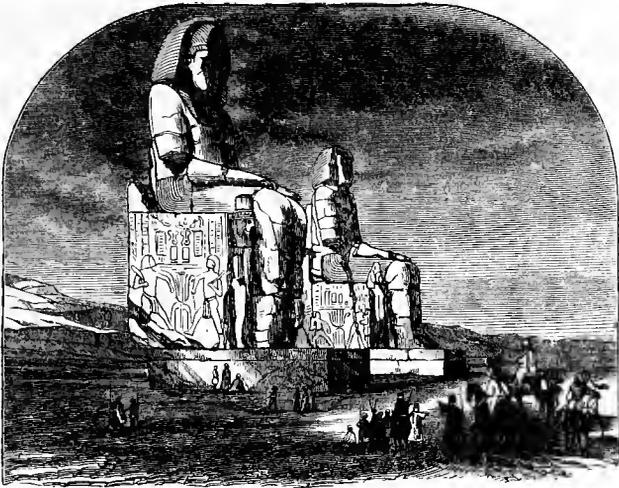
There is no doubt that animals possess this power, and although it cannot be ascertained whether it is shared by the lower orders, yet it is quite clear that higher ones are endowed with it to a certain extent. If we remove one of a litter during its mother's absence, she misses it on her return. A man having found some tiger cubs in the jungle, took them up and was bearing them away, but finding he was pursued by the tigress, he dropped one, and hastened on. Having placed it in safety, she again pursued the man, when he dropped another, which she again bore off, and thus continued following the man and redeeming her cubs till she had got them all.

LICHTENBERG says that his nightingale could reckon up to three. He made the experiment with meal worms, giving it daily three. It hopped on its perch to devour them as it took them in succession from his fingers, and then sprang to the top of its cage. It was not from satiety, for if he enticed it by a fourth, it jumped down to receive it.

Birds which lay a certain number of eggs before they begin to sit, are evidently aware when the complement is made; and hence follows one of the most remarkable and mysterious phenomena in the whole system of nature, for if we continue to remove one for many times in succession, the hen-bird will continue as often to deposit another egg, and ceases only when the number is complete. This power of producing or of withholding, baffles all conjecture and investigation.

The tricks taught to dogs and pigs, of distinguishing letters and numbers, are mere deception, and do not belong to this category; an almost inaudible click of the nail, or a private and well-understood signal from the master, being the guide to the performance.

This slight review of the perceptions and natural endowments of animals, is far less than the subject deserves, but yet, perhaps, sufficient to satisfy the most unthinking and skeptical—who regard this part of the creation, if they regard it at all, as beneath their notice—that each creature, according to its wants and habits, is in its structure as complete and perfect as themselves, possessing organs of the most astonishing sensibility and refinement, and faculties which, in discrimination and adaptation, approach even the powers of reason. If the higher mental qualifications, and the greater powers of the understanding—those, namely, of generalization, of abstraction, of speculation, of planning, and arrangement—are deficient, who can venture to maintain that the understanding itself does not exist? If there be a deficiency in that stretch of intellect that seeks to fathom the foundation of things, and their mutual connection, for their sake alone; to find out the reason and the consequence, the cause and the effect; it cannot be denied that their actions are regulated by design, and that they are even capable of acting beyond the point at which their instinct serves them.



THE COLOSSAL STATUES OF AMUNOPH III.

THE stupendous ruins of the city of Thebes, extend for seven miles on both sides of the Nile. Several villages are scattered among these vestiges, and among them, on the western bank, is that of Goorna, situated within a grove of palm-trees ; beyond it is a plain, which exhibits at present very little cultivation, extending to some distance, and bounded by desert hills. Amidst the vast levels of this rough and neglected plain, are seen the well-known statues of MEMNON, sitting, as they have done for ages, in grand and mournful solemnity, surrounded by the ruins of temples, the desolate but magnificent monuments of ancient splendor. They are called, by the natives, Damy and Shamy ; words that sound like nicknames to us, but the natives have no such association with them.

The farthest in the view, is that which is known as the vocal MEMNON.* Thanks to the newly-discovered power of decyphering

* It was said that when the first rays of the morning sun fell upon this statue, a sound was produced like the snapping of a harp string, or of a metallic ring. When

the hieroglyphics, it is ascertained to be the statue of AMUNOPH III, believed to be the PHARAOH of the Exodus, B. C. 1500. The other statue has been supposed to be that of his brother, AMUNTOONH, but without foundation; for though he reigned for a short time jointly with AMUNOPH III, he was deposed by him, and excluded from the hieroglyphic lists; AMUNOPH was not likely, therefore, to establish his statue. It is more probable that both statues represent the same PHARAOH, as the statues of REMESSES II are repeated in the pronaos of ABOO-SIMBEL. The plain is bounded by lofty mountains, among which are the valleys of Biban, El Malook, and other recesses, full of sepulchral excavations; whilst the lower part of the rocky heights facing the last, are occupied by the village of Goorna.

The view of these wonders of the plains of Thebes, is taken from the upper or southern side of the group. The statues and their thrones, but not their pedestals, were originally hewn each out of a single stone; but the farthest, the vocal Memnon, having suffered disruption, had been restored. The material of these colossi is a coarse hard gritstone, slightly stained in some places with iron. The height of each is forty-seven feet, without the pedestal; but the total height before the accumulation of soil, which has buried so much of the pedestal, must have been sixty feet above the plain.

These enormous figures rest where they did at the period of their erection, when they formed the entrance of a grand dromos, 1100 feet in length, to the Temple of AMUNOPH III. Several pairs of statues, scarcely less colossal, originally formed the avenue;

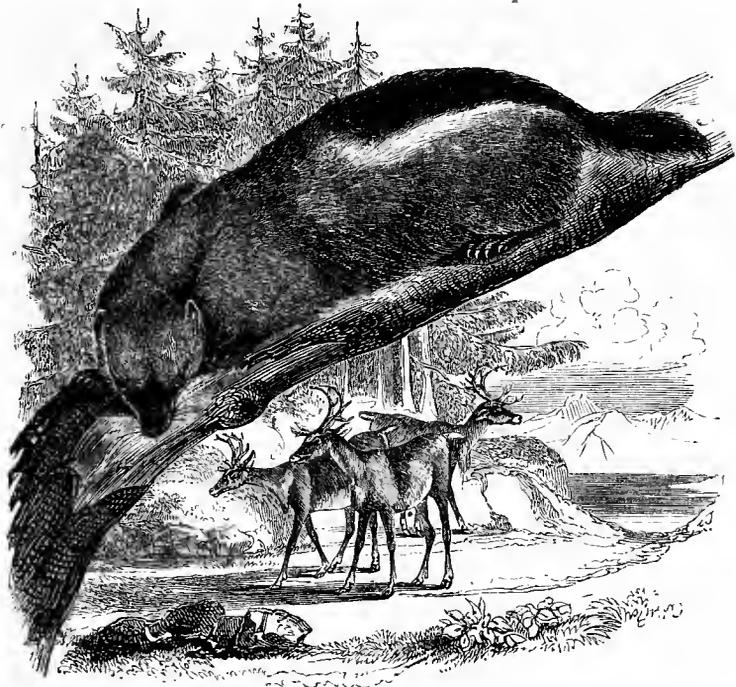
CAMBYSSES conquered the country, he came here, and suspecting a trick, caused the statue to be broken from the head to the middle of the body, but found nothing. Many ancient authors assert that, before this, the sounds uttered the several mysterious vowels. The legs of the statue are covered with Greek and Roman inscriptions, attesting the miracle. One of these says: "I, PUBLIUS BALBINUS, heard the divine voice of MEMNON. I came at the first hour of the sun's course, with the empress SABINA, the fifteenth year of the Emperor HADRIAN." Of the fact that the statue did produce sounds at sunrise, there can be no doubt; but they are supposed to have been contrived by the priests, causing a particular species of sonorous stone, placed in the lap of the statue, to be struck, producing a ringing sound like brass.

but of the others, little more than fragments of the figures and of their pedestals can be traced. Many of the fragments are now buried in the alluvial deposit which each successive inundation of the Nile leaves; for at the period of high Nile, the entire plain is so flooded that the waters reach the feet of these colossi, and have done so annually these 3,300 years; leaving a tribute which has accumulated till the soil has risen seven feet above the level of the time of erection. Mr. HAY caused an excavation to be made below these two statues, and ascertained that they rested on a bed of sand retained by a wall of stone. The cartouch of AMUNOPH III has been found upon these statues; but of the temple to which the avenue, commencing with these colossi, led, a few substructures alone remain to mark the site of what must have held a conspicuous rank among the temples of Thebes.

All the prominent features of these vast statues, are now obliterated. The faces have flaked, and fallen off. The massive head-dresses, which descend over the breast, have, in their angles, preserved the ears. Sculptured for endurance, the severe and simple form of the Egyptian statue required the limbs to be in close contact with the body, or otherwise supported. Position without action, is its characteristic: the legs are united to the throne, the arms to the body, and the fore-arms and hands to the thighs, on which they rest. The smallest surface possible for its volume, is thus presented to the action of Time, who finds few weak points in Egyptian art by which to insinuate his attacks: whence the marvelous preservation to our day of so many of its magnificent remains. This statue may have been seen by MOSES, for it was erected three-and-thirty centuries ago, by that PHARAOH in whose reign the Israelites were led forth by the great lawgiver from their bondage in Egypt.

The sides of the thrones are similarly ornamented with hieroglyphics, in which the dominion of the sovereigns over Upper and Lower Egypt is supposed to be typified by figures of the god NILUS, binding the stalks of two different water-plants round the support of a tabular frame, or stela, that contains the ovals and

characters which probably record the erection of these colossi. A line of hieroglyphics also extends from the shoulder, down the back, to the pedestal, and here is found the name of the PHARAOH whom the statue represented, AMUNOPH III. On either side stand, attached to the throne, statues of the wife and the mother of the PHARAOH, eighteen feet high; and there are traces of a smaller statue of his queen between his feet.



THE WOLVERINE.

THIS animal has a marked character, as its great variety of significant names abundantly proves. The European species, which is probably the same as the American, goes by the amiable title of *glutton*, a word which well describes its genius and disposition. *Wolverine*, which may signify a little wolf—or perhaps it is the same as *wiffern*, a fabulous animal, with bat wings and webbed feet and claws—is its usual designation in this country. The French Canadians call it *carcajou*; the English at Hudson's Bay, *quickhatch*; the Esquimaux, *kableearioo*; the Indians of Boothia *Felix*, *ka-e-week*; the Chippewas, *naghai-ah*; the Crees and Algonquins, *okeecoohawgew*. It is called *rosomak*, by the Russians; *timmi*, by the Kamtschadales;

haeppi, by the Koratzki; gulo, by OLAUS MAGNUS; hyæna, by BRISSON; ursus luscus, by LINNÆUS; ursus gulo, by PALLAS and GMELIN; taxus gulo, by TIEDEMANN; gulo arcticus, by DESMAREST; gulo vulgaris, by CUVIER.

It is not surprising to find that a creature with so many names, has been the theme of innumerable tales, many of them true, and many of them fabulous. OLAUS MAGNUS tells us that it is an animal of the most cruel and destructive powers. He says that its voracity is unbounded; that it gorges itself with the blood and flesh of its victim till it is ready to burst, and then it obtains relief by squeezing between two trees, close together, which alike promotes digestion and causes an emetic! BUFFON even embellishes the wonderful tale.

“The legs of the glutton,” he says, “are not formed for running; its pace is very slow, but its cunning supplies this deficiency. It waits the arrival of its prey in ambush; and in order to seize it with greater security, it climbs up a tree, carrying with it a quantity of a kind of moss to which the deer are partial. This is thrown down to the deer, and if one of them stops, the glutton darts down and fastens itself so strongly with its claws and teeth that all the efforts of the animal cannot remove it. The poor victim in vain flies with its utmost speed; in vain it rubs itself against the trees and other objects; all is useless: fastened on its back or loins, the glutton still persists in tormenting it by digging into its flesh and sucking its blood, till the animal, fainting with loss of blood, falls. The glutton then devours it by piecemeal, with the utmost avidity and obstinate cruelty. It is inconceivable what a length of time together the glutton will eat, and what a quantity of flesh it will devour at one single meal.

“From this quality, the glutton has obtained the name of *quadruped vulture*. It is more insatiable and commits greater depredations than the wolf. It would destroy every animal if it had sufficient agility; but the only animal it is capable of taking on foot, is the beaver, which it easily destroys; it even often attacks the animal in its hole, and devours both it and its young,

if they do not get into the water in time; for then the beaver escapes its enemy by swimming, and the glutton stops its pursuit to feed upon the fish. When it is deprived of any living food, it goes in search of carcasses, scratches open the graves, and devours the flesh of dead bodies to the very bone."

This description is either imaginary or exaggerated. Truth compels us to give a more sober account, though the actual qualities of the animal appear to be extraordinary enough. It is found in northern Europe, and is familiarly known throughout the northern parts of our continent. Its body is two feet and a half in length, and its tail some seven inches; its fur is dark brown. Its feet are plantigrade, and its tracks are often taken for those of the bear:

The glutton is scarcely capable of catching any animal by pursuit, and therefore its habits are generally those of a liar in wait, though it sometimes overtakes its prey by a slow yet persevering chase. Small mammalia and birds are understood to be its ordinary fare; but, in cases of emergency, it can and does prey upon larger animals, upon the different species of arctic deer, and even on the reindeer itself. Indeed, from its mode of attack, the size and strength of its prey do not appear to be matters of very material consequence. The glutton is well adapted for climbing trees; and its length and lowness, the extent of its feet and the sharpness of its claws, enable it to hold on upon a branch, crouching so that it is not easily seen.

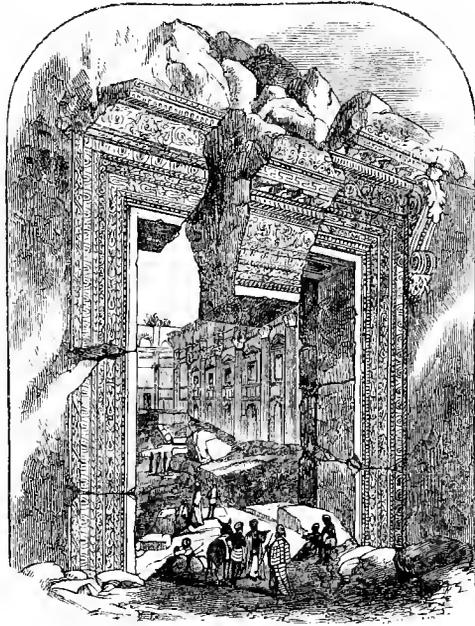
Deer, and other animals, usually have tracks or passages through the thick parts of the wild forests; and so prone are all animals which feed on vegetables to follow in each others' footsteps, that sheep, horses, rabbits, and even mice, are road makers, although the surface upon which they make the road, by successively following each other, may be quite level and uniform. The same instinct which leads the glutton to prey upon those animals, leads it to the track along which they pass; and getting on to a branch that overhangs this track, it drops down on the shoulders of the passing animal, where it keeps a firm hold with its sharp

claws, tearing and lacerating all the while with its formidable teeth, at that part where the neck joins the shoulders. The pain produced induces the victim to set off at great speed; and the excitement increases the discharge of blood from the wounded part; so that, as is the case with the larger prey of the lion, the strength and fleetness of the animal contribute to its destruction, and the glutton continues in its place of attack until the prey tumbles down completely exhausted and incapable of making any further resistance.

We are told that the gluttons are exceedingly troublesome to the marten hunters, whom they will follow round a line of traps from forty to sixty miles, and take off the baits, which consist of the heads of partridges or bits of dried venison. They often tear away the martens which they find in the traps, and, as they do not relish their flesh, they bury them in the snow. The fox has a less delicate appetite, and accordingly he feeds upon what the gluttons have concealed. So well understood is this practice, that the former is often seen following the latter animals, evidently regarding them as his providers.

It seems that the glutton is sly and suspicious, and instead of entering a trap, he begins behind, pulls it to pieces, scatters the logs, and then carries off the bait. RICHARDSON says he has seen one of these creatures following a hare, which at the same time was harassed by a snowy owl. It resembles the bear in its gait, and though not fleet, it is vigorous, persevering, and industrious, and gets a luxurious living. It does not disdain making a meal upon any dead animal which comes in its way. It does not sleep through the winter like the bear, but continues its activity through the season. The track of its journey in a single night, may be often followed in the snow for many miles. In general it flies from man, and makes a poor fight with a hunter; but SIR JAMES ROSS tells us that a short time before he abandoned his ship in Victoria harbor, one of these creatures, pressed by hunger, came boldly on the deck of the vessel, amidst the men, seized a canister which had some meat in it, and was so ravenous that he was taken in

the very act by a noose slipped around his neck. We may add, that the glutton may be tamed, and is easily taught to perform various amusing tricks. We are told of one at Dresden, that among other performances, ate fourteen pounds of meat a day!



THE DOORWAY TO THE TEMPLE OF THE SUN.

THE RUINS OF BAALBEC.

IN a valley at the foot of Mount Anti-Libanus, and forty-three miles northwest of Damascus, lie the ruins of Baalbec, the Heliopolis of the Greeks, and the Baal-ath of the Scriptures. With the exception of those of Palmyra, no other ruins in Syria equal in extent those of Baalbec; in grandeur they exceed all that remain in this ancient and renowned country. The principal vestiges are those of three temples, and the city walls, the latter three or four miles in circuit.

The origin of this city is lost in the mists of antiquity. It was situated on the road from Tyre to Palmyra, and was probably a place of some note as early as the time of SOLOMON; it is supposed by some to have been built by him, under the name of Baal-ath, as

related in 2 Chronicles viii. 6 ; and a portion of it is regarded as the "house of the forest of Lebanon," constructed by that monarch, as related in 1 Kings, chap. vii. It is not improbable that here was the "house which he made for PHARAOH'S daughter whom he had taken to wife." The Temple of the Sun, which is one of the wonders of the world, was probably erected by ANTONIUS PIUS, who became emperor of Rome, A. D. 136. The city continued to be a place of importance till the Moslem invasion, when it was sacked, A. D. 786 ; in 1400 it was pillaged, and finally destroyed, by the Tartar hordes under TAMERLANE. The present village, to the east of the ruins, is an insignificant place of 2,000 inhabitants.

Every traveler who has visited the site of Baalbec, seems to have been overwhelmed by the grandeur and the desolation of the scene. The ruins do not present a crowd of fallen edifices like those of Palmyra ; they consist, as we have said, of three distinct buildings, constructed of a species of marble, and finely grouped together on the west side of the town, in a plain at a short distance from the inhabited portion of the place.

The Great Temple originally consisted of a magnificent central edifice, with courts and quadrangles, the whole occupying a circuit of half a mile. It embraced a portico, a hexagonal court 244 feet in diameter, a quadrangle 317 feet in width and 347 in length, with the peristyles of the temple itself. Of this last, six gigantic and highly polished pillars remain, seventy feet six inches in height, and twenty-three feet in circumference, with the cornice and entablature resting upon them. The whole edifice was built without mortar, the stones being so nicely fitted as not to admit a knife-blade between the joints. The pillars and cornices were fastened by clamps of metal.

The two courts were encompassed by chambers, open towards the front, and supposed to have been occupied by priests, and perhaps by schools and lyceums. Towards the west is an esplanade, 118 feet in width, and 230 in length, bounded by a sloping wall, thirty-two feet high. In this the stones are of enormous magnitude ;

two are sixty feet long, and one sixty-three feet, both having a breadth and thickness of twelve feet. These are elevated in the wall to the height of twenty feet! In no known human structure, not even in the temples or pyramids of Egypt, are there any masses of stone comparable in size to these. In a neighboring quarry, from the material of which the temple was built, there is one stone which is seventy feet long, fourteen feet wide, and fourteen feet six inches thick, and weighing 1,130 tons! It would require 20,000 men to move it. By no process of which we have any knowledge, could such masses be moved from their bed and wrought into buildings. We can only account for what we see has been done, by considering the immense power of the Roman emperors, who could command the slavish labor of thousands or even millions of their subjects, to execute any task to which ambition incited them.

The masses of columns, the heaps of stones, the wilderness of capitals, cornices, architraves, and entablatures which lie prostrate upon the earth, amid walls, colonnades and arches, either in partial decay, or still lifting their noble forms toward the sky, surpass all powers of description. LAMARTINE says: "On reaching the summit of the breach, we know not where to fix our eyes. On every side we behold marble doors of prodigious dimensions, windows and niches bordered with exquisite sculpture, richly ornamented arches, fragments of cornices, entablatures, and capitals. The master works of art, the wrecks of ages, lay scattered as thickly as grains of dust, beneath our feet. All was mystery, confusion, inexplicable wonder. No sooner had we cast an admiring glance on one side, than some new prodigy attracted us on another."

One of the most beautiful portions of the Great Temple, is the door-way of which a sketch is given at the head of this article. "This," says Mr. ROBERTS, the celebrated artist, "is perhaps the most elaborate work, as well as the most exquisite in its detail, of anything of its kind in the world. The pencil can convey but a faint idea of its beauty. One scroll alone, of acanthus leaves,

with groups of children and panthers intertwined, might form a work of itself. Even independently of the beauty of the sculpture, and its excellent preservation, we are lost in wonder at the size of the stones, and at the nature of the machinery by which such masses were raised. Earthquakes have shaken this extraordinary remnant; but from the magnitude of the blocks which form the lintel, the central one, being wedge-shaped, has slipped only so far as to break away a portion of the blocks on either side, and thus remains suspended."

The exquisite beauty of these relics, however, cannot dispel the feeling of sadness and desolation which the whole scene impresses on the mind. The place is utterly deserted, except by lizards which swarm by thousands beneath the stones, flocks of pigeons which nestle among the crumbling wall and columns, and troops of bats which cling to the crevices. By day, this edifice, which was once thronged with worshipers lifting their minds and voices to BAAL, the Spirit of Life, as imaged in the Sun, is alike without an altar, a priesthood, and a people: at night, its roofless halls are given up to darkness and gloom, sad emblems of the mystery in which its story begins, and the ruin in which it ends.



THE WETTERHORN, OR PEAK OF TEMPESTS.

THE immensity of the scale upon which the Swiss Alps are formed, renders it impossible that any pictorial representation should give an adequate idea of their appearance. They are supremely the work of God, and defy the petty arts of man almost as much to imitate as to create them. By selecting a single peak, however, as in the sketch at the head of this article, the artist may give a faint and ghost-like semblance of one among

the thousand giant elevations which make up the sublime chain of the Alps.

It is even more futile to attempt any measure of these mountains by the imagination. We may see them indicated on a map, and be told their height and their extent; but these numbers do not and cannot stretch the soul to a full comprehension of them, in their diversified peaks and glaciers, their valleys and precipices, their woods and waterfalls. All general views of such a subject must consist of a mere outline, a glimmering impression, "a mass of things, but nothing distinctly." A more correct, and, in fact, a larger and more adequate comprehension, will be attained by taking an individual mountain, and making that the subject of special observation.

Let us, for instance, select the Wetterhorn, which is one of the peaks rising up from the valleys of the Swiss Oberland. Until recently, this had never been ascended by the foot of man; but, in 1845, a young Englishman, by the name of SPEER, accompanied by several guides, scaled its heights, and stood upon its summit. Starting from the village of Interlachen, in the canton of Berne, they climbed over rocks and glaciers, and surmounting every danger and every obstacle, at last achieved their hazardous enterprise. The principal in this adventure, in a very interesting account he has given of it, says:

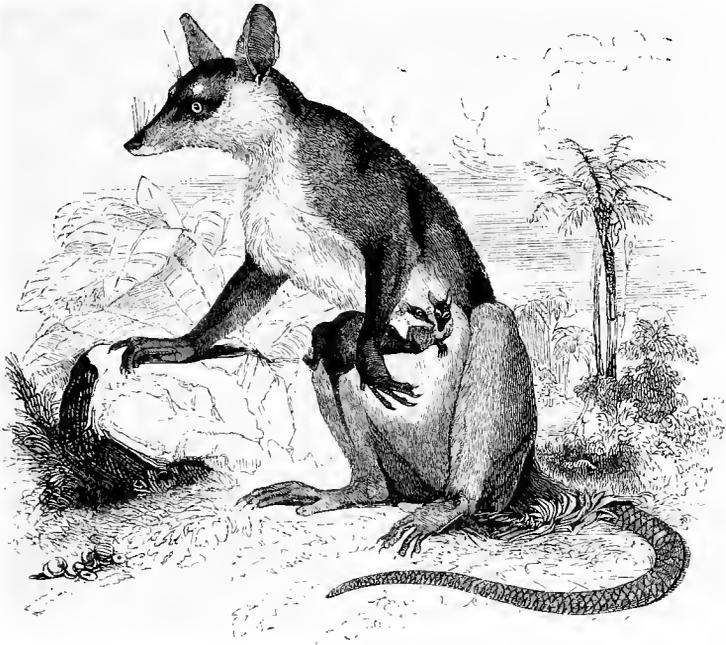
"We had thus, after three days' continual ascent from the level of the plain, attained a height of 12,154 feet above the level of the sea. Up to this period, our attention had been too much occupied in surmounting the opposing obstacles which lay in our route, to allow us to contemplate with attention the astonishing panorama which gradually unfolded itself. The summit being under our feet, we had ample leisure to examine the relative position of the surrounding peaks, the greater portion of which appeared to lie far beneath us. To the north, we perceived the Faulhorn, and the range of mountains skirting the lake of Brienz; behind these, the passage of the Brünig, together with the lakes of Lungern and Lucerne, on the banks of which rise the pyramids

of the Righi, and the Mont Pilate, the summits of which, the boast of so many tourists, appeared as mole-hills.

“Towards the east, the eye wanders over an interminable ascent of snow-clad summits, extending to the utmost verge of the horizon—a perfect ocean of mountains. Turning to the south, however, we there perceive the monarchs of these Bernese Alps rising side by side: the Rosenhorn and Berglistock raise their snow-clad crests in close proximity; separated from them by the Col de Lauteraar, we perceived the rugged Shreckhorn, aptly denominated the Peak of Terror; whilst the loftiest of the group, the Finsteraarhorn, appears peering among his companions. To the right of these two peaks, the brilliant Vischerhorner next came into view; beyond which, we discover the three celebrated sister summits of the Eiger, the Monnch, and the Jungfrau; the whole group exceeding the height of 12,000 feet.

“At the base of these gigantic masses lies the Wengern Alp, apparently a mere undulation; whilst, far below, the outline of the village of Grindelwald may be faintly discerned, the river Lutchine winding, like a silver thread, through the valley. On all sides of the peak on which we now stood—on the summit of which a dozen persons could scarcely assemble—we beheld vast, glittering precipices; at the foot of these lie the plains of snow which contribute to the increase of the numerous glaciers, situated still lower; namely, to the left, the superior glacier of Grindelwald, and that of Lauteraar; to the right, the glaciers of Gauli, of Reufen, and of Rosenlauri, out of which rose the peaks of the Wellhorn, the Tosenhorn, and Engelhorner.”

Having surveyed with unbounded admiration and wonder the unrivaled scene, the adventurers descended, and, after an absence of four days, returned to Interlachen. Such was the labor of climbing a single peak of the Alps; and that nearly four thousand feet less elevated than Mont Blanc!



THE OPOSSUM.

THIS is a familiar animal in the southern states; but nothing can deprive it of the interest excited by its curious structure and habits. From the period of its first discovery, it has attracted the attention of naturalists.

In the "Perfect Description of Virginia," (1649,) we find in the catalogue of animals, as follows: "Passounes: this beast hath a bagge under her belly, into which she takes her young ones, if at any time affrighted, and carries them away." LAWSON says: "The possum is found nowhere but in America. She is the wonder of all the land animals, being the size of a badger, and near that color. The female doubtless breeds her young at her teats, for I have seen them stick fast thereto, when they have been no bigger than a small raspberry, and seemingly inanimate. She has a paunch, or false belly, wherein she carries her young, after

they are from those teats, till they can shift for themselves. Their food is roots, poultry, or wild fruits. They have no hair on their tails, but a sort of scale, or hard crust, as the beavers have.

“If a cat has nine lives, this creature has surely nineteen; for if you break every bone in their skin, and mash their skull, leaving them for dead, you may come an hour after and they will be gone, or perhaps you may meet them creeping away. They are a very stupid creature, utterly neglecting their safety. They are most like rats of any thing. I have for necessity, in the wilderness, eaten of them. Their flesh is very white and well-tasted; but their ugly tails put me out of conceit with that fare. They climb trees as the racoons do. Their fur is not esteemed, nor used, save that the Indians spin it into girdles and gaiters.”

This antique and quaint description is not very wide of the truth. Although the more recent discovery of the kangaroo, and various other marsupial animals, in New Holland, has somewhat diminished the wonder with which we regarded the great peculiarity of the opossum, the pouch in the female for the reception of her young, yet it is so strange a departure from the ordinary routine of nature, that we cannot cease to look upon it with curious admiration.

The number of young produced at a birth by the opossum, is from five to sixteen, the period of gestation being about twenty-six days. At first these creatures are scarcely larger than a bumblebee. They remain in the pouch, clinging to the paps till they are of sufficient size to run about, when they occasionally go forth upon the ground or the trees. They return, however, upon the slightest alarm, and indeed spend a great part of their time here, in nursing and sleeping, until they are capable of taking care of themselves. The pouch may be opened, and the young ones counted and handled, without their showing much anxiety. So long as they are in the cradle which nature has provided for them, they seem to be without either care or fear.

From the mere inspection of the feet of this animal, it is easy to judge that he walks awkwardly, and seldom runs; a man can

overtake him without hastening his steps. He climbs up trees with great facility, hides himself in the leaves to catch birds, or hangs himself by the tail, the extremity of which is muscular and flexible as the hand, so that he may squeeze and even incurvate all the bodies he seizes upon. He sometimes remains a long time in this situation, without motion; his body hangs with his head downward, where he silently waits for his prey: at other times, he balances himself to jump from one tree to another, like the monkeys with like muscular flexible tails, which he resembles also in the conformation of the feet. Though he is voracious, and even greedy of blood, which he seeks with avidity, he feeds also on reptiles, insects, sugar-canes, potatoes, roots, and even leaves and barks of trees. The fruit of the persimmon tree is his favorite article of food. He is easily tamed, but he creates disgust by his bad smell, stronger and more offensive than that of the fox. His figure is also forbidding; for independently of his ears, which resemble those of an owl, of his tail, which resembles that of a serpent, and of his mouth, which is cleft to the very eyes, his body appears always very dirty, because his hair is neither smooth nor curled, but tarnished, as if covered with dirt. The bad smell of this animal resides in the skin, for his flesh is eatable. The savages hunt this creature, and feed on his flesh heartily.

The opossum is a nocturnal and timid animal, depending for his safety more on cunning than strength. His motions are slow, and his walk, when on the ground, entirely plantigrade, which gives an appearance of clumsiness to his movements. When on the branches of trees, he moves with much greater ease, and with perfect security from sudden gusts of wind; even were his weight sufficient to break the limb on which he rests, there is no danger of his falling to the earth, unless when on the lowest branch, as he can certainly catch and securely cling to the smallest intervening twigs, either with the hands, or the extremity of the tail. This organ is always employed by the animal while on the smaller branches of trees, as if to guard against such an occurrence; and it is very useful in aiding the opossum to collect his food, by

enabling him to suspend himself from a branch above, while rifling a bird's nest of its eggs, or gathering fruits.

The hunting of the opossum is a favorite sport with the country people, who frequently go out with their dogs on moonlit nights, after the autumnal frosts have begun, and the persimmon fruit is in its most delicious state. As soon as he discovers the approach of his enemies, the opossum lies perfectly close to the branch, or places himself snugly in the angle where two limbs separate from each other. The dogs, however, soon announce the fact of his presence, by their baying; and the hunter, ascending the tree, discovers the branch upon which the animal is seated, and begins to shake it with great violence, to alarm and cause him to relax his hold. This is soon effected, and the opossum, attempting to escape to another limb, is pursued immediately, and the shaking is renewed with greater violence, until, at length, the terrified quadruped allows himself to drop to the ground, where hunters, or dogs are prepared to despatch him.

Should the hunter, as frequently happens, be unaccompanied by dogs when the opossum falls to the ground, it does not immediately make its escape, but steals slowly and quietly to a little distance, and then, gathering itself into as small a compass as possible, remains as still as if dead. Should there be any quantity of grass or underwood near the tree, this apparently simple artifice is frequently sufficient to secure the animal's escape, as it is difficult by moonlight, or in the shadow of the tree, to distinguish it; and if the hunter has not carefully examined the spot where it fell, his labor is often in vain. This circumstance, however, is generally attended to, and the opossum derives but little benefit from his instinctive artifice.

After remaining in this apparently lifeless condition for a considerable time, or so long as any noise indicative of danger can be heard, the opossum slowly unfolds himself, and creeping as closely as possible upon the ground, would fain sneak off unperceived. Upon a shout or outcry in any tone from his persecutor, he immediately renews his deathlike attitude and stillness. If

then approached, moved, or handled, he is still seemingly dead, and might deceive any one not accustomed to his actions. This feigning is repeated as frequently as opportunity is allowed him of attempting to escape, and is, in fact, one of the most curious and characteristic traits of the animal.

The usual haunts of the opossum are thick forests, and their dens are generally in hollows of decayed trees, where they pass the day asleep, and sally forth after nightfall to seek food. They are, however, occasionally seen out during the daylight, especially when they have young ones of considerable size, too large to be carried in the maternal pouch. The female then offers a very singular appearance, as she toils along with twelve or sixteen cubs, nearly of the size of rats, each with a turn of his tail around the root of the mother's, and clinging on her back and sides with claws, hands, and mouth. It is exceedingly curious and interesting to see the young, when the mother is at rest, take refuge in the pouch, whence one or two of them may be seen peeping out with an air of great comfort and satisfaction. The mother, in this condition, or at any time in defence of her young, will make battle, biting with much keenness and severity, for which her long canine teeth are well suited.

The opossum is not known in the colder parts of America, but is distributed throughout the milder parts of both divisions of the continent. As we have said, it is a familiar animal in the southern and south western states, even entering into the popular songs and proverbs of the people there. "Possum up a gum tree," is a favorite negro ballad, and "playing possum," is a common phrase, expressive of pretence and deception, derived from the well-known tricks which this animal employs in its attempts to escape from its pursuers. It is sometimes tamed, yet it is never a favorite. It is at once familiar and captious, sometimes being troublesome from its familiarity, and yet often snappish and snarling, when its humors are not consulted. It is also exceedingly troublesome by its meddling curiosity, seeming to have something of both the bear and the monkey in its disposition.



THE LEAF.

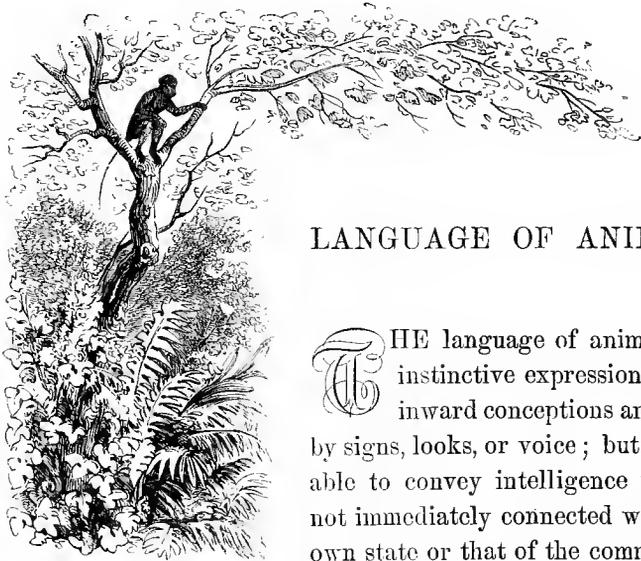
It came with spring's soft sun and showers,
'Mid bursting buds and opening flowers ·
It flourished on the same light stem,
It drank the same bright dews with them.
The crimson tints of summer morn,
That gilded one, did each adorn :
The breeze that whispered, light and brief,
To bud or blossom, kissed the leaf ;
When o'er the leaf the tempest flew,
The bud and blossom trembled too.

But its companions passed away,
And left the leaf to lone decay ;
The gentle gales of spring went by ;
The fruits and flowers of summer die ;
The autumn winds swept o'er the hill,
And winter's breath came cold and chill.
The leaf now yielded to the blast,
And on the rushing stream was cast :
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Far, far it glided to the sea,
And whirled and eddied wearily,
Till suddenly it sank to rest,
Forgotten in the ocean's breast.

Thus life begins — its morning hours
Bright as the birthday of the flowers
Thus passes like the leaves away,
As withered and as lost as they.
Beneath the parent roof we meet
In joyous groups, and gayly greet
The golden beams of love and light
That dawn upon the youthful sight ;
But soon we part, and one by one,
Like leaves and flowers, the group is gone

One gentle spirit seeks the tomb,
His brow yet fresh with childhood's bloom
Another treads the paths of fame,
And barter peace to win a name :
Another still, tempts fortune's wave,
And seeking wealth, secures a grave.
One lingers yet, with tottering tread,
And trembling grasps life's brittle thread
Though friends are gone, and joy is dead :
Still, still he dares the fretful tide,
And clutches at its power and pride
Till, suddenly, the waters sever,
And, like the leaf, he sinks forever !



LANGUAGE OF ANIMALS.

THE language of animals is an instinctive expression of their inward conceptions and wants, by signs, looks, or voice; but it is not able to convey intelligence which is not immediately connected with their own state or that of the community.

The lower orders of animals, particularly insects, communicate by signs; and the organs employed for that purpose are the feelers, as in bees and ants, which, like every other animal living in society, require a medium of communication. The effects produced upon the former by the loss of their queen, will furnish proof of this fact. In a well-peopled and thriving hive, each bee is employed in its appropriate avocation — some in attending the young, some in making cells. At first, when the queen has been abstracted, everything goes on well for about an hour: after this space of time, some few of the workers appear in a state of great agitation; they forsake the young, relinquish their labor, and begin to traverse the hive in a furious manner. In their progress, whenever they meet a companion, they mutually cross their antennæ, or feelers, and the one which seems first to have discovered the national loss, communicates the sad news to its neighbor, by giving it a gentle tap with these organs. This one in its turn becomes agitated, runs over the cells, crossing and striking others.

To make out the use of the antennæ, HUBER tried various experiments by amputating them altogether, and the results were very remarkable. The queen, when thus shorn, ran about the combs, dropped her eggs anywhere, and became perfectly helpless ; the workers neglected their labors, ran into corners, or to some sunny spot, and ultimately quitted the hive never to return. Hence it would seem that the antennæ are the organs of communication ; and, as a further proof of it, the sentinels, on a moonlight night, may be seen patrolling round their habitation with these feelers stuck out. If some unhappy moth, slyly endeavoring to steal into the habitation, happens to come in contact with them, the signal is made, and a body of guards soon rush out to chastise the interloper.

Attachment to the female is not the only instance of affection evinced by ants ; they, as well as bees, appear to recognise each other even after a long absence. HUBER, having taken an ant-hill from the woods, placed it in a glass hive ; finding that he had a superabundance of ants, he allowed some of them to escape, and these formed a nest in his garden. Those which were in the hive he carried into his study, and observed their habits for four months ; after which he placed the hive in the garden, within fifteen paces of the natural nest. Immediately, the ants established in it recognised their former companions, with whom they had held no communication for four months : they caressed them with their antennæ, and, taking them up in their mandibles, led them to their own nest. Presently others arrived in crowds, and carried off the fugitives in a similar manner ; and, venturing into the artificial ant-hill, in a few days caused such a desertion that it was wholly depopulated.

The above anecdote seems to prove that ants have a language of dumb signs, of which the organs are the antennæ. As yet, the proofs of this antennal language have been drawn from the affections of these creatures ; but more striking ones are to be derived from their passions—for there are a few animals in which the passions assume a more deep and threatening aspect ; they unite themselves in myriads for the purposes of war and extermination.

DR. FRANKLIN found some ants feasting on some treacle in his closet. He shook them out, and suspended the pot by a string from the ceiling. One ant had happened to remain, and after eating its fill, found its way up the string with some difficulty, crawled on to the ceiling, and thence along the wall to its nest. In less than half an hour a great company of ants sallied out of their hole to the ceiling, and crept along the string into the pot. This was done by others, till the treacle was all consumed; one body of ants running up the string from the sweet, while another passed down to it. The Doctor inferred that the first ant had communicated to its comrades the new position of their delicacy, and directed them to the only accessible road to it.

Mr. JESSE says that "nature has given to ants a language of communication, by the contact of their antennæ. With these organs, they are enabled to render mutual assistance in their labors and dangers, discover again their route when they have lost it, and make each other acquainted with their necessities." He adds, respecting wasps: "if a single wasp discovers a deposit of honey, or other food, he will return to his nest and impart the good news to his companions, who will sally forth in great numbers to partake of the fare."

A beetle—*scarabæus*—making a pellet of dung for the reception of its egg, rolled it to the summit of a small hillock, but it fell into a hole, from which all the efforts of the beetle could not extricate it. After several ineffectual trials, the insect repaired to an adjoining heap of dung, and soon returned with three of his companions. All four now joined and succeeded in pushing out the pellet, when the three assistant beetles left the spot and returned to their own quarters.

The higher classes of animals obviously communicate their wishes and ideas to each other by signs. Cattle and horses, by biting the corresponding part on each other, indicate the service they wish to have performed on themselves.

Two goats grazing about the ramparts of Plymouth citadel, got down upon the narrow ledge of the rock, and one of them ad-

vancing before the other till it came to an angle, was enabled to return ; but in its way back it met its companion, which produced a most perplexing dilemma, as it was impossible for them to get past each other. Many persons saw them, without being able to render any assistance. After a considerable time, one of the goats was observed to kneel down with great caution, crouching as close as it could lie ; which was no sooner done, than the other, with great dexterity, walked over him, and they both returned the way they came, in perfect safety. At Ardinglass, near Glenarm, in Ireland, two goats moving towards each other, over a precipice one thousand feet high, on a narrow ledge of rock, were seen to extricate themselves from danger by a similar expedient. In both these instances, the animals looked at each other for some time, as if they were considering their situation and deliberating what was best to be done in the emergency.

The martin builds on the outside of houses, under the eaves ; and when it has built its nest, the sparrow frequently takes forcible possession of it. The martin, unable to dislodge the intruder, convokes his companions, some of whom guard the captive, while others bring clay, and completely closing up the entrance of the nest, fly away, leaving the sparrow to be suffocated, and to perish from hunger.

Many insects possess a voice, or the power of extracting a sound by some muscular action of their bodies ; which sounds, whether by the way of challenge, of calling, or of pleasure, are so many means of expressing their sensations, and even their wants. The chirping of a cricket is immediately responded to by its neighbor, like the challenge of a cock ; the *ptinus*, or death-watch, which makes a ticking noise by beating its head with great force against the substance on which it stands, invites its female ; and the deafening din of the *cicadae* seems to proceed from an exuberance of joy.

The walrus, in case of attack, plunges into the deep, and summons others of its race to its assistance.

There is a beautiful species of the lizard tribe, called the monitor, a native of South America, said to be so attached to the human race, that by a sort of loud and shrill whistle, it warns mankind of the approach of alligators, serpents, and other noxious animals. SOUTHEY, in his "Life of Nelson," intimates that the life of that hero would, in all probability, have been much shorter, but for the timely warning of one of these animals. When about to attack the Castle of St. Juan, one of his men was bitten under the eye by a snake, which darted at him from the bough of a tree. He was unable to proceed from the violence of the pain, and when, after a short time, his comrades were sent back to assist him, he was dead. NELSON himself narrowly escaped a similar fate. He had ordered his hammock to be slung under some trees, being excessively fatigued, and was sleeping, when a monitory lizard passed across his face. The Indians happily observed the reptile, and knowing what it indicated, awoke him. He started up, and found one of the deadliest serpents of the country coiled up at his feet.

That animals possess the means of communicating with one another, and of expressing their ideas and wants, will admit of no question; but how this is effected is often beyond all human observation, although, in some cases, the gestures of the animal with reference to some particular object before him, render the interpretation easy. A gentleman who was in the habit of occasionally visiting London from a distant county, performed the journey on horseback, accompanied by a favorite little terrier dog, which he left at an inn at St. Albans, some twenty miles from the city, till his return. On one occasion, on calling for his dog, the landlady told him that it was lost. It had had a quarrel with the great house dog, and had been so worried and bitten that it was thought he would never recover; but at the end of a few days he crawled out of the yard, and no one saw him for almost a week, when he returned with another dog, bigger than his enemy, on whom they both fell and nearly destroyed him. This dog had actually traveled to its own home at Whitmore, in Staffordshire,

had coaxed away the great dog in question, which followed him to St. Alban's to assist in resenting the injury of its friend.

The following story is related of a little spaniel which had been found lame by a surgeon at Leeds. The latter carried the poor animal home, bandaged up its leg, and after two or three days turned him out. The dog returned to the surgeon's house every morning till his leg was perfectly well. At the end of several months, the spaniel again presented himself in company with another dog, which had also been lamed; and he intimated, as well as piteous and intelligent looks could intimate, that he desired the same assistance to be rendered to his friend as had been bestowed upon himself. The combination of ideas in this case, growing out of the recollection of his own injury, and referring that to the cure which had been performed, the compassion he had for his friend, to whom he communicated the occurrence, and induced to seek relief under his guidance, together with the appeal to the humane surgeon, is as extraordinary a piece of sagacity as can be found in all the annals of animal biography.

Animal language is chiefly confined to expressions of sensation, and of desire of some kind; and even an unpractised ear can discriminate between the notes of joy and pain, of anger and fear, of hunger and distress, of rage and lust. The voice, again, when exerted in cries for assistance, is changed and modulated into sounds of thankfulness and satisfaction. In England, a cow ran hastily up to a man, as he entered a field, who, mistaking her intention, moved away; she then stopped and bellowed in a distressing manner, as if to gain his attention. Seeing him look towards her, she went to a ditch, and again bellowed loudly. He walked to it, and saw a calf on its back, almost lifeless from its ineffectual struggles to release itself. AUDUBON relates, that birds whose nests are attacked by snakes, raise a loud and piteous cry of alarm, which collects an assemblage of other birds, who join in a furious attack on the reptile and compel it to retreat, and even at times destroy it.

Most animals utter sounds of some sort or other, which they

can vary into as many tones as are necessary to give vent to their feelings, to denote their wants, or to communicate with one another. Whoever has taken the trouble to watch a poultry-yard, must have perceived that each species uses particular modifications of sound to their brood, and fellows, to signify what they wish them to understand, and each seems perfectly to comprehend the meaning of the speaker.

Among fowls, at their accustomed hour of being fed, if it be delayed, all are clamorous for it. The cock repeatedly calls his hens to the grain, if they be absent, and these, their chickens. The maternal notes, to express danger to the brood; those of anger against an assailant, and of alarm at their own peril; and their calls for each other, when those accustomed to be together are separated and unseen, are very distinguishable. All these are appropriated to their respective sensations, and are only repeated as these occur. RAY has remarked the different voices of the hen, when she broods—when she leads her chickens—when she has found food, and calls them to it—when she would alarm them to seek shelter—when she is angry—when she has laid an egg—when in pain or in great fear; all significant, being effects of the several passions of anger, grief, fear, or joy. Again, if a fowl flies down from an eminence, with what a cheer and hurrah is it welcomed to terra firma; and with what congratulations is the announcement of the laying of an egg received by the whole tribe!

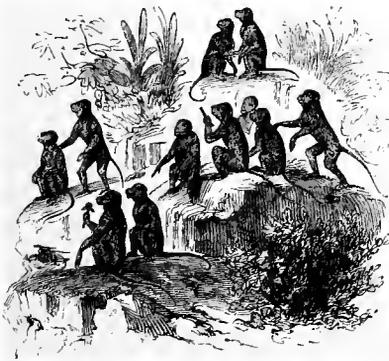
Many animals have been remarked for their communications, by utterance, to each other. The chamois, when alarmed, advertise each other of their feelings by a kind of whistle. The one on watch continues this as long as he can blow without taking breath. He then stops for a moment, looks round on all sides, and begins whistling afresh, which he continues from time to time. He leaps on the highest stones he can find, again looks round, leaps from one place to another, and when he discovers anything seriously alarming, flies off.

Many of the ape species, when beaten, will sigh, groan, and

weep like children. The four-fingered monkey, when touched, utters a plaintive kind of cry; but has another sound, which it emits as an expression of delight at receiving food. When female seals come out of the sea, they bleat, like sheep, for their young.

MARCGRAVE gives a singular account of the Ouarine monkey. He says: "I have frequently been a witness of their assemblies and deliberations. Every day they assemble in the woods, to receive instructions. One then takes the highest place on a tree, and makes a signal with his hand for the rest to sit round. As soon as he sees them placed, he begins his discourse in a loud and precipitate voice: the rest observe a profound silence. When he has done, he makes a sign with his hand for the rest to reply. At that instant they raise their voices together, until, by another signal, they are enjoined to silence. At last the assembly breaks up."

The following incident is related as having occurred on the rock of Gibraltar, where it is well known that the only European colony of monkeys exists. A party of soldiers occupying an advanced post during the celebrated siege, in 1782, and being ordered to lie concealed, observed a troop of monkeys advance, with an old gray-headed baboon, carefully guarded, in the center. To use the words of the witness, who describes it as a *Monkey Court*;



"They arrived, halted, and detached their prisoner to a small distance, where he remained between two monkeys, who had the charge of him. The rest formed a sort of court, before which an advocate evidently accused the prisoner of some offence, he weeping, screaming, and frequently interrupting the attorney-general. Indeed, the

proceedings seem to have been altogether irregular, for the judges,

advocate, and prisoner, were all screaming together. At length, however, an old monkey, whom the soldiers insisted was the chief-justice of the woods, screamed louder than the rest, and the prisoner was instantly hurried off, and precipitated over a projecting rock. The soldiers were much scandalized at this proceeding, being convinced that the old baboon was too helpless to have deserved his punishment, and that he was sacrificed under some false accusation, to prevent his being burdensome to his parish."

WENZEL, in his analyzation of the animal voice, says that distress and trouble are expressed by a dissyllabic sound, as with dogs and cats when deprived of their young—with hens, when their foster-brood of ducklings plunge into the water—and with birds, when alarmed by a bird of prey; that satisfaction and pleasure are denoted by quick consecutive notes, and displeasure by indistinct and hasty sounds; soft and prolonged notes are the expression of love, boisterous ones those of joy; impetuous, inharmonious, and sharp tones, betoken anger, and when monosyllabic, hollow and continued, sadness.

The voice, in animals, has reference to some immediate object of perception, or to some want, of which they are reminded by instinct or memory; and as they seem to be nearly incapable of forming any abstract notions or speculations apart from sensible objects, the want of articulate language must ever oppose an insurmountable barrier to their progress in acquired knowledge, beyond individual experience.

A gentleman of Inverness, while passing through a lonely and unfrequented district, on a journey in the highlands, observed a sheep hurrying towards the road before him, as if to interrupt his progress, and at the same time bleating most piteously. On approaching nearer, the animal redoubled its cries, and, looking significantly in the face of the traveler, seemed to implore some favor or assistance at his hands. Touched with a sight so unusual, the gentleman alighted, and leaving his gig, followed the sheep to a field in the direction whence it came. There, in a solitary cairn,

at a considerable distance from the road, the sheep halted, and the traveler found a lamb completely wedged in between two large stones of the cairn, and struggling feebly, with its legs uppermost. He instantly extricated it and placed it safely on the ground, while the overjoyed dam bleated forth her thanks in a manner not to be misunderstood.

An old goose that had been for a fortnight hatching in a farmer's kitchen, was perceived, on a sudden, to be taken violently ill. She soon after left the nest, and repaired to an out-house where there was a young goose of the first year, which she brought with her into the kitchen. The young one immediately scrambled into the old one's nest, sat, hatched, and afterwards brought up the brood. The old goose, as soon as the young one had taken her place, sat down by the side of the nest, and shortly after died. As the young goose had never entered the kitchen before, there was no other way of accounting for it than by supposing that the old one had some way of communicating her thoughts and anxieties, which the other was perfectly able to understand.



THE CATACOMBS OF BENI HASSAN.

THAT the Egyptians exceeded all other ancient nations in learning, arts and civilization, is universally known. It was here that HOMER, nearly a thousand years before CHRIST, gathered materials for song, and having refined and expanded his sublime genius with Egyptian lore, produced his immortal poems. Here SOLON and LYCURGUS found the archetypes of their celebrated laws; here PYTHAGORAS learned the principal tenets of his philosophy; here PLATO imbibed that religious mysticism, those beautiful illusions, and those eloquent but fanciful theories, which characterize his works. Greece was indebted to Egypt, perhaps, for letters, and, undoubtedly, for the mysteries of religion.

The polity of the Egyptians was equal to their skill in the arts
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and sciences. It is lamentable, however, to think that a people so wise in their politics, so conversant with science, and so richly endowed with general knowledge, should have been so grossly superstitious as to expose themselves to the ridicule of nations greatly their inferiors in general intelligence, and should have cherished the meanest and most degrading conceptions of the Deity. They not only worshiped him under the symbols of ISIS, OSIRIS, and APIS—symbols which had not lost all trace of their philosophical origin—but they made a cat, a dog, or a stork, an object of adoration, and admitted into the list of their gods the very herbs of their gardens. Superstition is always intolerant and cruel; while it debases the understanding, it hardens the heart. Those who imagined that they found a type of the Divinity in an onion, perceived not his image in a fellow-creature!

The vagaries of their religion were indeed amazing. Every priest was devoted to a particular deity, and to that only. Each temple was dedicated to some special divinity, as a cat, an ichneumon, a crocodile, a hawk, a snake, an ibis, a fish, an insect, or an herb. APIS, the ox, was one of the leading divinities. Some of the temples whose mighty ruins still excite admiration, were reared only for the worship of brutes, birds, or vegetables! The adoration of these objects originated in some fancied resemblance they have to the heavenly bodies. The whole mythology was the work of the priests, who used religion as the means of exercising power and influence over the people. They were the richest members of society, and enjoyed a consideration only due to Deity. It is not to be overlooked, however, that, behind the strange idolatries which appear in Egyptian religions, there doubtless was, as there is in all other religions, a profound sentiment of faith in a future state of rewards and punishments, which exercises an influence over the conduct of men, and establishes a system of morals founded in truth and justice.

The singular propensity of the Egyptians to decorate their tombs with the lavish splendor which other nations have reserved for the palaces and temples of the living, is one of the most

strange and inexplicable phenomena in the history of man. Many of these highly adorned sepulchral chambers appear to be accessible only through long, narrow, and intricate passages. The approach to others seems to have been closed with the strictest care, and concealed with a kind of reverential sanctity. To each city or district belonged a city of the dead. In the silent and rock-hewn counterparts of Memphis and Thebes, were treasured up all the scenes in which the living king and his subjects had been engaged. Egypt is full of immense tombs, and their walls, as well as those of the temples, are covered with the most extraordinary paintings, executed thousands of years ago. In these, the whole country, with all its natural productions, its animals, birds, fishes, and vegetables, as well as the people in all their private and domestic occupations, are delineated, if not in the first style of art, yet with that which renders them still more curious and valuable—an apparent Chinese fidelity of outline, and an extraordinary richness of coloring.

Among the numerous tombs and catacombs of Egypt, those of Beni Hassan are, perhaps, the most interesting. This village is situated on the right bank of the Nile, about 140 miles south of Cairo, and nearly the same distance north-west of the site of the ancient Thebes. The entrance to the caves, of which an engraving is given at the head of this article, consists of an edifice resembling a Greek temple, though it must have been erected long before Greece had begun its career of civilization. The columns have sixteen sides, and are slightly fluted; they are sixteen and a half feet high, and somewhat more than five in diameter, with a slight lessening at the top. The structure has a general resemblance to the Doric order, and perhaps illustrates the origin of that style of architecture, afterwards developed in Greece.

But the great interest of these remains lies in the pictorial representations left by the ancient Egyptians on the walls of these caves and catacombs, excavated in the solid rocks, and which were consecrated as burial-places. Rich as many of the temples are in the painted and sculptured delineations of the conquests of the

PHARAOHS; yet here, the arts, habits, and pursuits of the Egyptians in their social state, are delineated in outline and in colors. Here they are represented as occupied in their various trades, as potters, weavers, glass-blowers, jewelers, writers, statuaries, and painters. Their sports are shown in dancing, music, wrestling, in various attitudes, posturing and fencing, playing with balls and at chess, and at the game of morra, as among the Italians of our own day. The chase of wild animals, fowling and fishing, agricultural pursuits, planting, sowing, reaping, threshing, rearing cattle, and the management of herds and flocks, are all depicted. The caves of Beni Hassan have, in short, preserved the best, and in many cases, the only information we possess, of the manners, pursuits, and customs of the extraordinary people, who lived and flourished here, ages ago. It is indeed wonderful to see these generations, after a slumber of three or four thousand years, by the aid of these delineations, seeming to rise up in their graves, and thus in the house of death, to engage in the various occupations, pleasures, and amusements, which occupied them in life!



THE TWO WINDMILLS.

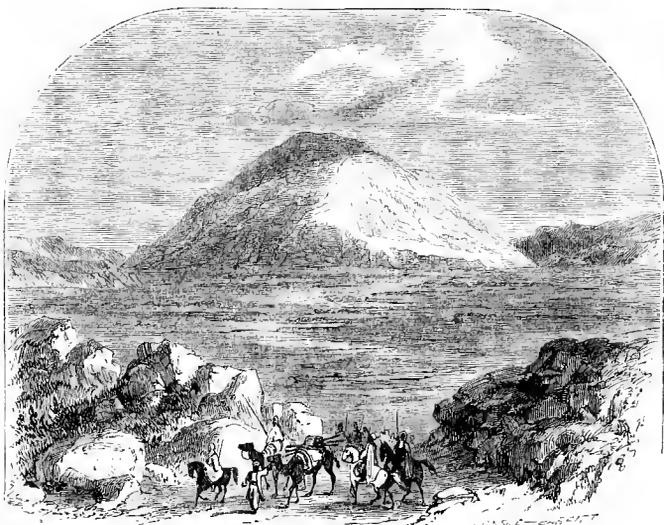
TWO neighbors, living on a hill,
Had each, and side by side, a mill.
The one was JONES—a thrifty wight,
Whose mill in every wind went right :
The storm and tempest vainly spent
Their rage upon it—round it went !
E'en when the summer breeze was light,
The whirling wings performed their flight ;
And hence a village saying rose—
“As sure as JONES’S mill, it goes.”

Not so with neighbor SMITH’S, close by ;
Full half the time it would not ply :
Save only when the wind was west,
Still as a post it stood at rest.
By every tempest it was battered,
By every thundergust ’t was shattered ;
Through many a rent the rain did filter,
And, fair or foul, ’t was out of kilter ;
And thus the saying came at last—
“SMITH’S mill is made for folks that fast.”

Now, who can read this riddle right?
Two mills are standing on a height—
One whirling brisk, whate'er the weather,
The other, idle weeks together!

Come, gentle reader, lend thine ear,
And thou the simple truth shalt hear;
And mark—for here the moral lurks—
SMITH held to faith, but not to works;
While JONES believed in both, and so,
By faith and practice, made it go.

SMITH prayed, and straight sent in his bill,
Expecting Heaven to tend his mill,
And grumbled sore whene'er he found
That wheels ungreased would not go round.
Not so with JONES—for, though as prayerful,
To grease his wheels he e'er was careful—
And healed with ready stitch, each rent
That ruthless time or tempest sent;
And thus, by works, his faith expressed,
Good neighbor JONES by heaven was blessed.



MOUNT TABOR.

THIS mountain, situated about thirty miles east of the Mediterranean, and a hundred north of Jerusalem, rises in a single hemispherical mound from the extensive plains of Esdraelon, the ancient Jezrael. It is about a thousand feet in height, and has a beautiful appearance from every point of view. Though it has a smooth, rounded aspect, from a distance, its surface is somewhat diversified, and in places is rough and rocky. It may, however, be ascended on horseback.

The higher grounds are covered with bushes and small oak trees. Among them, wild boars and partridges are said to find shelter. The whole is without inhabitants. At the top there is a small plain, on which are the ruins of ancient fortifications. In remote times there was a town here, with strong defences. ANTIOCHUS, king of Syria, got possession of it, and after him, VESPASIAN captured it. At a subsequent date, JOSEPHUS fortified it with strong walls.

The great interest, however, which attaches to this mountain, is that, according to tradition, the transfiguration of our Savior took place here, as related in the 17th chapter of Matthew. The place has therefore been regarded as sacred ground, and in the time of the crusaders, as well as at subsequent periods, churches and monasteries have been erected upon it, the vestiges of which are still visible.

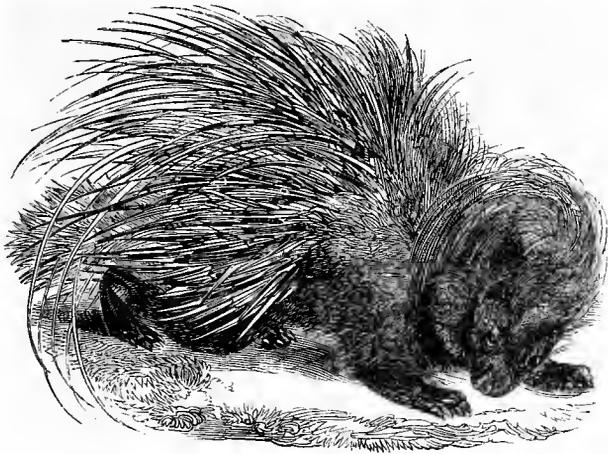
Every traveler who has visited Mount Tabor, seems to have been highly gratified by the scene. VAN EGMONT says: "This mountain, though somewhat rugged and difficult, we ascended on horseback, making various circuits, in the space of three fourths of an hour. It is the most beautiful I ever saw as to verdure, being every where decorated with small oak trees, and the ground enameled with a variety of plants and flowers, except on the south side, where it is more bare and barren."

"From the top of Mount Tabor," says the minute and accurate MAUNDREL, "you have a prospect which well rewards the labor of ascending it. It is impossible for man's eyes to have a higher gratification of this nature. On the northwest, in the distance, you discern the Mediterranean, and all around you have the spacious plains of Esdraelon and Galilee. Turning southward, you have in view the mountains of Gilboa, fatal to SAUL and his sons. To the east you discover the Sea of Tiberius, distant about a day's journey. To the north is that which they call the Mount of Beatitudes. Beyond is the green-capped chain of Anti-Libanus. To the southwest is Carmel; and on the south, the hills of Hermon."

In modern times, only a single event of importance signalizes this region. In the spring of 1799, the "Battle of Mount Tabor" was fought between the French, under BONAPARTE, and the Turkish army. The attack was made by twenty-seven thousand of the latter, upon three thousand of the former, who had just marched out of the neighboring village of Nazareth, under command of KLEBER. NAPOLEON himself was on the top of Mount Tabor, when he saw the unequal fight, and rushed to the support

of his troops. The fiery MURAT joined the battle with his invincible dragoons, and victory speedily declared for the French.

How strangely does this clangor of NAPOLEON'S glory, mingle in the scenes consecrated by the transfiguration of the peaceful JESUS! What startling contrasts of historical association do the same places bring to view!



THE PORCUPINE.

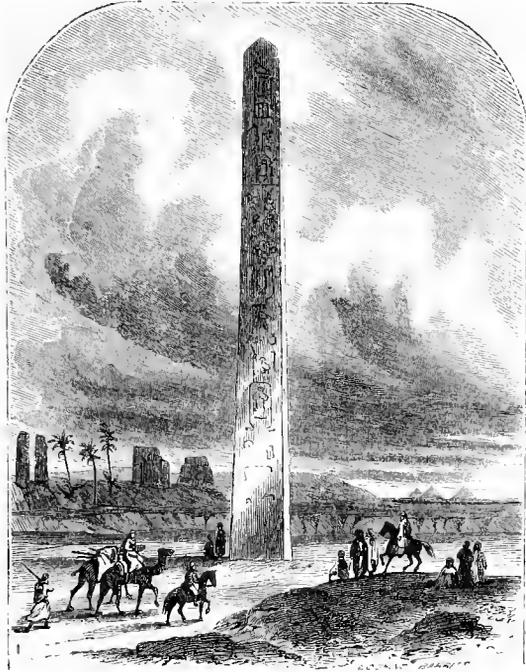
FROM the earliest ages, the Porcupine has attracted the attention of mankind, on account of the singularity of his covering, which, instead of hair, consists of sharp-pointed quills. As was natural, this creature has been the occasion of numerous popular marvels, the most prominent of which was, that it could shoot its quills, like arrows, to a considerable distance, thus inflicting severe wounds. Another story, told by THUNBERG, and long credited, was that the Ceylonese porcupine used its tail quills, which are hollow, in this wise: it would go to a brook, dip its tail in the water, and the quills being thus filled, it would carry the water and empty it in the nest for the benefit of the young ones! It is hardly necessary to say that both these tales are without foundation.

There are various species of porcupines, in different parts of the world, all being distinguished by the spiny covering, which is used as a defence. When threatened or assaulted, the animal raises its quills and runs backward against the enemy, and often inflicts severe wounds. The common porcupine of Europe is

about two feet long, its legs being short, and its body low and squat. It is nocturnal in its habits, sleeping in its burrow during the day, and going forth at night to seek its food, which consists chiefly of roots, fruits, and tender leaves. Sometimes it enters gardens, and commits depredations among the cabbages and other leguminous plants.

The Canada porcupine differs from the European one, being somewhat smaller, and living much upon trees. It is a sluggish creature, dragging its tail along upon the ground. When a man approaches, it makes a whining noise, like the crying of a child. It is killed by the dogs of the Indian hunters, but they are often severely wounded by the quills, whose sharp barbed points, after entering the skin, work inwards until they reach a vital part, and thus cause death. These spines, which are easily detached, and probably by the volition of the porcupine, fill the mouths of the dogs. The Indian women carefully pick them out, but if they neglect any, they are finally sure to prove fatal.

This animal usually makes its retreat near the roots of an old tree, and here it spends a great part of its time in sleeping. Its flesh is relished by the Indians. The quills are dyed by the Indian women, and wrought into shot-pouches, belts, shoes, and other ornamental articles of dress.



THE OBELISK OF ON.

THIS obelisk and some mounds of earth, are all that now remain to mark the site of the once renowned city of On—thus named in the Bible, the Bethshemeth of the Hebrews, and the Heliopolis of the Greeks. It was situated in the Land of Goshen, about fifteen miles north-east of Memphis; five miles north-east of the modern Cairo, and fifty-two miles west of Suez.

It was here that JOSEPH, when he was established in Egypt, about 1740 B. C., married ASENATH, the daughter of POTI-PHERA, the priest, in the reign of OSSERTASEN I, the PHARAOH whose name is borne on this—the only obelisk in its place—now remaining, amid the ruins of the city. It is probable that this

patriarch often looked on this monument, and it is not improbable that it was erected under his superintendence. It is of red granite, sixty-eight feet high, and rather more than six feet square at the base—a portion of the latter being buried in the sand. It is covered with hieroglyphics, and is probably the oldest monument, in a perfect state, now existing on the face of the globe.

The city took its name from the worship of the sun, which was here conducted in a superb temple dedicated to that luminary. HERODOTUS speaks of the people of this city, as the most learned of the Egyptians: here MOSES resided, and here he received that education which made him acquainted with all the wisdom of the Egyptians. Yet, notwithstanding it was the seat of the sciences, it was so filled with foolish idolatries, that the Jews named it, in ridicule, Beth-Aven—the house of vanities.

In the time of STRABO, near the commencement of the Christian era, this great city was already in ruins, the schools of learning having been removed to Alexandria. It was, however, still a scene of interest; for here the most eminent of the earlier Greek scholars had come to acquire knowledge. The great temple still existed, and the rites were performed by the priests. The houses in which PLATO and EUDOXUS pursued their studies for the space of thirteen years under the priests, were still standing, and were shown as objects of interest and curiosity to strangers.

At the present time, the spot occupied by the town and the Temple of the Sun, is a plowed field and a garden of herbs. The solitary but sublime obelisk we have described, is all that remains of this once renowned city. At a short distance to the north-east, are the ruins of several towns on elevated sites, traditionally called “mounds of the sun,” but their history is lost. One of these places was probably the Leontopolis, where the Greek or Septuagint version of the Old Testament was made for the Jews.

THE BEE AND BEETLE.



BEE and beetle chanced to meet,
One sunny day, upon a rose ;
His neighbor thus the bee did greet,
Although, meanwhile, he held his nose :



“ I wonder much to meet you here,
For surely you don't feed on roses ! ”

The beetle answered with a sneer :

“ I know the idle fool supposes
That in a rose there's nought but honey ;
You think a flower so fair to view,
With breath so sweet, and cheek so sunny,
Is only made for things like you !
But, prithee, do not look so sour,
A thing that hath a nose like mine,
May turn the breath of sweetest flower—
Of rose, carnation, columbine—
To odors fetid as the air
Where beetles love to delve and dine :
Each has his gift for foul or fair—
You, buzz, have yours, and I have mine ! ”



SAINT GEORGE.

SAIN'T GEORGE, the patron saint of England, is familiar to all our readers as well by the legends which are current respecting him, as by the innumerable engravings which represent him as battling with the dragon. In BUTLER'S work, professedly devoted to the Lives of the Saints, we find that GEORGE, who is there called the "Great Martyr," flourished about the year 300, and was one of the most illustrious of the martyrs to Christianity. According to this authority, he was born of noble parents, and after the death of his father, being strong and robust of body, he embraced a military profession, and became a tribune or colonel in the army. Afterwards he was promoted to high stations by the Emperor DIOCLETIAN, in consequence of his courage. But when that emperor began his persecutions against the Christians, the saint threw up his commission and complained to the emperor of his cruel edicts. He was then thrown into prison and put to the

torture; but as nothing could shake his constancy, he was led through the city, and then beheaded.

Such is the legend as related in the authorized "Lives of the Saints;" now let us look at the veritable history.

"GEORGE, THE CAPPADOCIAN," says the Encyclopedia Britannica, "was so surnamed, according to some, from his parents or education, and was born at Epiphania, in Cilicia, in a fuller's shop. From this obscure and servile origin, he raised himself by the talents of a parasite; and the patrons whom he had assiduously flattered, procured for their worthless dependent a lucrative commission or contract to supply the army with bacon. His employment was mean, and he rendered it infamous. He accumulated wealth by the basest arts of fraud and corruption; but his malversations were so notorious that he was at length compelled to escape from the pursuit of justice.

"After this disgrace, in which he appears to have saved his fortune at the expense of his character, he embraced, with real or affected zeal, the profession of Arianism. From the love or the ostentation of learning, he collected a valuable library of history, rhetoric, philosophy, and theology; and the choice of the prevailing faction promoted GEORGE OF CAPPADOCIA to the throne of ATHANASIUS, the Archbishop of Alexandria. His conduct in this station is represented by historians as polluted by cruelty and avarice, and his violent death is considered as a just punishment for the enormities of his life.

"The immediate occasion of his death, however, as narrated by ecclesiastical writers, does not appear calculated to add any stain to his memory. There was, in the city of Alexandria, a place in which the heathen priests had been accustomed to offer human sacrifices. This place, as being of no use, CONSTANTIUS gave to the church of Alexandria; and GEORGE, the bishop, issued orders that it should be cleared in order to build a Christian church on the spot. In doing this, they discovered an immense subterranean cavern in which the heathen mysteries had been performed, and where there were many human skulls. These, and

other things which they found in the place, the Christians brought out and exposed to public ridicule.

“Provoked at this exhibition, the heathens suddenly took arms, and rushing upon the Christians killed many of them with swords, clubs, and stones; some, also, they strangled, and then crucified. The Christians, therefore, proceeded no further in clearing the temple; but the heathens pursuing their advantage, seized the bishop while he was in the church, and threw him into prison. The next day they dispatched him; and then fastening the body to a camel, they dragged it about the streets all day, and in the evening burned the corpse and the camel together. This fate, according to SOZOMEN, the bishop owed, in part, to his haughtiness, whilst in favor with CONSTANTIUS, and some think that the friends of ATHANASIUS were concerned in this murder; but the former ascribes it chiefly to the inveteracy of the heathens, whose superstitions he had been active in abolishing.”

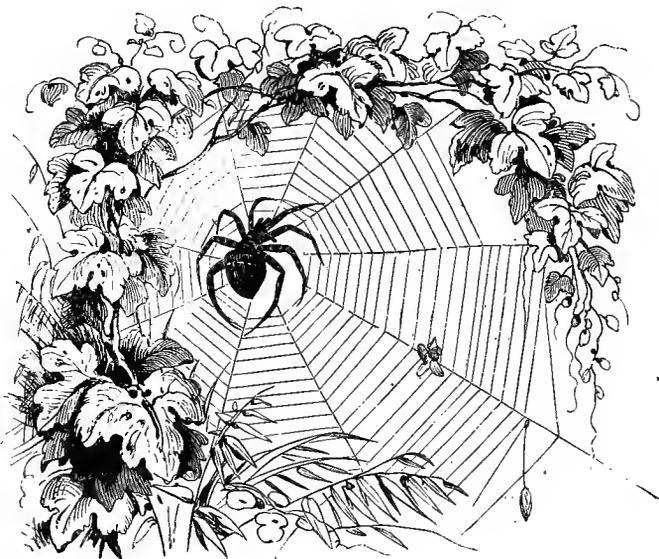
GIBBON gives a somewhat different version of the affair of GEORGE'S murder. “The Pagans,” says he, “excited his devout avarice; and the rich temples of Alexandria were either pillaged or insulted by the haughty prelate, who exclaimed in a loud and threatening tone, ‘How long will these sepulchres be permitted to stand?’ Under the reign of CONSTANTIUS, he was expelled by the fury, or rather by the justice, of the people; and it was not without a violent struggle that the civil and military powers of the state could restore his authority and gratify his revenge. The messenger who proclaimed at Alexandria the accession of Julian, announced the downfall of the archbishop. GEORGE, with two of his obsequious ministers, Count DIODORUS and DARCONTIUS, master of the mint, were ignominiously dragged in chains to the public prison. At the end of twenty-four days, the prison was forced open by the rage of a superstitious multitude, impatient of the tedious forms of judicial proceedings. The enemies of gods and men expired under their cruel insults; the lifeless bodies of the archbishop and his associates were carried in triumph through the streets on the back of a camel; and the inactivity of the

Athanasian party was esteemed a shining example of evangelical patience.

“The remains of these guilty wretches were thrown into the sea ; and the popular leaders of the tumult declared their resolution to disappoint the devotion of the Christians, and to intercept the future honors of these martyrs, who had been punished, like their predecessors, by the enemies of their religion. The fears of the Pagans were just, and their persecutions ineffectual.

“The meritorious death of the archbishop, obliterated the memory of his life. The rival of ATHANASIUS was dear and sacred to the Arians, and the seeming conversions of these sectaries, introduced his worship into the bosom of the Catholic church. The odious stranger, disguising every circumstance of time and place, assumed the rank of a martyr, a saint, and a Christian hero ; and the infamous GEORGE OF CAPPADOCIA, has been transformed into the renowned St. GEORGE OF ENGLAND, the patron of arms, of chivalry, and of the garter.”

Such is history, compared with the legends of the church—such is a saint, stripped of the attributes with which the fictions of superstition have clothed him ; and yet, millions on millions have been baptized in the name of SAINT GEORGE, and have regarded him as their patron in heaven, and their protector on earth !



HABITATIONS OF ANIMAL

THESE are either natural or artificial, dispensable or indispensable, congenital or adopted; and every animal, regulated by its appointed wants, if not naturally provided, seeks its asylum and protection accordingly.

Snails and shell-fish are furnished by nature with a defensive covering, which is at the same time their habitation, and which they receive at their birth, and cannot, if they would, vary or forsake. It accommodates itself to their growth, and is at the same time sufficiently light not to interfere with the movements and functions of the animal.

All the various tribes of shell-bearing animals, are thus defended from the injuries or attacks to which their situation exposes them. These have a soft body, furnished with organs of different kinds, suited to their station and purposes. Those that are below them in the scale, especially the naked polypes and gelatinous

radiæ, are still more frail and evanescent; but their organization is so inferior that it is probably less subject to derangement from external accidents, or injuries are sooner repaired, than in that of the shell-fish, which, unless they were clad in some kind of mail, would probably soon perish. Accordingly, we find some protected by a multivalve tubular shell, the inhabitant protruding its organs at the summit, which is defended by an operculum, consisting of more than a single piece; in others, the shell is univalve, but the animal protrudes itself at the sides, and has no operculum, as in the common barnacle. Others, again, are protected by a shell consisting of two valves, open at one or two ends, and these seek further protection either by burying themselves in the sand, or perforating the rocks, or by suspending themselves by a byssus; others again, which only open their shells at certain times, as the oyster, fix themselves to any convenient substance. To these succeed others, whose shell is transversely divided into many pieces, but yet, taken together, it forms a single valve, protecting the back of a gastropod, or slug-like animal, which, for further protection, when it is not moving, and to supply the place of a lower valve, fastens itself to a rock or other substance. There is, indeed, no end to the curious devices which nature has adopted for the protection of the various animals of these lower orders of creation.

The chalk-like cases which the polypes, or coral insects, form round themselves, are a safe retreat for the animals, into which they can withdraw. In one species, a remarkable arrangement is found: the upper openings of the cells which they inhabit have a vase-like form, shutting with a lid; when the animal wishes to expand itself, it opens the lid like a trap-door, and protrudes itself; and when it re-contracts itself and retreats, the lid falls, and closes the aperture so exactly that the animal is perfectly protected. A similar contrivance is found by the serpulæ, and some gastropods.

But with these, as with the molluscæ and asterias, with the scales of fish and serpents, with the coats of mail and shields of

the alligator, the tortoise, the manis, and the armadillo, this defensive covering—this portable habitation—is dependent on the bodily conformation of the animal, and not on its choice; and even in those cases where animals, like the spiders, spin themselves abodes, or contrive their webs for the capture of their prey, their acts are subservient to instinct; and it is only in the more perfect stages of intellect, that natural materials, besides those proceeding from their own bodies, or the former exclusively, are used. Some few instances occur of animals appropriating the empty shells of others to their own use, as the hermit-crab, which, having no shell to any part of its body, but the nippers, supplies by art what is denied to it by nature; for, taking possession of the deserted shell of some other animal, it occupies that, till, becoming too large for its habitation, it is under the necessity of changing it.

It is curious enough, in some countries, to observe this animal busily parading the sea-shore, along that line of pebbles and shells which is formed by the furthest wave; still, however, dragging its old incommodious habitation at its tail, unwilling to part with one shell, even though a troublesome appendage, till it can meet with another more convenient. It stops first at one shell, turns it, passes by; then goes to another, contemplates that for a while, and, slipping its tail from the old habitation, tries it in the new. This also is found inconvenient, and it quickly resumes the old one. In this manner it frequently changes, till at length it finds one light, roomy, and commodious; to this it adheres, though the shell be sometimes so large as to hide both the body and claws of the animal.

But many trials and combats are sometimes to be sustained by the hermit-crab, before he is thus completely equipped; for there is often a contest between two of them for some favorite shell; they both endeavor to take possession, striking with their claws, and biting each other, till the weakest is compelled to yield. The victor then takes possession, and in his new acquisition parades backward and forward on the strand.

That the ancients were well acquainted with the maneuvers of

the hermit-crab, is evident from the following lines, translated from OPPIAN :

“The hermit-fish, unarmed by nature, left
Helpless and weak, grow strong by harmless theft.
Fearless they stroll, and look with panting wish
For the cast crust of some new-covered fish ;
Or such as empty lie, and deck the shore,
Whose first and rightful owners are no more.
They make glad seizure of the vacant room,
And count the borrowed shell their native home ;
Screw their soft limbs to fit the winding case,
And boldly herd with the crustaceous race.
Careless they enter the first empty cell ;
Oft find the plaited whelk's indented shell ;
And oft the deep-dyed purple, forced by death,
To stranger fish the painted home bequeath.
The whelk's etched coat is most with pleasure worn,
Wide in extent, and yet but lightly borne.
But when they, growing, more than fill the place,
And find themselves hard pinched in scanty space,
Compelled, they quit the roof they loved before,
And busy search around the pebbly shore,
Till a commodious roomy seat be found,
Such as the larger shell-fish living owned.
Oft cruel wars contending hermits wage,
And long for the disputed shell engage.
The strongest here the doubtful prize possess,
Power gives the right, and all the claim possess.”

Of the cowries, a very remarkable fact has been stated by M. BRUGUIERE : that when the animals find their shells too small for the increased dimensions of their body, they quit them, and proceed to the formation of new ones of larger size, and consequently better adapted to their wants. As soon as the cowry has abandoned its covering, the hinder parts of its body begin to furnish anew the testaceous matter, which is afterwards condensed upon its surface. This secretion is continued, until at length the

shell appears of the consistence of paper, and the mouth or opening of the shell, which at this period is very wide, soon afterwards contracts to its proper form and dimensions. The edges are thickened, and form into those beautiful folds, or teeth, which are so remarkable on each side of the opening of these shells; and by means of the membranaceous wings of the animals, the highly-polished surface of the whole exterior of the shell is by degrees completed.

Lobsters cast their shells annually. Previously to putting off their old one, they appear sick, languid and restless. They acquire an entirely new covering in a few days; but during the time that they remain defenceless, they seek some lonely place, lest they should be attacked and devoured by such of their brethren as are not in the same weak condition. In casting their shells, it is difficult to conceive how the lobsters are able to draw the flesh of their large claws out, leaving the shells of these entire and attached to the shell of the body. The fishermen say, that previously to the operation, the lobster pines away till the flesh in its claws is no thicker than the quill of a goose, which enables it to draw its parts through the joints and narrow passage near the trunk. The new shell is membranaceous at first, but it hardens by degrees.

Among those creatures which employ foreign substances in the construction of their habitations, there is a distinction: some occupy them for the period of their lives, like the ship-worm, that bores into the bottoms of ships and piles, which, on being split lengthwise, are found full of large passages, or hollow, cylindrical ducts, each of which contains a worm, enclosed in its testaceous tube, which it exactly fills; and the dactyle pholas, which penetrates into rocks, and there forms a habitation, from which it never removes, and seems perfectly content with being enclosed in its own sepulchre; and the razor-shell, which burrows in the sand, sometimes to the depth of two or three feet, and never quits the burrow unless by force: others only seek shelter in these substances from time to time, these being their habitation,

in its strict sense. The first and simplest indication of this is found in the holes which snails prepare for their hibernation.

Crustacea and centipedes conceal themselves chiefly under stones, many of the former digging little cavities in the soil, as the fresh-water craw-fish, which excavates a hole by the sides of streams. The land-crab, described by SIR JOSEPH BANKS, which inhabits holes, has one claw of such disproportionate size, that it uses it to block up the entrance to its hole in moments of danger.

Many spiders prepare a web for their protection, although the most employ it for predatory purposes, and some, again, envelope their eggs with such material; and hence MENGE distinguishes it as residence, net, and nest. One of the most singular constructions belongs to the trap-door spider, a species of which is described by M. AUDOIN, under the name of *pioneer*. He says, some spiders are gifted with a particular talent for building; they hollow out dens—they bore galleries—they elevate vaults—they build, as it were, subterranean bridges—they construct, also, entrances to their habitations, and adapt doors to them, which want nothing but bolts; for, without any exaggeration, they work upon a hinge, and are fitted to a frame!

The habitations of the species in question are found in an argillaceous kind of red earth, in which they bore tubes about three inches in depth, and ten lines in width. The walls of these are not left just as they are bored, but are covered with a kind of mortar, sufficiently solid to be easily separated from the mass that surrounds it, and as smooth and regular as if a trowel had been passed over it; this is covered with some coarse web, on which is glued a silken tapestry. If this passage were always left open, the spider would be subject to intrusion and attack; she has, therefore, been gifted with the art to fabricate a very secure trap-door, which closes the mouth of it. To judge of this door by its outward appearance, we should think it was formed of a mass of earth, coarsely worked, and covered internally by a solid web, which would appear sufficiently wonderful for an animal that seems to have no special organ for constructing it; but if it be

divided vertically, it will be found a much more complicated fabric than its outward aspect indicates, for it is formed of more than thirty layers of earth and web, emboxed, as it were, in each other, like a set of weights for small scales!

If these layers of web be examined, it will be seen that they all terminate in the hinge, so that the greater the volume of the door, the more powerful is the hinge. The frame in which the tube terminates above, and to which the door is adapted, is thick, and its thickness arises from the number of layers of which it consists, and which seem to correspond with those of the door; hence, the formation of the door, the hinge, and the frame, seem to be a simultaneous operation; except that, in fabricating the first, the animal has to knead the earth, as well as to spin the layers of web. By this admirable arrangement, these parts always correspond with each other, and the strength of the hinge, and the thickness of the frame, will always be proportioned to the weight of the door. If we examine the circular margin of the door, we shall find that it slopes inwards, so that it is not a transverse section of a cylinder, but of a cone; and, on the other side, that the frame slopes outwards, so that the door exactly applies to it. By this structure, when the door is closed, the tube is not distinguishable from the rest of the soil, and this appears to be the reason that the door is formed with earth. Besides, by this structure also, the animal can more readily open and shut the door; by its conical shape it is much lighter than it would have been if cylindrical, and so more easily opened; and by its external inequalities, and mixture of web, the spider can more easily lay hold of it with its claws. Whether she enters the tube or goes out, the door will shut of itself. These facts are so curious and wonderful, as almost to surpass belief, yet they are all well ascertained.

The most powerful instinct which belongs to insects, is that which has regard to the preservation of their species. We find, accordingly, that as the necessity for their preservation is of the utmost importance in the economy of nature, so for this especial

object many insects, whose offspring, whether in the egg or larva state, are peculiarly exposed to danger, are endowed with an almost miraculous foresight, and with an ingenuity, perseverance, and unconquerable industry, for the purpose of avoiding those dangers, which are not to be paralleled even by the most singular efforts of human contrivance. The same ingenuity which is employed for protecting either eggs, or caterpillars and grubs, or pupæ and chrysalides, is also exercised by many insects for their own preservation against the changes of temperature to which they are exposed, or against their natural enemies. Many species employ these contrivances during the period of their hibernation, or winter sleep. For these purposes, some dig holes in the earth, and form them into cells; others build nests of extraneous substances, such as bits of wood and leaves; others roll up leaves into cases, which they close with the most curious art; others build a house of mud, and line it with the cotton of trees, or the petals of the most delicate flowers; others construct cells of secretions from their own bodies; others form cocoons, in which they undergo their transformation; and others dig subterranean galleries, which, in complexity of arrangement, in solidity, and in complete adaptation to their purposes, vie with the cities of civilized man. The contrivances by which insects effect these objects, have been accurately observed, and minutely described, by patient and philosophical inquirers, who knew that such employments of the instinct with which each species is endowed by its Creator, offered the most valuable and instructive lessons, and opened to them a wide field of the most delightful study. The construction of their habitation is certainly among the most remarkable peculiarities in the economy of insects, whether they be the separate work of one individual, or the joint labor of a vast community.

The structures of wasps and bees, and still more those of the wood-ant, when placed in comparison with the size of the insects, equal our largest cities compared with the stature of man; but if we look at the buildings erected by the white ants of tropical

climates, all that we have been surveying, dwindles into insignificance. Were our houses built according to the same proportions, they would be four or five times higher than the pyramids of Egypt, with corresponding dimensions in the basements of the edifices. The termites do not stand above a quarter of an inch high, while their nests are frequently twelve feet. Bishop HEBER saw a number of these high ant-hills in India, near the principal entrance of the Sooty or Moorshedabad river. "Many of them," he says, "were five or six feet high, and probably seven or eight feet in circumference at the base, partially overgrown with grass and ivy, and looking at a distance like the stumps of decayed trees."

The caddis worms live under water, where they construct for themselves moveable habitations of various materials, according to the habits, or to the substances most conveniently procured, such as sand, stones, shells, wood, and leaves. One of these grubs forms a case of leaves glued together longitudinally, but leaving an aperture sufficiently large for the inhabitant to put forth its head and shoulders when on the look-out for food; another employs pieces of reed, grass, straw, or wood, carefully joined and cemented together; another makes choice of the tiny shells of young fresh-water mussels and snails to form a moveable grotto, and as these little shells are for the most part inhabited, he keeps the poor animals close prisoners, and drags them along with him! But one of the most surprising instances of their skill occurs in the structures of which small stones are the principal materials. The problem is to make a tube about the width of the hollow of a wheat-straw, and equally smooth and uniform; and as the materials are small stones, full of angles and irregularities, the difficulty of performing this problem will appear to be considerable, if not insurmountable; yet the little architects, by patiently examining their stones, and turning them round on every side, never fail to accomplish their plans. This, however, is only part of the problem, which is complicated with another condition, namely, that the under surface shall be flat and smooth, without

any projecting angles which might impede its progress when dragged along the bottom of the rivulet where it resides. In some instances, where these little cases are found to possess too great a specific gravity, a bit of light wood or a hollow straw is added, to buoy them up!

Fish, from the nature of the element they inhabit, and their power to migrate or to descend to greater depths, according to the seasons, do not, with few exceptions, attempt to form any artificial abode. The black goby, however, is said to form runs in the clay, in which it passes the greatest part of the year, secure from cold, storms, and enemies. In the spring, it approaches the shallows, where it forms deeper channels, and deposits its spawn. The salmon also forms a cavity in the mud for the reception of its spawn; and the stickleback constructs quite an artificial retreat for rearing its young, consisting of grass, straw and earth. Other fishes scoop out places in the sand for their breeding grounds.

Newts, frogs, and toads make themselves holes, in which they hibernate, and to which they retreat for safety while renewing their skin. Snakes and lizards also hibernate in holes in the earth, and fly to the nearest in moments of danger.



However great the skill of architecture in insects, it attains, if possible, a higher degree of perfection in birds, which employ almost exclusively foreign materials for the purpose, collected and adapted in the most artistical manner. There are very few which do not construct nests, as the cuckoo, and the cow-bird of America, which use the nests of other birds, and as, among the water-birds, the petrels and razor-bills, which deposit their eggs on the bare rock. Others of this race, like the puffins and penguins, excavate long burrows. The former, in the breeding season, visit several places on the British coasts, particularly the small island of Priestholm,

near Anglesea, which might be called Puffin Island, as the whole surface appears literally to be covered with them. Soon after their arrival, in May, they prepare for breeding; and it is said that the male, contrary to the usual economy of birds, undertakes the hardest part of the labor. He begins by scraping out a hole in the sand, not far from the shore; and after having got to some depth, he throws himself on his back, and with his powerful bill as a digger, and his broad feet to remove the rubbish, he excavates a burrow with several windings and turnings, from eight to ten feet deep. He prefers, when he can find a stone, to dig under it; in order that his retreat may be more securely fortified. Whilst thus employed, the birds are so intent upon their work that they are easily caught with the hand. Professor HOOKER says: "In one part of the island, where there is a considerable quantity of rich loose mould, the puffins breed in vast numbers, forming holes three or four feet below the surface, resembling rabbit-burrows, at the bottom of which they lay a single white egg, about the size of that of the lapwing, upon the bare earth."

The penguin, whose long and narrow bill seems less strong for digging than that of the puffin, contrives to form extensive burrows in the desolate islands it frequents. They select for nestling, a sandy plain or down, where they usually congregate in such numbers as everywhere to undermine the ground, so that, in walking, it is not unusual for a person to sink up to the knees; but if the penguin chance to be at home, she revenges herself upon the passenger who has destroyed her roof, by fastening on his legs and biting him severely. The species are so numerous on some of the uninhabited islands of the South Seas, on both sides of Cape Horn and the Cape of Good Hope, that PYRARD says, "one cannot stir a step without crushing their eggs or their young!"

The kingfisher also uses a hole for the purpose of incubation, but it is doubtful whether it does not select the old hole of a water-rat to save itself trouble; it seems to indicate a dislike to the labor of digging, as it frequents the same hole for a series of years, and

will not abandon it though the nest be repeatedly plundered. Up to the present time, more or less misrepresentation has been introduced into the description of this burrow. GESNER furnishes it with a soft bed of reed-flowers; GOLDSMITH says it lines its hole with the down of the willow; and Colonel MONTAGUE asserts that at the end of the hole there is a kind of bedding formed of the bones of small fish, evidently the castings of the parent birds, mixed with earth.

The burrowing owls, found in some of the milder districts of North America, are another and singular instance, from their inhabiting the same holes, and certainly the same villages, as they are termed, with the prairie-dog or prairie-marmot. The pelican tribe make a very artless nest from sea-weed; and the same absence of arrangement pervades the gallinaceous tribes, including also the ostrich and bustard, both of which are content with merely scratching a hole in the earth, without even the addition of leaves or straw as a protection. The nest of the wild turkey is of a very simple structure, being composed of a few dried leaves only, but concealed as much as possible, to guard against the predatory attacks of the crow, and other enemies.



The great majority of birds, however, build the most artistical nests, selecting situations according to their habits, either on the ground, in shrubs, in trees, on rocks, and even on human dwellings; and it is a received opinion with many, that the more perfect the nature of the bird, the higher from the ground is the nest constructed.

The greatest variety prevails in the construction, and, without exception, the materials consist of bad conductors of heat: thin twigs, grasses, fibers of plants, &c., lined with hair and feathers, and some few are formed of mud or clay. The shape is chiefly hemispherical, and rarely otherwise in this country; HILL confirms this, and adds, that in the tropics

the nests of birds are more often spherical than in other countries, for two obvious reasons: for protection, namely, to the bird against the climate while sitting, and against the attacks of snakes and monkeys. And besides, the birds which build such nests breed in the season which intervenes between the spring and the autumnal rains, when the air is particularly charged with electricity and subject to sudden changes of temperature, a condition particularly injurious to animals of dull respiration and of great excitability. The unhatched bird is in an inferior state of organization, and therefore its existence is endangered by any strong electrical rarefaction of the air, and by continual atmospherical changes; but from the peculiarity of the materials employed in the nest, the eggs are, as it were, insulated and protected, and the act of incubation goes on in perfect security in the midst of an atmosphere loaded with electricity.

The black-and-blue humming bird builds its nest of long grass, in the form of a retort, hanging from the top of a cane or bamboo: the entrance to the neck, which is a foot long, is from beneath, so that the bird has to climb up as through the nose of a funnel, and then both the situation and form of the nest protect it fully from snakes and monkeys. A species of oriole builds a similar nest, but with the entrance from above; such nests are not unfrequently seen on the further twigs of high trees, when the leaves, which hid them, have fallen off. The Baltimore oriole, seeking materials for its nest, when the women hang out their thread to bleach, perceives that this will suit it, and carries it off. Skeins of silk and hanks of thread have often been found hanging round its nest, but so woven up and entangled as to be irreclaimable.

The long-tailed titmouse builds a singularly curious and elegant nest, of a long oval form, with a small hole in the side near the top as an entrance: the outside is formed of moss, woven or matted together with the silken shrouds or aurelia of insects, and covered all over with the tree and stone lichens, fixed with fine threads of the same silken material. From this thatch, the rain trickles off without penetrating, whilst from its similarity in color and ap-

pearance to the bark of the branch, or the foliage of the shrub on



which it is placed, it is not easily discovered. The inside is thickly lined with a profusion of feathers, the soft webs of which are laid inwards, with the quills or points stuck into the outward fabric. But the most extraordinary performance is perhaps that of the tailor-bird, the description of which would be suspected as an oriental fiction, were not the authenticity placed beyond all doubt. This bird will not entrust its nest to the extremity of a slender twig,

but makes one more advance to safety by fixing it to the leaf itself. It picks up a dead leaf, and sews it to the side of living ones, its bill being its needle, and its thread some fine fibers: the lining consists of feathers, gossamer, and down; these slight materials, therefore, added to the weight of the bird, which is only three sixteenths of an ounce, are not likely to draw down a habitation so delicately suspended.

“Behold a bird’s-nest!

Mark it well, within, without!

No tool had he that wrought; no knife to cut,

No nail to fix, no bodkin to insert,

No glue to join; his little beak was all:

And yet how nicely finished! What nice hand,

With every implement and means of art,

Could compass such another?”

It is in their nests that birds display the most striking and varied indications of contriving and judging, and, therefore, of thinking intellect; confined, indeed, in the extent of its operations, but resembling reasoning intellect, within this compass. The birds of the Indian climates are obliged to exert unusual artifice in placing their broods out of the reach of an invader. Each

aims at the same end by different means. Some form their pensile nest in the shape of a purse, deep, and open at the top; others, with a hole at the side; and others, still more cautious, with an entrance at the very bottom, forming their lodge at the summit. This instinct prevails also among the birds on the banks of the Gambia, which abound with monkeys and snakes. Others, for the same end, make their nests in the holes of the banks that overhang the river. The lesser species, having a certain prescience of the dangers that surround them, and of their own weakness, suspend their nests at the extreme branches of trees. They are conscious of inhabiting a climate replete with enemies to them and their young—with snakes that twine up the bodies of the trees, and apes that are perpetually in search of prey; but, heaven-instructed, they elude the gliding of the one and the activity of the other.

The eagle has but one enemy—man; and to secure itself from him, it seeks the most inaccessible rock, or the loftiest tree, on which to construct its nest. This is composed of great sticks, serving as rafters, united strongly together with smaller and more flexible branches, on which is piled a considerable quantity of brushwood, moss, heath, and even rushes, if they are to be found in the vicinity, forming a mass of four or five feet in diameter, and two feet thick, without a hollow in the center. The birds use the same nest for a succession of years, and some of the species, as the fish-hawk, leave their breeding place in the autumn, like the English rooks; and like them also, before departing, regularly repair their nests, carrying up sticks, sods, &c., to fortify them against the violence of the winter storms. This indicates a very remarkable degree of prospective contrivance, irreconcilable with the common theories of instinct.

Not to multiply examples where all are wonderful, it is only necessary to turn to the swallow, whose mode of operation is so entirely dissimilar from all others. The crust or shell of its nest seems to be formed of such mud or loam as comes most readily to hand, tempered and wrought together with little bits of broken

straws to render it tough and tenacious; and that the work may not, while it is soft and green, pull itself down by its own weight, the bird has prudence and forbearance enough not to advance its construction too fast. About half an inch seems to be a sufficient layer for a day, and thus in about ten or twelve days a hemispheric nest is formed with a small aperture towards the top, compact and warm, and perfectly adapted to its purposes. The shell or crust is a sort of rustic work, full of knobs and protuberances on the outside, but the inside is smoothed with more care, and in some instances has even a glazed appearance.

Some birds invade the nests of others and appropriate them; others, under a sense of security, or from some eccentricity of purpose, select situations the most singular, and at variance with their habits: thus a pair of swallows at Camerton Hall, near Bath, built their nest on the upper part of the frame of an old picture over the chimney-piece, coming through the broken pane in the window of a room, and using it for three years successively, till the room was put into repair and their future entrance stopped. Besides the many small rookeries which exist in gardens in London, there has been for several successive years a single rook's nest in the tree at the corner of Wood-street, Cheapside; and some years ago a pair of these birds built their nest on the top of the vane of the Exchange at Newcastle, and brought forth their young, undisturbed by the noise of the populace below them; the nest and its inhabitants turning about with every change of wind. This was continued for ten years, when the spire was taken down.

A laboring man of the village of River, near Dover, reared a young hen-blackbird in the spring of 1844, and succeeded so perfectly in domesticating it, that it was allowed its full liberty, flying in and out of the house at will, and roosting in the little kitchen parlor. Early in the spring of 1845 it disappeared, and was mourned as lost; but at the expiration of a few weeks it returned, followed by a mate, which, encouraged by the fearlessness and impunity of its partner, threw off some of its natural

timidity, and ventured to take its stand on the sill of the window, beyond which it never ventured. The hen bird constructed its nest in the room, hatched and reared its young ones, and at length flew off together with them. In the spring of 1846, it again returned under the same circumstances, the male bird frequenting its old position in the window, and again a nest was begun; but the position selected on the little dresser between two plates, was so inconvenient to the woman of the house, that she deranged it; but it was of no avail, for that was the place decided on, and another nest was begun. The good woman took in washing, and, having occasion to go out for a short time, she left some lace she was ironing on the table. On her return, she found the lace had been appropriated by the bird, which had interwoven it beautifully in the nest, in which it was then seated. Loth to disturb her favorite, and yet fearful of being blamed by her employer, she went to the lady, and begged her to see the nest and to judge what was to be done. The result was that the bird was left undisturbed, and reared its young in safety, the male bird assisting in the task of bringing food to the window, which the female received and carried to the nestlings; and often, when picking up crumbs from the table, she would carry them to her mate, feeding him with the dainties he was afraid to take himself.

The sociable grosbeak of Africa, is one of the few instances of birds living in community, and uniting in constructing one huge nest for the whole society. LE VAILLAIN'T'S account has been fully confirmed by other travelers. He says: "I observed, on the way, a tree with an enormous nest of those birds, which I have called republicans; and, as soon as I arrived at my camp, I despatched a few men with a wagon to bring it to me, that I might open and examine the hive. When it arrived, I cut it in pieces with a hatchet, and saw that the chief portion of the structure consisted of a mass of Boshman's grass, without any mixture, but so compact and firmly basketed together as to be impenetrable to the rain. This is the commencement of the structure, and each bird builds its particular nest under this canopy. But the nests are

formed only beneath the eaves, the upper surface remaining void, without, however, being useless ; for, as it has a projecting rim, and is a little inclined, it serves to let the water run off, and preserves each little dwelling from the rain. Figure to yourself a huge, irregular sloping roof, all the eaves of which are completely covered with nests crowded one against another, and you will have a tolerably accurate idea of these singular edifices.

“ Each individual nest is three or four inches in diameter, which is sufficient for the bird ; but, as they are all in contact with one another around the eaves, they appear to the eye to form but one building, and are distinguishable from each other only by a little external aperture, which serves as an entrance to the nest ; and even this is sometimes common to three different nests, one of which is situated at the bottom, and the other two at the sides. This large nest, which was one of the most considerable I had any where seen in the course of my journey, contained three hundred and twenty inhabited cells, which, supposing a male and female to each, would form a society of six hundred and forty individuals ; but, as these birds are polygamous, such a calculation would not be exact.”

The mammalia which burrow, particularly those which not only live beneath the surface, but obtain their food there, form often a complete labyrinth of subterranean passages. Several of these construct a chamber or vault at the utmost extremity of the burrow, contracting the passages in the neighborhood of it, so that no animal larger than themselves can penetrate. Many have, besides the places which they usually inhabit, others which they can fly to in case of danger, as the fox, the beaver, the field mouse, the squirrel, &c., and additional outlets are also provided to facilitate the means of escape. Amphibious animals are mostly content with concealing themselves simply in holes, or with forming a subterranean passage of some depth, with one entrance in connection with the water, and with another on the bank, generally concealed by the gnarled roots of a tree or a thick bush : as is the case with the otter, and the ornithorhynchus of

New Holland, this latter forming burrows of from twenty to fifty feet long, with a double entrance.

Many mammalia, as the pachyderms, ruminants, and the larger predaceous, have no habitation, as they are either secure from danger in their own bodily strength, or because they roam so wide in search of food that a fixed home would be as impossible as useless; monkeys and sloths are equally independent of habitations, as they live entirely in trees; but the greater number of the rodents and the lesser predaceous, inhabit dwellings, which are generally most artistically contrived. Those of the beaver are familiarly known.

Some animals and birds appropriate, and even invade, the dwellings of others. The bank-swallow frequently adopts the forsaken hole of the water-rat; the hawk possesses itself of the nest of the crow; and sparrows, not content with occupying by forestalment the nest of the swallow, will attack the rightful owner with a view to dispossess it. The shrew-mouse, unable to penetrate the hard ground with its weak feet, shelters itself in the runs of the mole; and the martin not unfrequently seizes the nest of the crow or of the squirrel, and converts it to his own purposes.

Most animals conceal not only their dwellings; but even the approaches to them. Wasps contrive a long, subterranean, tortuous gallery, as the entrance to their nest; and the emmets, or jet-ants, form covered ways to the tree which they inhabit. A mason-wasp was observed on the wall of a house at Lee, in Kent, busily employed in excavating a hole in one of the bricks at a little height from the ground. Whether there might not have been an accidental hole in the bricks, before the wasp commenced her labors, is unknown, as she had made considerable progress in the work when first observed. The most remarkable circumstance in the process of hewing into the brick, was the care of the insect in removing to a distance the fragments which from time to time she succeeded in detaching. It might have been supposed that these fragments would have been tossed out of the hole as the work proceeded, without further concern, as the mole tosses above

ground the earth which has been cleared out of its subterranean gallery ; but the wasp was of a different opinion, for it was possible that a heap of brick chips at the bottom of the wall, might lead to a discovery of her nest by some of her enemies, particularly by one or other of the numerous tribes of what are called ichneumon flies.

Most of the smaller birds conceal their nests in thick bushes, or cover them externally with a material of the same color as the surrounding objects. Ostriches conceal the position of their nests, by making a circuit when they leave or approach them ; and larks and nightingales neither fly to nor from their nests direct, but creep for some little distance through the grass and shrubs, as a blind. The wild turkey, some of the grouse and duck tribes, the moorhen, and others, when they absent themselves from their nests, cover them so completely with leaves and moss, that the most experienced eye cannot detect them. The fox, too, never returns to its earth in a straight line, and seldom commits any depredations in its immediate neighborhood, and further, never allows any bones or refuse to be seen about the entrance.

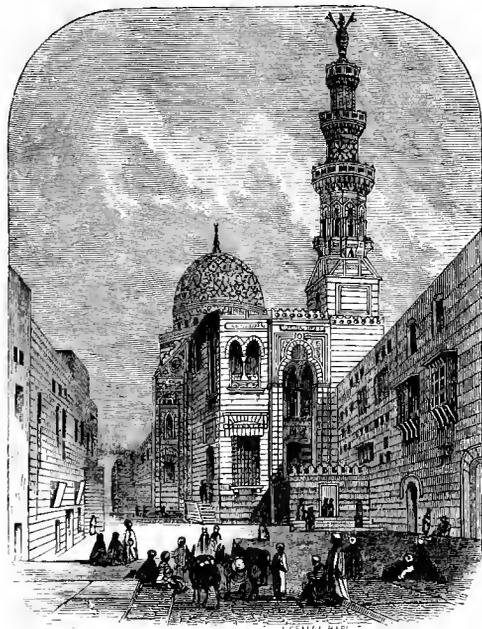
It is interesting to observe that most animals keep their habitations perfectly clean, and this cleanliness extends equally to their bodies. Many insects and spiders are furnished with hairy feet, with which they brush themselves, cleansing them afterwards with their jaws ; crickets and grasshoppers draw their antennæ through their palpi to keep them in order ; the larva of the May-bug cleans itself with its tail, which has a little brush-like tuft. The middle claw of the goatsucker is serrated for the purpose of arranging the bristly appendages of the bill ; and other birds preen themselves with their bills, smoothing and cleaning their feathers. Deer, cattle, and horses, lick themselves ; and the cat wets its paws with its saliva, and rubs its head and those parts which it cannot reach with its tongue. Burrowing and climbing animals constantly clean themselves with their fore paws. The bat keeps the hair of its coat in order with its hind feet, and passes its tongue over its wings. Many animals and birds either bathe in

the water or wallow in the same, and some of the former enjoy rubbing themselves against posts and trees.

Bees are remarkable for the cleanliness of their dwellings; they are extremely solicitous to remove such insects or foreign bodies as happen to get admission into the hive. When so light as not to exceed their powers, they first kill the insect with their stings, and then drag it out with their jaws. But it sometimes happens that an ill-fated snail creeps into the hive; this is no sooner perceived than it is attacked on all sides, and stung to death. But to attempt to carry out so heavy a burden would be labor in vain, and therefore, to prevent the noxious smell which would arise from its putrefaction, they immediately embalm it, by covering every part of its body with propolis, through which no effluvia can escape. When a snail with a-shell gets entrance, the disposal of it gives much less trouble and expense to the bees. As soon as it receives the first wound from a sting, it naturally retires within its shell. In this case, the bees, instead of pasting it all over with propolis, content themselves with gluing all round the margin of the shell, which is sufficient to render the animal for ever immovably fixed.

An adder, which was kept for a considerable time in a box, took every opportunity to crawl out, in order to perform its natural functions in a distant corner. Birds, with very few exceptions, preserve the greatest cleanliness in their nests, by throwing over the side the dung of their young ones, which, as they attain strength, protrude their bodies over the rim of the nest, and avoid all impurities within.

Many burrowing animals, like the pole-cat and beaver, discharge themselves outside of their dwellings, and the former removes to a distance the excrement of its young; the mole sets apart a division of its run for its wants, and the cat and jackall bury their matter.



THE MOSQUE OF THE SULTAN KAITBEY.

CAIRO.

CAIRO, situated on the east side of the Nile, seventy-five miles west of Suez, and one hundred and twelve south-east of Alexandria, is the modern capital of Egypt, and the second city of the Mohammedan world, being only inferior to Constantinople. It is the chief residence of the pacha, and the seat of government; nevertheless, its population does not exceed two hundred and fifty thousand.

In comparison with Thebes and Memphis, Cairo is a modern town; but, in reality, it is a place of some antiquity. It has been conjectured that it succeeded to the ancient Egyptian city, which bore the name of Babylon, but its recognized and authentic

origin is referred to GOHER, a general sent by EL MÔEZ, the first Fatimite caliph, to invade Egypt. Having conquered the country, and thus established the Fatimite dynasty there, he founded the city of Cairo A. D. 967, which became, and has since continued to be, the capital. The sovereign EL MÔEZ, arrived with his court and the bones of his ancestors, from Cayrawan, near Tunis, where he had formerly resided, and henceforward made his new conquest the seat of his dominion.

Viewed from a distance, Cairo has a magnificent appearance ; but, like all eastern cities, its interior has a very different aspect from its exterior. It is, however, in all respects so unlike European and American cities, that the traveler from either of these portions of the globe, is not only surprised but interested with every thing around him, as he enters the place. In the words of a British resident : " Here, every thing is oriental ; the style of the buildings, the shaded streets, the aspect and costumes of the people, the quiet and repose universally prevailing. No rattling of carriages and carts, no rushing busy crowds intent upon their various pursuits ; but in their stead, the solemn camel and its patient little attendant the donkey, making their noiseless way under their burdens ; the people gathering in groups around the doors of their cafés, chatting and smoking ; the shopkeeper listlessly reclining in his stall ; the sentinel half asleep at his post, while the guard within lie stretched in profound repose, all yielding to the influence of a climate as delightful as it is salubrious, and which fortunately acts to some extent as an opiate against the many physical as well as political ills the people are exposed to from a bad and rapacious government."

The city is enclosed by a wall, terminated on the south-east by a scarped rock, rising 200 feet above the level of the Nile, on which the citadel stands. The view from this is one of the most wonderful in the world, including the sublime obelisk of On, to the east ; to the south, the lofty quarries of Mokattem, with ruined castles, domes and edifices, above and below ; to the west, the aqueducts, mosques and minarets of Old Cairo, with the island

and groves of Rhoda, and beyond, the pyramids of Ghizeh and Saccara.

The walls, with the fortress, were either built or restored by SALADIN, about the year 1176. There are four gates, celebrated for their magnificence. The streets are unpaved, and mostly crooked and narrow — being rather lanes than streets, according to our ideas. The great thoroughfares have generally a row of shops on each side, the upper parts being rented as dwelling apartments. The different nations, Jews, Copts, Franks, &c., occupy different quarters, though this arrangement is only a matter of choice. The Jewish quarter is noted for its filthiness; the Frank quarter, where many Armenian and Syrian Christians reside, is superior to the others, in the width of its streets, and in cleanliness. There are several open squares in the city, that of Esbekiah being the finest, and surrounded by many of the palaces and best buildings of Cairo. Its center is laid out as a garden, and, as is the case with some others, is annually overflowed by the Nile.

The distinguishing feature of Cairo is its mosques, of which there are no less than four hundred — a fact which attests the intensity of the Mohammedan faith, which has led to such a prodigious number of religious edifices, in proportion to the population. Many of them are of great cost and great beauty, regarded as specimens of Arabic architecture. The most noted one, El Azhar, or Lazarus, is in the middle of the most populous quarter. That of Sultan HASSAN is the largest, and has the finest dome in the city. The principal door is of bronze, beautifully inlaid with silver. The body of the edifice is surrounded with a large square court, with shrines under fine, bold arches. This mosque is also celebrated for the loftiness of its two minarets, the variety of marbles used in its construction, and its arabesque ornaments, mosaics, and inscriptions.

There are many other mosques which are noted, some for their antiquity, and some for their architectural beauty. Of the former is that of Taglioum, founded A. D. 887, nearly a century before

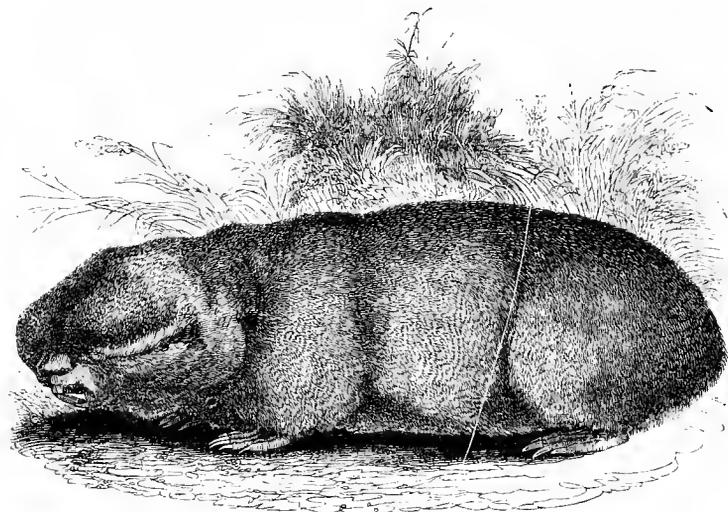
Cairo was built; of the latter is that of Sultan KAITBEY, a sketch of which is given at the head of this article. The arabesque scrolls of the dome, wrought in rich patterns of tracery; the minaret with its three successive balconies, adorned with arches, columns, corbels, and balustrades, all of such fantasy and design as Saracenic buildings alone possess in the same degree, are very striking.

That portion of the city called "Old Cairo," is chiefly occupied by Copts, and contains twelve Christian churches, some of them extensive and sumptuous. Here are the ancient granaries bearing the name of JOSEPH, a grotto, castle, &c., together with a machine for raising the waters of the Nile into the ancient aqueduct. Boulac, the port of Cairo, contains the principal manufactures, and is the seat of trade. It is very dirty, but presents a busy scene attended with much noise, in which the people seem to find a special pleasure, forming a striking contrast to Cairo itself. Here, on the banks of the river, are heaped up pyramids of millet, beans and corn—all the property of the government. The shore is lined with vessels of every description, discharging their cargoes or advertising for hire.

Along the banks of the river, from Boulac to Cairo, for a distance of some two or three miles, are seen a number of handsome palaces, embowered in groves of orange, sycamore and acacia, the most conspicuous of which is that of IBRAHIM PACHA. This is built in the Turkish style, and contains many handsome apartments. Its extensive gardens and plantations occupy the plain between it and the city. Toward the Nile the grounds are laid out in terraces ornamented with statuary, which give them quite a European appearance.

Most of the higher classes of Turks, as well as individuals holding official stations, have their residences in Cairo, where they live in much splendor. Several of the public baths are spacious and highly ornamented, and some of the public fountains are on a liberal scale. With these marks of splendor, the prevailing character of Cairo is, however, that of meanness and poverty,

the large mass of the people living in a state of depression which would make life a curse rather than a blessing, were it not that the softening effect of the climate produces a languor which reconciles the mind to poverty, ignorance and squalidness.



THE RAT MOLE

THE ZEMNI.

THIS animal, which is commonly called the rat-mole, has some of the qualities belonging to both the rat and mole. It is a native of Southern Russia, and portions of Western Asia. It is of a gray color, tinged with a reddish brown; its length is eight inches, its size being almost equal to that of the common rat. It is destitute of a tail, that ornament so nearly universal in the leading species of the animal kingdom.

Like the mole, it burrows in the earth, excavating long galleries, from which it seldom ventures. Its abode is usually chosen in fields, where it finds the roots of grass, upon which it feeds, and in pursuit of which it goes about boring the earth one or two inches below the surface—thus making an intricate network of tunnels in all directions. Its eye is extremely small, and so imbedded in fur, that the animal was long held to be altogether destitute of sight. It is excessively timid, but makes a vigorous defence, in case of attack.

There are several species of the rat-mole, some very peculiar kinds of which belong to America. Among these is the pouched rat, found in the northwestern states and in parts of Canada. It is about six inches in length, with a short naked tail, and a pouch or wallet, resembling the thumb of a lady's glove, hanging down on each side of its head. These are used for collecting food, and open into the mouth. When emptying them, the animal sits on its haunches and squeezes the sacks against its breast. When full, they have an oblong shape; when empty, they are drawn up, and have a flabby look, like purses of leather.

We are told by SIR JOHN RICHARDSON, that these little sand-rats are numerous on the western coast of North America, in the vicinity of Fort Vancouver, where they inhabit the declivities of low hills, and burrow in the sandy soil. They feed on acorns, nuts and grass, and make great havoc in potato fields, when they have an opportunity. They not only devour as much as they can swallow on the spot, but they fill their pouches, and carry the contents home to their burrows.



THE LAPLANDERS.

LAPLAND is the most northern portion of Europe, and is a desolate barren region, over which winter prevails for three fourths of the year. The summer begins in May, and ends in September. In the more northern portions, the sun remains sunk behind the horizon for several weeks, during which time the cold becomes so intense as to reduce brandy to solid ice. At this time, however, the darkness is relieved by the brightness of the stars and the vivid corruscations of the aurora borealis. The twilight is also such that during several hours of each day, it is possible to read without a lamp or candle.

In these regions, there is a race of people as peculiar as their climate. They are extremely short of stature, not averaging more than four feet nine inches in height, if we include both sexes. They have swarthy complexions, black, coarse hair, wide mouths, hollow cheeks, and long pointed chins. They are, however, strong, active, and hardy, but are generally short lived. They are, unhappily, noted for intemperance and dishonesty.

The dress of these half civilized people, is of a very coarse texture, consisting of a woollen cap, a coat, usually of sheep skin with

the wool inward, a great-coat of kersey, or of a skin of reindeer, with the hair outward. They have no stockings, but wear a kind of pantaloons of coarse cloth or tanned leather, fitting close to the legs. The shoes are made of reindeer skin, the sole taken from the forehead of the animal, and the upper leather from the legs.

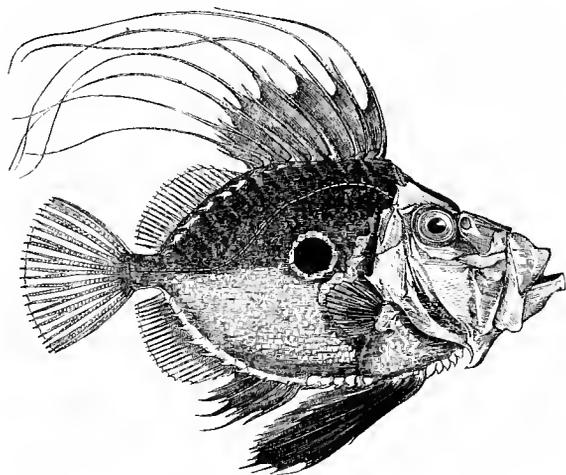
The women dress in a similar manner, except with the addition of a few ornaments; some of the more affluent, however, wear mantles and aprons of Russia linen or cotton. When the weather is severe, they cast a thick hood over the head.

The reindeer is associated with these people, as is the camel with the Arabs. Some of the tribes, it is true, live along the sea-coast and banks of rivers, subsisting chiefly upon fish, but the great mass of the people derive nearly their whole support from their flocks of reindeer. This animal is indeed suited to the country, and alone renders it habitable.

So curious an adaptation of nature and providence, deserves particular notice. In summer, this creature feeds on the buds and leaves of trees, and in winter, upon the white moss, which he finds beneath the snow, by plowing with his horns, or digging with his feet. When the snow is too deep for this process, he feeds on the lichens which grow on the pine trees. In cases of extremity, the people cut down these trees to supply their deer with food.

We may add to all this, that the reindeer is of a docile temper, and easily yields to domestication; his feet are broad, and he travels on the snow crust without sinking in; his flesh furnishes food; his skin, clothing; his muscles are used for cords, and his bones are converted into spoons!

But the greatest utility of the reindeer to the Laplander is as a beast of draught. Attached to a light sledge, these creatures will carry a man over the snow at the rate of ten miles an hour, or a hundred miles in a day. It is not uncommon for them to go a hundred and fifty miles in nineteen hours. Thus, the people, in their land of poverty and isolation, have a power of locomotion unknown to any other tribes, and only recently bestowed on civilized nations by the invention of railroads.



JOHN DOREE.

THERE is something in the very air and aspect of this fish, which seems emphatically to declare, "I am somebody!" And the truth corresponds to the boast. There are few fishes that swim the sea, which can claim a more notable history.

In the first place, this fish has the honor of having been named by the ancients Zeus—one of the titles of JUPITER; besides this, it is supposed to be the fish out of which the Apostle PETER took the tribute money, leaving on its sides, in proof of its identity, the marks of his finger and thumb, and which is to be seen in two golden spots, on every one of the species, to this day.

John Doree is the theme of various pious legends, among which is the following: ST. CHRISTOPHER was one day wading through an arm of the sea, bearing our Savior on his back, when he caught one of these fishes in his hand. He too left the print of his thumb and finger, and hence it is said the name is given, being an adaptation of the French word *adorée*. Among the fishermen of the Adriatic, this fish is called the "gate-keeper," in allusion to

the Apostle PETER, who is supposed to hold the keys of Heaven. It is also called "St. PETER'S fish."

Besides all this, we are told that a celebrated English actor, by the name of QUIN, was very fond of this fish, and even journeyed from Bath to Plymouth to enjoy the luxury of feeding upon it.

Such is the legendary history of John Doree. In more simple terms it may be stated that it is a migratory fish, weighing from five to ten pounds; it is common in Europe, and well known and esteemed in the London market. Its general color is bright yellow, from which its name is doubtless derived through the French words, *jaune dorée*—meaning yellow golden. It keeps company with pilchards, and upon occasion, swallows a cuttle fish, with his long arms and sack of ink. Its ordinary food is the fry of other fishes, molluscous animals, and shrimps.



FIGHT WITH SEA LIONS.

PASSIONS AND SENSIBILITIES OF ANIMALS.

BESIDE the instinctive anger and rage excited in different animals by combat with their enemies, they are subject to various passions, very analogous to those which agitate the human breast. A few anecdotes and observations in illustration of this fact, cannot prove uninteresting.

Joy.

Joy, like a sunbeam, enlivens the existence of animals; and their susceptibility to its influence, particularly as regards the domesticated races, alleviates the yoke of labor, and even stimulates them in its performance.

Who, in going abroad in the early morning, when the rising

sun is awakening the slumbering world, has not been sensible of a gladness of sound. The springs of life are touched, and all awaken to new existence and action. The cricket chirps, the grasshopper springs rustling over the sunny banks, and myriads of other insects, leaving their hiding-places, fly buzzing through the fresh and fragrant air; thousands of voices are awakened in the woods, and high aloft, the lark is warbling forth its hymn of praise. In all creation the stamp of joy is visible, in which even the inanimate portion seems to take a share :

“Forth in the pleasing spring
Thy beauty walks, thy tenderness and love.
Wide flush the fields; the softening air is balm;
Echo the mountains round; the forest smiles;
And every sense and heart is *joy*.”

It is more especially by the voice that the tumult of joy is expressed. Among the insect tribes it is thrilling, as in the cicadae and locusts; among amphibia, the frogs raise a chorus on still, warm evenings, which fills the air, now veiled with a thin gauze-like mist rising from their haunts. But it is in birds, and particularly in those of song, that this ecstasy is the most eloquent, whether when these are careering in the air, shooting through it in all directions with the rapidity of an arrow, or wheeling high aloft in mazy circles, like the rooks in the bright evenings of summer: these, the brightest ornaments of the creation to whom the sun gives life, are not only emblems of joy in themselves, but produce it in others.

Among mammalia; the effect of joy is strongly marked. The horse neighs and snorts with delight when it rejoins its companion, and the dog is tumultuous in its delight when it sees its master. Savage animals in confinement have recognized, after an interval of years, the persons of those who have reared and fed them, and have exhibited the most marked symptoms of pleasure.

The expression of joy is not confined to animals in their voice but shows itself also in the general movement of the body. Little

is generally perceptible in the expression of the face. An approach to laughter is only visible in those monkeys which bear the greatest resemblance to the human form. The ourang-outang, when tickled, draws down the angles of its mouth and grins, uttering at the same time a grunting sound. The chimpanse titters almost like a human being. Yet joy is not in all cases connected with the outward senses ; it is confined, in the lower classes of animals particularly, to the gratification of the appetite ; and in these it is found only as a sensual feeling, which no other excitement can awaken. But M. D'OBSONVILLE, in the East Indies, kept an elk, from twelve days old, for two years. It always came when he called it. Leaving Sumatra, he gave it to Mr. LAW, in whose country-house, being chained and alone, it became furious and dangerous. Some months afterwards, D'OBSONVILLE returned, and went to it. "It knew me afar off," he says : "I ran to meet it, and shall never forget the impression of its transports and caresses."

SIR GEORGE DAVIS had brought up a lion from a whelp, and at five years old, parted with it, as it began to be mischievous. Three years afterwards, he saw it in the Grand Duke's menagerie, at Florence. Though then fierce to others, when SIR GEORGE appeared at the gate, the animal remembered him, reared up, and licked his hands. He entered its den, and the lion threw its paws upon his shoulders, licked his face, and ran about the place, fawning, and as full of joy as a dog at the sight of his master.

A bullfinch, kept by a lady, became extremely attached to her. Her presence created a sunshine to him, and he sang and rejoiced with his whole heart when she was by, while he drooped in her absence, and would sit silent in his cage for whole days together. The lady fell sick, and was confined to her bed for a week, with so severe an illness as to be entirely disabled from thinking of the bird. At length, when she was sufficiently recovered to see him, she ordered his cage to be brought, and set upon the bed beside her. The bird knew her voice in an instant, though it was weak and low from fever. The cage-door was opened ; he uttered

a shrill cry of joy, between a song and a scream, fluttered from her hand to her cheek, and fell dead!

Pain.

This sensation can only be slight in the lower ranges of animal life; for if it bore any proportion to the violence to which the higher are subject, it is impossible to conceive how the polypi and many species of worms could endure such injuries as they suffer, without perishing. The polypi can be drawn back like a glove, cut in pieces, and pounded in a mortar, and yet live. The naiades can be severed into many parts, each of which will form a separate animal, and the medusæ, if deprived of a large portion of their bodies, will replace it, and live. It would thus appear that where nature has assigned so great a tenacity of life, and such slight powers of sensibility, the amount of pain must be proportionably small, as pain, in its intensity, acts prejudicially to life.

This tenacity of life is less in the infusoria and the wheel animalculæ. Pressure destroys the latter; the smallest quantity of spirits of wine, or of acid, affects them, and if the measure be increased, it kills them. The least proportion of poison is sufficient to destroy them, and an infusion of strychnine added to a drop of water, is fatal to them, causing convulsions as in the superior animals.

The molluscæ contract themselves with a spasmodic action, if touched with violence, and the trodden worm writhes in agony.

The assertion is altogether groundless, that insects experience no sensations of pain, although transfixed with a pin, and left till they perish from hunger; for although in all probability they do not suffer pain during the latter period, there is no doubt but they feel acutely at the moment of the transfixion. It is only necessary to watch the effect when a needle is thrust through the back of an insect, and it will be obvious that it makes many powerful and convulsive movements, indicative of pain, and not merely of struggles for escape. Butterflies pierced with a common pin, exhibit these

symptoms, and the spasms are repeated if a heated pin be afterwards introduced. But still, as said before, much depends on the perfection of the organization ; and besides, the formation of insects is so peculiar to themselves, that we have no parallel in any of the other classes. Some of the animals in the class *Vermes*, may be cut and divided almost *ad infinitum*, and each part will eventually become a perfect animal. Some insects without this reproductive power, will bear dividing, and still continue to live, and perform most of the functions with which they are endowed.

The common dragon-fly will live for days without its head ; and if, instead of the head, the abdomen be taken away, the animal seems to feel no material injury. This insect is of a most voracious nature, and has been known to feed under the following extraordinary circumstances : A gentleman being engaged in collecting insects, caught a specimen of the common dragon-fly, which he fastened down in his collecting-box, with a large pin thrust through its thorax, when, to his astonishment, he observed the dragon-fly holding in its forceps a fly, which was struggling for liberty. This it soon devoured, without exhibiting any sign of pain, seeming wholly unconscious of its own unpleasant situation, being still secured by the pin, before named, to a piece of cork. When the fly was devoured, the insect began to flutter, and made several attempts to regain its liberty. The gentleman, greatly surprised at this incident, and willing to improve the experiment still further, caught another fly, which he offered to it. This was eagerly seized by the rapacious insect, and devoured with greediness ; and when its meal was finished, it began to flutter again as before.

It certainly is not derogating from the benevolence so conspicuous in all the works of Providence, to conceive it probable that it has, with infinite wisdom, withheld from some of the lower classes of animals that degree of sensation so abundantly dispensed to others, filling the higher ranks of creation ; as from the habits necessarily entailed upon them, they are more likely to encounter accidents that tend to mutilate, than other individuals of finer

powers of sensation. Thus we often see the earth-worm an object of contention between two birds, neither of which is willing to part with its prize, and in the scuffle, the worm is frequently separated into three parts, each of the birds flying away with a portion, and leaving the center part of the animal behind, which, if the situation where it is left be moist and sheltered, begins in a few days to repair its loss, and in a short time restores its deficient parts; or if a worm be divided into two pieces, they will each in a short time, under favorable circumstances, become perfect animals.

Now insects, the constant food, and the objects of almost unremitting search, by such a variety of animals, had they the acuteness of feeling supposed generally to exist in all animated bodies, their lives must be a continued round of pain and watchfulness; not that it is possible to conceive, as we see from the writhings of a severed worm, that they are destitute of feeling, but their sense of pain is so blunted, as not to be of the nature generally understood by that term. That it is consistent with the beneficence of Almighty wisdom that these, his creatures, should experience pleasure, we feel convinced; and with that mercy, so benevolently extended to all his works, he has kept them from experiencing those painful sensations which their rank in creation would subject them to, if possessed of the sensibility so evident in the mammiferous class.

The expression of pain is more marked than that of joy in the features of animals, and extends in some even to the shedding of tears. This has been noticed in the seal; the giraffe, if separated from its companion, and the camel, if deprived of its foal, weep profusely; the elephant, and several of the monkey tribe, shed tears and the horse does the same, when violently excited or in suffering.

Anger.

Fear and anger are not, properly speaking; independent feelings, but are rather the effects of a certain state of the mind.

Anger is a sympathetic expression of the mind, called forth by some violence or opposition done to the feelings ; and being bound up with a burning desire to remove or revenge the cause, goes beyond mere feeling, by having the satisfaction of an object in view.

In the lower classes of animals it exists in full force, and is not unusually attended with fear. The larva of the ant-lion struck gently, and without injury, with a stick, flies for shelter to its hole, but driven from thence it becomes enraged, and attempts to seize the stick with its forceps. In the same manner, the anger of a snake is not unmixed with fear : if its passage be impeded, it elevates its body, hissing and projecting its forked tongue. If lizards be driven into a corner, from which there is no escape, they threaten with open jaws, and the large green variety will try to fasten on a dog.

Many birds also become violently angry, on any attempt to touch them. The owl, on the appearance of any unusual object, ruffles its feathers, and hisses and snaps with its bill. Birds of prey, herons and bitterns, defend themselves fiercely in the same way, and even the submissive goose runs hissing after intruders when accompanied by its young. Wrens and humming-birds are particularly remarkable for their anger and pugnacity against their own species, if they cross their path.

Among the mammalia, the beasts of prey are the most subject to fits of rage. If a tiger be wounded in its flight, it springs furiously on its pursuers, and only relinquishes its attack with its life. The rhinoceros, with its head crouched, and its horn brushing the ground, rushes madly on its opponent. How fearful must be the engagement between two of the more powerful wild animals encountering in their rage!

The following incident, illustrative of the anger of the elephant, occurred at Delgoa Bay. A party of officers and men belonging to the British war-ship *Leven*, had been hunting hippopotami, and were returning along the banks of the river, when a rustling, as if of a hippopotamus, was heard amongst the reeds. Two of the offi-

cers, Messrs. ARLETT and BARETTE, entered them, with a view of driving it out; the former gentleman was a little in advance, and eager in pursuit, when he was heard loudly to exclaim, "Here he is!" The shrill, angry scream of some large animal instantly followed, and in a few seconds, MR. BARETTE rushed out with his face covered with blood, and calling loudly for assistance, as LIEUT. ARLETT was attacked and thrown down by an elephant. The party were immediately on the alert, in search of the unfortunate officer, whom they expected to find a mangled corpse. As they approached, the elephant, alarmed at the numbers, retreated, leaving his victim on the ground in a state hardly to be described. He was stretched motionless on his back, covered with blood and dirt, and his eyes starting from their sockets, in all the expressive horror of a violent death.

Every attention was paid to him, but it was long feared that life had fled. Some water was procured, when, after his face had been washed, and a little introduced into his mouth, he showed symptoms of returning life; but it was some time before he recovered his senses, and became sufficiently collected to give a connected account of the occurrence. It appeared that, from the thickness of the reeds, he was close to the animal before he was at all aware of his situation, but immediately on making the discovery, he uttered the exclamation already mentioned. This had hardly escaped him, when he discovered that, instead of a hippopotamus, he was almost coming against an enormous elephant. The animal, which appeared highly irritated at the intrusion, waved its trunk in the air, and the moment he spoke, reared upon its hind legs, turned short round, and with a shrill, passionate cry, rushed after him, bearing down the opposing reeds in his way, while LIEUTENANT ARLETT vainly attempted to effect his escape.

For a short time he had hopes of evading his pursuer, as the animal perceived one of the seamen mounted on the top of a tree, about twenty feet high, and three in girth, menacing him by his voice and gestures, while preparing to fire. The elephant

turned short round, and shrieking with rage, made a kind of a spring against the tree, as if to reach the object of its attack, when its ponderous weight bore the whole to the ground, but fortunately without hurting the man, who slipped away among the reeds. The ferocious animal still followed, foaming with rage, to the rising bank of the river, the man crying loudly, "An elephant, an elephant!" until closely pressed by his pursuer, they both came upon the top of the slope, when the party who had heard his cries were prepared, and instantly fired a volley as the elephant appeared. This made him return with ten-fold fury to Mr. ARLETT, who in his eagerness to escape, stumbled and fell, the huge beast running over him and severely bruising his ankle.

As soon as he had passed, Mr. ARLETT arose, and, limping with pain, attempted once more to retreat, but the animal returned to the attack: his trunk was flourished in the air, and the next moment the unfortunate officer was struck senseless to the ground. On recovering himself, his situation appeared hopeless, his huge antagonist standing over him, chafing and screaming with rage pounding the earth with his feet, and plowing it with his tusks. When the party first saw them, Mr. ARLETT was lying between the elephant's legs, and had it been the intention of the animal to destroy him, the placing a foot upon his body would in a moment have crushed him to atoms.

Less intelligent animals, like the boar, dash blindly in their rage on the nearest person to them, while those with greater powers of instinct, distinguish and select the object of their vengeance.

Animals of the most peaceful habits, like the marmot and the hare, give way to occasional bursts of rage; and the bat threatens with extended jaws and a sharp cry.

Anger is much modified, according to age, temperament, sex and nature. Males in general, carnivorous animals, and such as are of a hasty disposition, and in the fullness of strength, are the most prone to anger.

In some animals, the passion has no existence, as in pigeons and sheep, which submit passively to everything which may be

done to them, without even uttering a sound ; but in these instances, the feelings of fear predominates over all others.

The display of the passions in animals in their wild and native state, has in it something both terrible and majestic, to which hardly any description can do justice. An American colonist says, that sitting one day in a secluded shady spot, his attention was engaged by a strange sort of rustling noise at some paces distant, and looking round, he beheld two snakes of considerable length; the one pursuing the other with great celerity through a hemp stubble-field. The aggressor was of the black kind, six feet long; the fugitive was a water-snake, of nearly equal dimensions. They soon met, and in the fury of their first encounter, appeared in an instant firmly twisted together, and whilst their united tails beat the ground, they tried with open jaws to lacerate each other. Their heads were compressed to a very small size; their eyes flashed fire; and after this conflict had lasted about five minutes, the second found means to disengage itself from the first, and hurried towards a ditch. Its antagonist instantly assumed a new posture, and half creeping, half erect, with a majestic mien, overtook and attacked the other again, which placed itself in a similar attitude, and prepared to resist.

The scene was uncommon and fearful, for thus opposed, they fought with their jaws, biting each other with the utmost rage; but notwithstanding this appearance of mutual courage and fury, the water-snake still seemed desirous of retreating towards the water, its natural element. This was no sooner perceived by the keen-eyed black one, than twisting its tail twice round a stalk of hemp, and seizing its adversary by the throat, not by means of its jaws, but by twisting its own neck twice round that of the water-snake, he pulled it back from the ditch. To prevent a defeat, the latter took hold of a stalk likewise on the bank, and by the acquisition of that point of resistance, became a match for his fierce antagonist. Strange was this to behold: two great snakes strongly adhering to the ground, mutually fastened together by means of the convolutions which lashed them to each other,

and stretched at their full length, they pulled, but pulled in vain. In the moments of greatest exertion, that part of their bodies which was entwined, seemed extremely small, while the rest appeared inflated, and now and then convulsed with strong undulations, rapidly following each other. Their eyes appeared on fire, and ready to start out of their heads.

At one time the conflict seemed decided ; the water-snake bent itself into great folds, and by that operation rendered the other more than commonly outstretched : the next minute, the new struggles of the black one gained an unexpected superiority ; it acquired two great folds likewise, which necessarily extended the body of its adversary, in proportion as it had contracted its own. These efforts were alternate, victory seemed doubtful, inclining sometimes to one side, sometimes to the other ; until at last, the stalk to which the black snake was fastened, suddenly gave way, and in consequence of this accident, they both plunged into the ditch. The water did not extinguish their vindictive rage, and they soon reappeared on the surface, twisted together, as in their first onset ; but the black snake seemed to retain its wonted superiority, for its head was exactly fixed above that of the other, which it incessantly pressed down under the water, until it was stifled and sank. The victor no sooner perceived its enemy incapable of further resistance, than abandoning it to the current, it returned to the shore and disappeared.

A raccoon having been one day lashed by a servant, would never forgive him. Neither eggs nor fish, of which he was very fond, would appease it. Whenever the man approached, its eyes kindled ; it endeavored to spring at him ; uttered mournful cries, and refused everything, until the servant went away. In the menagerie at Paris, a terrific combat arose between two black bears, confined together in one of the sunk fosses, and which at length terminated in favor of the strongest, who, after strangling his comrade, literally tore him to pieces. Guinea pigs are extremely irascible, and their manner of fighting is both singular and ridiculous. One of them seizes the neck of its antagonist with its teeth,

and attempts to tear the hair from it. In the meantime, the other turns his posterior to his enemy, kicks up behind like a horse, and, by way of retaliation, scratches the sides of his opponent with his hinder claws, in such a manner that both are frequently covered with blood.

The savage and treacherous disposition of the Cape buffalo render him particularly dangerous. He frequently conceals himself among trees, and there stands lurking till some unfortunate passenger comes by, when the animal at once rushes out into the road, and attacks the traveler, who has no chance to escape but by climbing up a tree, if he is fortunate enough to be near one. Flight is of no avail: he is speedily overtaken by the furious beast, which, not content with throwing him down and killing him, stands over him even for a long time afterwards, trampling him with his hoofs, and crushing him with his knees. He not only mangles and tears the body to pieces with his horns and teeth, but likewise strips off the skin, by licking it with his tongue. Nor does he perform all this at once, but often retires to some distance from the body, and returns with savage ferocity to gratify afresh his cruel inclinations.

As Professor THUNBERG was traveling in Caffraria, he and his companions had just entered a wood, when they discovered a large old male buffalo, lying quite alone, in a spot that for the space of a few square yards was free from bushes. The animal no sooner saw the guide who went first, than, with a terrible roar, he rushed upon him. The fellow turned his horse short round behind a large tree, and the buffalo rushed forward to the next man, and gored his horse so dreadfully in the belly, that it died soon after. These two men climbed into trees, and the furious animal made his way towards the rest, of whom the professor was one, who were approaching, but at some distance. A horse without a rider was in the front; as soon as the buffalo saw him, he became more outrageous than before, and attacked him with such fury, that he not only drove his horns into the horse's breast, but even out again through the very saddle. The horse was thrown to the

ground with such excessive violence, that he instantly died, and many of his bones were found broken.

Just at this moment the professor happened to come up, but from the narrowness of the path, having no room to turn round, he was glad to abandon his horse, and take refuge in a tree. The buffalo had, however, finished ; for after the destruction of the second horse, he turned suddenly round, and galloped away.

Some Europeans at the Cape once chased a buffalo, and having driven him into a narrow place, he turned round, and instantly pushed at one of his pursuers who had on a red waistcoat. The man, to save his life, ran to the water, plunged in, and swam off : the animal followed him so closely, that the poor fellow had no alternative but that of diving. He dipped overhead, and the buffalo losing sight of him, swam on towards the opposite shore, three miles distant.

At Liverpool, as a carter was altering the bearing reins of the chain-horse of his lorry, the animal suddenly struck him to the ground with his fore foot, and before he could recover himself, seized him with his teeth and lifted him into the air. His clothes gave way, and he was rescued from his perilous situation and conveyed home, fortunately with no other injury than some severe bruises. It was some time before the infuriated beast could be either approached or appeased. It was stated that this horse, about three years before, had killed a driver in a similar manner.

Fear.

Fear has its origin chiefly from some sudden and unusual impression on the senses ; and when they are so violently acted upon that the active powers are not only shaken, but are even palsied, the feeling becomes one of terror, and thus animals, as if paralysed and helpless, stand rooted to the earth. Fear, as well as anger, has the greatest influence on the lives of animals, as aids and excitements for their preservation ; the latter urges them to offer resistance to violence and attacks, and the former impels

them to shun a threatened danger by flight, which terror disqualifies them from attempting, and therefore has a fatal influence on their safety and lives.

The fear inspired by ferocious animals is universally felt : the otherwise courageous elephant dreads the tiger, even when it is dead, and cannot readily be induced to carry one, particularly if in attack the beast has made a spring on its back ; this dread is not altogether dependent on experience, for oxen and horses brought from countries where no lions are found, become restless and uneasy, when one approaches the encampment in the night.

LE VAILLANT gives many interesting statements to this effect in his African expeditions, and often ascribes the safety of his camp to the exquisite scent of the cattle of his teams, for there can be no doubt, as he expresses, but that all savage animals emit a powerful smell. Mules also cannot tolerate the smell of a dead tiger, but bolt and fly in all directions, and according to a Hottentot declaration, the fat of a panther smeared on the trees, will drive foxes and other animals out of a district. A dog brought up to the newly-flayed skin of a lion, trembled violently, bristled up its hair, and drew its tail between its legs, and when its first alarm had subsided, it fled away, and could by no inducements be brought back. Poultry and pigeons forsake their stalls, if a martin has recently visited them ; and rabbits run wildly about their shed if the fresh taint of a fox is perceptible.

Many animals are so extremely timid that they are alarmed at the slightest cause, and this occurs especially with birds : the peewit shrinks even at the rustle or passing flight of another bird, and all birds crouch and attempt to conceal themselves on the appearance of those of prey. The turkey, as well in the wild as in the tame state, utters on such occasions a peculiar note, and its whole brood disperses and conceals itself among the long grass and leaves. They even stretch themselves at full length upon the ground, and continue motionless as if dead, and in the mean time the mother with her eyes directed upwards, continues crying. On looking up in the direction in which she seemed to gaze, the

author has discovered a black spot just under the clouds, but was unable at first to determine what it was ; however, it soon appeared to be a bird of prey, though at first at too great a distance to be distinguished. He has seen one of these animals continue in this agitated state, and her whole brood pinned down, as it were, to the ground for an hour together, whilst their formidable foe has taken his circuits, has mounted, and hovered directly over their heads ; at last, upon his disappearing, the parent changed her note, and sent forth another cry, which in an instant gave life to the whole trembling tribe, and they all flocked round her with expressions of pleasure, as if conscious of their happy escape from danger.

Some animals, like snakes, are held in universal dread, and not the least terrible is the effect produced by the rattle-snake. Mr. PENNANT says, that this snake will frequently lie at the bottom of a tree on which a squirrel is seated. He fixes his eyes on the animal, and from that moment it cannot escape : it begins a dolful outcry, which is so well known that a passer by, on hearing it, immediately knows that a snake is present. The squirrel runs up the tree a little way, comes down again, then goes up, and afterwards comes still lower. The snake continues at the bottom of the tree, with its eyes fixed on the squirrel, and his attention is so entirely taken up, that a person accidentally approaching may make a considerable noise, without so much as the snake's turning about. The squirrel comes lower, and at last leaps down to the snake, whose mouth is already distended for its reception.

LE VAILLANT confirms this fascinating terror, by a scene he witnessed. He saw on the branch of a tree a species of shrike, trembling as if in convulsions, and at the distance of nearly four feet, on another branch, a large species of snake, that was lying with outstretched neck and fiery eyes, gazing steadily at the poor animal. The agony of the bird was so great that it was deprived of the power of moving away, and when one of the party killed the snake, it was found dead upon the spot ; and that entirely

from fear — for on examination, it appeared not to have received the slightest wound. The same traveler adds, that a short time afterwards, he observed a small mouse in similar agonising convulsions, about two yards from a snake, whose eyes were intently fixed upon it ; and on frightening away the reptile, and taking up the mouse, it expired in his hand.

Terror depends materially on the nervous temperament of the creature, and the greater its excitability, the more powerful its effect. DARWIN mentions a canary bird, which fell into convulsions whenever the drawer of its cage was removed to be cleaned. Horses confined in a stable connected with premises in a blaze of fire, are so overwhelmed with terror that neither force nor encouragement can induce them to face the element and be led into safety. A herd of reindeer surrounded by hunters, or surprised by one individual in a spot where there is an echo, are so alarmed at the report of the fire-arms on every side, that they are unequal to flight, and are all slaughtered with ease.

Among the lower animals the lobster is remarkably affected with fear, its claws dropping off at the sound of thunder or the discharge of a cannon. Innumerable instances may be quoted in support of the paralysing influence of this feeling, the violence of which can be measured by no rule, since we know that in the human race it is sufficient to turn one man's hair white, and to reduce another to a state of idiocy.

But the effect of the human eye on animals, and the terror it produces, is not one of the least extraordinary facts connected with this subject. The ferocity of the Bengal tiger is subdued by it, and the lion is particularly unwilling to encounter man when he crosses him in the full blaze of day. Captain HEAD, in his "Journey across the Pampas," says that, "the fear which all wild animals in America have of man is very singularly seen in the Pampas. I have often rode towards the rheas and zamas, crouching under the opposite side of my horse's neck ; but I always found, that although they would allow any loose horse to approach them, they, even when young, ran from me, though little of my

figure was visible ; and when one saw them all enjoying themselves in such full liberty, it was at first not pleasing to observe that one's appearance was everywhere a signal to them that they should fly from their enemy. Yet it is by this fear that 'man hath dominion over the beasts of the field,' and there is no animal in South America that does not acknowledge this instinctive feeling."

He adds, that a native was out trying to shoot some wild ducks, and in order to approach them unperceived, he put the corner of his poncho over his head, and crawling along the ground upon his hands and knees, the poncho not only covered his body, but trailed along the ground behind him. As he was thus creeping by a large bush of reeds, he heard a loud, sudden noise, between a bark and a roar : he felt something heavy strike his feet, and instantly jumping up, he saw, to his astonishment, a large puma, actually standing on his poncho. The man was unwilling to fire, as his gun was only loaded with small shot : and he therefore remained motionless, the lion standing on his poncho for many seconds : at last the creature turned away its head, and walking very slowly away about ten yards, it stopped and turned again : the man still maintained his ground, upon which the beast tacitly acknowledged his supremacy, and walked off.

A party in India were once saved from a tiger, by a lady opening an umbrella in its face as she saw it about to spring.

The lion of Africa lives in the plains, and is always found where there are large herds of antelopes and quaggas feeding together. To all these animals he is an object of unceasing dread. It is supposed by the agitation which oxen display when a lion is near them, that they can scent him at a considerable distance. Whatever may be his physical strength, which is prodigious, it is evident he could not accomplish his purposes by strength alone. The instinctive fear of the creatures upon which he preys would be constantly called into action, by their keen sight and acute scent ; and as they would remove to some distant part before the destroyer could reach them, he therefore creeps on

them, or, for a short distance, advances rapidly by great bounds. His roar is a sound of terror, and produces an appalling effect. The instant it is heard by the animals reposing in the plains, they start up with alarm, and fly in all directions.

Ferocious animals are, however, themselves susceptible of fear under peculiar, and to them unaccountable, circumstances. Dr. SPARRMAN relates a story of a spotted hyena, to this effect. He says: "One night, at a feast near the Cape, a trumpeter, who had got himself well filled with liquor, was carried out of doors in order to cool and sober him. The scent of him soon attracted an hyena, which threw him on its back, and carried him away, thinking him a corpse, and consequently, a fair prize, towards Table Mountain. In the meantime, however, the drunken musician awaked, sufficiently sensible to know the danger of his situation, and to sound the alarm with his trumpet, which he carried fastened to his side. The beast, as may easily be imagined, was not less frightened in its turn."

Captain BASIL HALL, in his "Fragments of Voyages and Travels," gives the following anecdote of a tiger kept at the British Residency at Calcutta: "But what annoyed him far more than our poking him up with a stick, or tantalising him with shins of beef or legs of mutton, was introducing a mouse into his cage. No fine lady ever exhibited more terror at the sight of a spider, than this magnificent royal tiger betrayed on seeing a mouse. Our mischievous plan was to tie the little animal by a string to the end of a long pole, and thrust it close to the tiger's nose. The moment he saw it, he leaped to the opposite side; and when the mouse was made to run near him, he jammed himself into a corner, and stood trembling and roaring in such an ecstasy of fear, that we were always obliged to desist in pity to the poor brute. Sometimes we insisted on his passing over the spot where the unconscious little mouse ran backwards and forwards. For a long time, however, we could not get him to move; till at length, I believe by the help of a squib, we obliged him to start; but instead of pacing leisurely across his den, or of

making a detour to avoid the object of his alarm, he generally took a kind of flying leap, so high as nearly to bring his back in contact with the roof of his cage."

There are numerous accounts of animals, and even those of the fiercest nature, which have been so overawed by violent convulsions of nature as to lose their natural ferocity, and to become peaceful and quiet, even in the presence of man. We are told that in the inundations which take place in India, the water sometimes sweeps over the land for many miles. On such occasions, serpents, monkeys, leopards, and birds of different kinds, usually hostile to each other, may be seen on a tree that stands above the tide, and all reduced to a state of peace by fear and anxiety.

The human hair appears to be totally without sensibility; nevertheless, the passions have over it such an influence, that the heads of people have turned white the night before execution. The French Revolution, which produced in abundance the extremes of human suffering, furnished many authentic instances of persons that grew hoary in the space of a few days. Grief, as in the memorable history of *MARIE ANTOINETTE*, turned her hair gray in the space of one night; and terror, as in the case of a working man at York, produced the same effect instantaneously. This man was engaged in repairing the roof of a lofty building, when the ladder broke beneath him; he clutched at the gutter, and hung from it by one hand; assistance was rapidly brought, and he was saved before his strength failed him, but when he reached the ground, his hair was perfectly white.

By whatever process this extraordinary change is effected, it is most certain that it is in full force as regards the feathers of birds; for although not instantaneous in its operation, the action has taken place, and the result is shown when the season of moulting arrives. Dr. *YOUNG*, in the "*Edinburgh Geographical Journal*," in speaking of the change of color in the plumage of birds from fear, says: "A blackbird had been surprised in its cage by a cat. When it was relieved, it was found lying on its

back, and quite wet with sweat. The feathers fell off, and were renewed, but the new ones were perfectly white. A gray linnet happened to raise its feathers at a man who was drunk. He instantly tore the creature from its cage, and plucked off all its feathers. The poor animal survived the outrage, and had its feathers replaced, but they were also white."

Astonishment.

This feeling operates slightly, in comparison to the former, on the nervous system and bodily powers. It arises from the appearance of something previously unseen, or whose properties are unknown, and of anything of an unexpected and unusual nature. Few animals, and, indeed, none but the most intelligent, are capable of feeling astonishment. The lower and less endowed are indifferent to everything which does not endanger their safety and rest, or their means of subsistence; for their estimation of things not necessary to their habits, is hardly possible from the limited development of their powers.

It is probably first found in birds. Cranes, in their migrations, have been seen to be attracted by a fire, and to hover round it with loud screams. Among domestic animals, the cow is extremely susceptible of the feeling on any alteration of her accustomed haunts, such as the change in the appearance of a building, or by the insertion of a new door; which latter has been made the subject of a proverb in expressing a matter of astonishment—"Like a cow at a new door." Dogs are astonished at any change in the outward appearance of those they are familiar with, and at any strange object, encompassing it repeatedly, and smelling at it to discover its nature. They cannot recognize their master in the water, but swim round him, astonished at hearing his voice without identifying him. The monkey and cat beholding themselves in a mirror, are astonished at the reflection, and seek in vain for the figure represented. A dog chasing a raven, fled with

astonishment as the bird faced it, and uttered the words it had been taught.

M. SONINI says: "One day, as I was meditating in a garden, I stopped near a hedge. A jackall, hearing no noise, was coming through the hedge towards me; and when he had cleared himself, was just at my feet. On perceiving me, he was seized with such astonishment that he remained motionless for some seconds, without even attempting to escape, his eyes fixed steadily on me. Perplexity was painted in his countenance, with a degree of expression of which I would not have supposed him susceptible, and which denoted great delicacy of instinct. On my part, I was afraid to move, lest I should put an end to this situation, which afforded me much pleasure.

"At length, after he had taken a few steps, first towards one side, and then the other, as if so confused as not to know which way to get off, and keeping his eyes still turned towards me, he retired: not running, but stretching himself out, or rather creeping with a slow step, setting down his feet one after another with singular precaution. He seemed so much afraid of making a noise in his flight, that he held up his large tail almost in a horizontal line, that it might neither drag on the ground nor brush against the plants. On the other side of the hedge, I found the fragments of his meal; it had consisted of a bird of prey, a great part of which he had devoured."

Sympathy for Suffering.

This feeling, so highly characteristic of benevolence, and of kindness of heart in the human race, is most powerfully felt in the animal world. It is less surprising when extended from one to another by those of the same species, but is particularly so when exercised between those of different habits and orders. There must exist a fellow-feeling, a knowledge of the suffering felt, and a desire to alleviate it: faculties so far exceeding the highest degrees of intelligence ordinarily ascribed to the brute

creation, that it must be acknowledged that they are endowed with powers in which instinct takes no share. A wounded crow, left in a field, is soon surrounded by its fellows, seeking to assist it; a swallow entangled in its nest by a bit of thread, was immediately aided by many other swallows, which flew violently against the thread with the view of breaking it.

There is an anecdote told at the Red Lion Inn, Hungerford, of a circumstance which occurred there some years ago. A traveler, coming into the inn-yard with his chaise, ran over and bruised the leg of a Newfoundland dog, and while the injury was being examined, a raven stood by as a concerned spectator; for as soon as the dog was tied up under the manger, the raven not only visited him, but brought him bones, and attended him with particular and repeated marks of kindness. Besides the sympathy in the bird, there was a remarkable instance of recollection and of association of ideas, for the bird had been brought up with another dog, between whom and himself there was a mutual affection. This dog having broken its leg, the raven attended it constantly while it was confined, waiting on it, carrying it provisions, and never scarcely leaving it. On one occasion, when the stable door had been shut, and the raven had been deprived of the company of its friend all night, the hostler found in the morning the door so pecked away, that, had it not been opened, the raven would have made its entrance in another hour. Several other acts of kindness to dogs have been noticed, and particularly to maimed and wounded ones.

When a pig is caught in a gate, or suffers from any domestic operation, all the rest are seen to gather round it, to lend their fruitless assistance, and to sympathize with its sufferings. When the old starved elephant, which Bishop HEBER saw, fell down, another elephant of very large size, and in somewhat better plight, was brought to assist. "I was much struck," says the bishop, "with the almost human expression of surprise, alarm, and perplexity in his countenance, when he approached his fallen companion. They fastened a chain round his neck and the body of the sick

beast, and urged him in all ways, by encouragement and blows, to drag him up, even thrusting spears into his flanks. He pulled stoutly for a minute, but on the first groan his companion gave, he stopped short, turned fiercely round with a loud roar, and with his trunk and fore feet began to attempt to loosen the chain from his neck." The sympathy of the animal for his suffering fellow, was greater than his habitual obedience.

Elephants accommodate themselves to circumstances, in even a more extraordinary manner than such a refusal as this to perform a disagreeable task. The Baron DE LAURISTON states that he was at Lucknow when an epidemic distemper was raging, and when the road to the palace was covered with the sick and the dying. The Nabob came out upon his elephant. His slaves, regardless of their unhappy fellow-creatures, made no attempt to clear the road; but the more charitable beast, without any command, lifted some out of the way with his trunk, and stepped so carefully among the rest, that none were hurt.

Another extraordinary instance of sympathetic intelligence, is recorded upon the authority of an artillery officer who witnessed the transaction: "The battering train going to the siege of Seringapatam, had to cross the sandy bed of a river, that resembled other rivers of the East, which leave, during the summer season, but a small stream of water running through them, though their beds are mostly of considerable breadth, very heavy for draught, and abounding in quicksands. It happened that an artilleryman, who was seated on the tumbril of one of the guns, by some accident fell off, in such a situation that in a minute or two, the hind wheel must have gone over him. The elephant, which was stationed behind the gun, perceiving the predicament in which the man was, instantly, without any warning from its keepers, lifted up the wheel with its trunk, and kept it suspended till the carriage had passed clear of him."

Captain HUGH Crow, in the "Narrative of his Life," relates an interesting tale of the conduct of some monkeys on board his ship. He says: "We had several monkeys on board; they were of

different species and sizes, and amongst them was a beautiful little creature, the body of which was about ten inches or a foot in length, and about the circumference of a common drinking glass. This interesting little animal, which, when I received it from the Governor of the Island of St. Thomas, diverted me by its innocent gambols, became afflicted by the malady which unfortunately prevailed in the ship. It had always been a favorite with the other monkeys, who seemed to regard it as the last-born, and the pet of the family; and they granted it many indulgences which they seldom conceded to one another. It was very tractable and gentle in its temper, and never took advantage of the partiality shown to it. From the moment it was taken ill, their attention and care of it were redoubled; and it was truly affecting and interesting to see with what anxiety and tenderness they tended and nursed the little creature.

“A struggle frequently ensued among them for priority in these offices of affection; and some would steal one thing, and some another, which they would carry to it untasted, however tempting it might be to their own palates. Then they would take it up gently in their fore-paws, hug it to their breasts, and cry over it, as a fond mother would over her suffering child. The little creature seemed sensible of their assiduities, but it was woefully overpowered by sickness. It would sometimes come to me, and look me pitifully in the face, and moan and cry like an infant, as if it besought me to give it relief, and we did everything we could think of to restore it to health; but in spite of the united attentions of its kindred tribes and ourselves, the interesting little creature did not long survive.”

TAVERNIER informs us, that as he was himself traveling in the East Indies, in company with the English President, several large apes were observed upon the trees around them. The President was so much amused that he ordered his carriage to be stopped, and desired TAVERNIER to shoot one of them. The attendants, who were well acquainted with the habits of the animals, begged him to desist, lest those that escaped might do them some injury in

revenge for the death of a companion. Being, however, still requested, he killed a female, which fell among the branches, letting her little ones, that clung to her neck, fall. In an instant all the remaining apes, to the number of sixty or upwards, descended in fury, and, as many as could, leaped upon the President's coach, where they would soon have strangled him had not the blinds been immediately closed, and the number of attendants so great as, though not without difficulty, to drive them off. They, however, continued to run after the servants for at least three miles from the place where their companion was slain.

Dr. PERCIVAL, in his "Dissertations," speaks of the sympathy and sagacity of some rooks: "A large colony of these had subsisted many years in a grove, on the banks of the Irwell, near Manchester. One serene evening I placed myself within the view of it, and marked with attention the various labors, pastimes, and evolutions of this crowded society. The idle members amused themselves with chasing each other through endless mazes; and, in their flight, they made the air sound with an infinitude of discordant noises. In the midst of these playful exertions, it unfortunately happened that one rook, by a sudden turn, struck his beak against the wing of another. The sufferer instantly fell into the river. A general cry of distress ensued. The birds hovered, with every expression of anxiety, over their distressed companion. Animated by their sympathy, and, perhaps, by the language of counsel known to themselves, he sprang into the air, and, by one strong effort, reached the point of a rock which projected into the water. The joy became loud and universal; but, alas! it was soon changed into lamentation; for the poor wounded bird, in attempting to fly towards its nest, dropped into the river and was drowned, amidst the moans of its whole fraternity."

Fellowship of Joy, Compassion.

These two feelings exist only in the higher order of animals; and with them, as with man. the former, as the higher virtue, is

more rare than the latter. Fellowship of joy is entirely of a selfish character, arising from circumstances in which we ourselves are intimately connected, and of this many animals are equally susceptible; but it is principally associated with feelings of gluttony and sportive pleasures, and is only recognisable as a superior potentiality when combined with affection towards the offspring. Thus, animals chase each other in sport, play with and excite each other to gambol, as we see in horses, dogs, and in birds living in communities. But still this fellowship is, in fact, a human virtue, which in its higher attributes is not often to be met with, and hence must not be considered as proper to the animal race.

Compassion is of more ordinary occurrence. It is only necessary to particularize a few instances; for as all fellow-feeling awakens the impulse to assist in, and to administer to, the wants of others, we should have to revert to sympathy for its origin. It is compassion, then, that induces one animal to adopt the young of another, not for its own relief, when its own have been destroyed, as not unfrequently happens, but when it has its own to nourish and protect. And further still, caged birds have been known to feed the helpless nestlings of others introduced to them.

A wounded monkey has been seen to be dragged away by its companions, and elephants caught in pitfalls have been liberated by others. If a chamois doe be killed with a young one at its side, it is affirmed by the Tyrolese hunters that others of the flock adopt it. Terns hover round and are loth to quit one that has been shot; and INGLIS relates that if a pair of old swallows be shot, the young are attended to and reared by others. Some traces of compassion are also to be met with in the insect tribes, particularly among those which live in societies. LATREILLE amputated the antennæ of an ant, and others came immediately and caressed it. Cattle finding another in a ditch, have been seen to express their anxiety in the most marked manner, and it is recorded that by their actions and bellowings they have induced people to come with assistance.

A lady at Chelsea, among other birds which she kept, had a

canary, which was a particular favorite, but the loudness of its note often obliged her to put it outside of the window, among some trees which were trained up in front of the house. One morning during breakfast, when the cage was thus placed, a sparrow was observed to fly round and round it, to stand upon the top, and to twitter to the bird within, between whom and itself a species of reciprocal conversation at length began to ensue. After a few moments he flew away, but returned in a short time, bearing a small worm in its bill, which he dropped into the cage, and again flew away. Similar presents were received day after day by the canary, from its kind friend the sparrow, with whom at length it became so intimate, that it very often received the food, thus brought, into its own bill from that of the sparrow. Some of the neighbors, to try the effect of the sparrow's benevolence, also hung their birds out of their windows, when, singular to relate, they were also fed; but the first and longest visits were always paid by the sparrow to his earliest acquaintance. These attentions were continued daily for several months.

Envy and Cruelty.

Birds have some little leaven of envy in their composition. Vultures drive each other clamorously away from their carrion; when the wood-pecker sees another hammering at a tree, it flies at it and attempts to dislodge it, in order to secure the insect within; the petrels quarrel for their food so furiously and in such numbers, that they often allow themselves to be caught in the blindness of their rage; horses attempt either to drive each other away from the crib, or try to monopolize their neighbor's measure; and dogs abstain from that which is entrusted to them only so long as they are unmolested, for as soon as they find themselves unable to defend their charge from other dogs, they fall to and eat it themselves. They are also envious of attentions and caresses bestowed on other dogs by their master.

A dog was trained by his master to execute several commissions. When he wanted him to go to the tavern, he made certain signs, which the dog understood, and immediately set off to bring home whatever the tavern-keeper put into the basket intended for his master. He went on in this manner for some time without accident; when one evening, as he was returning with some hot pies for his master's supper, two dogs in the neighborhood, attracted by the inviting smell of the pastry, took it into their heads to attack the faithful messenger. The dog instantly dropped the basket, and placing himself before it, flew with determined courage at the first that advanced; but while he was thus engaged in fighting with one, the other dog ran to the basket and began to devour the pies. This was an embarrassing case for the poor animal. After a moment's reflection, seeing that it was impossible to preserve the pies for his master, he determined at least to have them for himself; and accordingly, without any further hesitation, he darted upon them and dispatched all that remained.

As regards cruelty, the only real example of it is found in cats, and in animals of the weasel tribe, which cripple their prey to prevent its escape, and play with it in a living state for a considerable time.

If we consider the instances of attachment, of cunning, fidelity, sagacity, gratitude, &c., ascribed to many of the lower animals, as well as the difference between old and young in point of experience and usefulness, we cannot refer them to instinct; for we find them so numerous and well-authenticated, and each individual action so diversified and adapted to times and circumstances, that if a man is beholden to reason for his power of adaptation, we must also admit that the brutes are likewise possessed of a degree of rationality. As far as we are enabled to judge of the uniformity of instinct, and of the power of the natural senses, these instances of sagacity belong neither to one nor the other; consequently, they must belong to reason, or to that intermediate power which compares and combines, adapting means to ends, and varying these means according to emergencies; for, supposing the highest

order of brutes are conscious of their acts, they can be classed with no other operations of the mind, with which we are acquainted.

Yet it would appear, that all the acts of apparent reasoning in the lower animals have reference to some immediate object of perception, or depend on the faculty of memory, as they seem to be nearly incapable of forming any abstract notions or speculations apart from sensible objects; and the want of articulate language must ever oppose an insurmountable barrier to their progress in acquired knowledge, beyond the merest individual experience. Of simple acts of comparison between a few ideas, we have numberless examples in the brute creation, as well as of their using means to attain their ends.

It is obvious that instinct acts more immediately and determinately on the lower animals, like the appetites in man, for the preservation of the individual, and the multiplication of the species. The lower animals have also their appetites; but these are wisely placed under the government of instinct, while the appetites of man require the control of his higher principles. It is interesting, therefore, to trace the phenomena of the passions and perceptions of the animal world, of which it has been said by the wisest men, that the barrier between instinct and reason is too nice to be apprehended, and, as POPE expresses it, "that these principles are for ever separate, yet for ever near."



MARKET SCENE IN NEW ORLEANS.

NEW ORLEANS.

THIS city is, in several respects, the most remarkable in this country, and indeed in any country. Its chief peculiarity is, that it is situated at the mouth of the largest river in the world, one which at the same time drains the most extensive and fertile vallèy found upon the globe. The result of this position is visible in the *levee*—a wharf running along the northern bank of the Mississippi—three or four miles in length,

and presenting, in its ships and steamboats, and its pyramids of merchandize and produce, the most extraordinary spectacle of the kind in any part of the world.

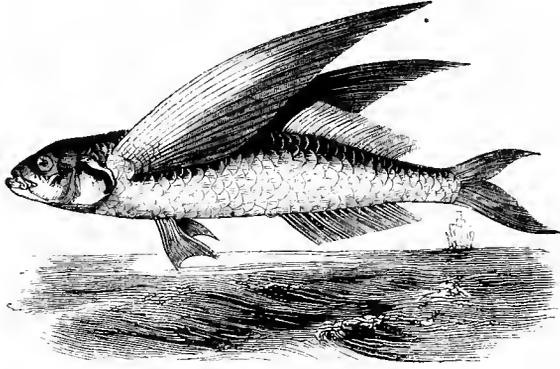
New Orleans is the greatest shipping port on this continent, and perhaps, in either hemisphere; and this fact is impressed on the mind of the beholder, as he strays along the mart we have mentioned, and takes a glance at the acres covered with cotton bales, the innumerable barrels of flour, the countless sacks of corn, the enormous cargoes of whiskey, which line the shore. The forests of masts, streaming with the flags of all the maritime nations of the globe, and the multitude of steamers—huge arks as big as Noah's—arriving and departing, snorting, puffing, fuming, and foaming, serve to complete the conception of the immense commerce which centers at this metropolis of the great Southwest.

Another curious circumstance in this city is, that it embraces in its inhabitants, two distinct races—the old colonial population, and the new Yankee generation, born and bred since Louisiana became a member of the Union. Both of these divisions are greatly diversified. The original population was mainly French, but there was also a Spanish mixture; and these two nations are variously blended with the negroes and Indians belonging to the colony. These constituted the indigenous inhabitants; the exotics are mainly Yankees, but with sprinklings of English, French, Italians, Spanish, Germans, Greeks, Danes, Swedes, Turks, Arabs, and Chinese—of more recent introduction.

New Orleans is divided into two parts, the Old and the New Town: in the former the houses, streets, and thoroughfares look like the suburbs of an old French city; in the latter are to be seen all the bustle, thrift, and movement of an American town. In the centers of trade, the costumes of nearly every prominent nation may be seen; at the common markets there are black, white, red, and gray some speaking French, some Spanish, some English, and some Chinese; and among this motley group, speckled with every shade of complexion, every color of dress, every fashion of

costume, may be seen groups of Indians, men, women and children, dark-eyed, brooding and solemn, as the gypsies of the old world.

Such are a few of the more striking characteristics of the Crescent City.



THE FLYING FISH.

THIS inhabitant of the deep, is in no respect remarkable, except that it occasionally emerges from the water, and is seen sporting through the element supposed to belong to the birds. It is armed with scales, is of a slender form, and measures about twenty inches in length. Its pectoral fins are unusually long, nearly the length of the body.

Nevertheless, this fish does not fly, properly speaking ; it only uses its wings like the flying squirrel, as a parachute ; that is, having attained an elevation by darting upward from the water, it prolongs its journey through the air by spreading out its wings, but which are not beaten like those of a bird. BENNET, in his "Wanderings in New South Wales," says :

"I have never been able to see any percussion of the pectoral fins during flight ; the most usual height to which they attain, is two to three feet, but I have known them to come on board a vessel at a height of fourteen feet or more. They have been well ascertained to come into the channels of a line-of-battle ship, which is considered as high as twenty feet and upward. But it must not be supposed that they have the power of elevating themselves after having left their native element ; for, on watch-

ing them, I have often seen them fall below the point at which they first rose from the water, but never, in any one instance, could I observe them to raise themselves from the height to which they had first sprung."

GRIFFITH says : " Their flight, as it is called, carries them fifteen to eighteen feet out of the water ; but they do not properly fly, they only leap into the air, after a rapid course of swimming. It appears that this fish, which swims in large shoals, is perpetually harassed by the dorados and other voracious inhabitants of the water ; in its endeavors to avoid these, it starts into the air, when it is attacked by the gulls and albatrosses, and thus driven back into the sea. In the fright which an onset makes upon them, sometimes a whole shoal will come flying out of the water, and dozens of them will fall upon the deck of a vessel that chances to be in their way."



THE FLIGHT INTO EGYPT.

THE flight of JOSEPH and MARY, with the infant CHRIST into Egypt, in order to escape the jealous rage of HEROD, the Roman Governor of Judea, is thus related in the second chapter of Matthew :

“ Now when JESUS was born in Bethlehem of Judea, in the days of HEROD the King, behold, there came wise men from the east to Jerusalem, saying, Where is he that is born King of the Jews? for we have seen his star in the east, and have come hither to worship him. When HEROD the King had heard these things, he was troubled, and all Jerusalem with him. And when he had gathered all the chief priests and scribes of the people together,

he demanded of them where CHRIST should be born. And they said unto him, In Bethlehem of Judea : for thus it is written by the prophet : And thou, Bethlehem, in the land of Judah, art not the least among the princes of Judah : for out of thee shall come a Governor, that shall rule my people Israel. Then HEROD, when he had privily called the wise men, inquired of them diligently what time the star appeared. And he sent them to Bethlehem, and said, Go, and search diligently for the young child ; and when ye have found him, bring me word again, that I may come and worship him also. When they had heard the king, they departed ; and lo, the star which they saw in the east, went before them, till it came and stood over where the young child was. When they saw the star, they rejoiced with exceeding great joy.

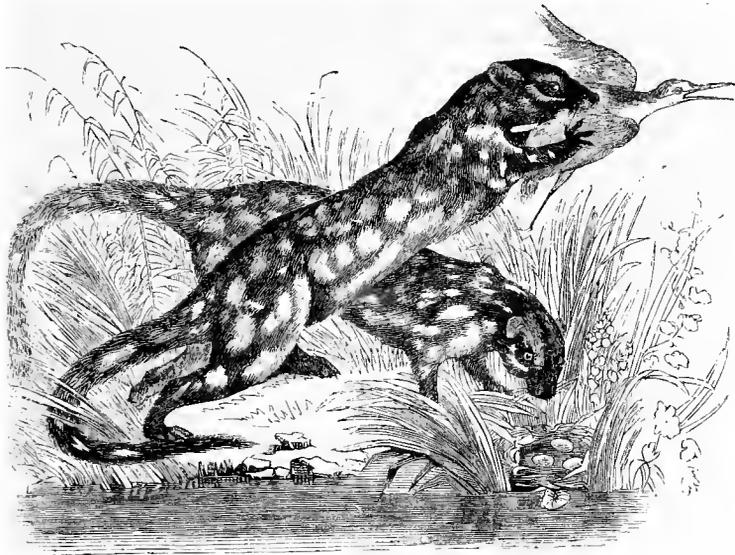
“ And when they were comè into the house, they saw the young child with Mary his mother, and fell down and worshiped him : and when they had opened their treasures, they presented unto him gifts ; gold, and frankincense, and myrrh. And being warned of GOD in a dream that they should not return to HEROD, they departed into their own country another way. And when they were departed, behold, the Angel of the LORD appeareth to JOSEPH in a dream, saying, Arise, and take the young child and his mother, and flee into Egypt, and be thou there until I bring thee word ; for HEROD will seek the young child to destroy him. When he arose, he took the young child and his mother by night, and departed into Egypt : and was there until the death of HEROD ; that it might be fulfilled which was spoken of the LORD by the prophet, saying, Out of Egypt have I called my son.

“ Then HEROD, when he saw that he was mocked of the wise men, was exceeding wroth, and sent forth, and slew all the children that were in Bethlehem, and in all the coasts thereof, from two years old and under, according to the time which he had diligently inquired of the wise men. Then was fulfilled that which was spoken by JEREMY the prophet, saying, In Ramah was there a voice heard, lamentation, and weeping, and great mourn-

ing, RACHEL weeping for her children, and would not be comforted, because they are not.

“ But when HEROD was dead, behold, an Angel of the LORD appeareth in a dream to JOSEPH in Egypt, saying, Arise, and take the young child and his mother; and go into the land of Israel; for they are dead which sought the young child’s life. And he arose, and took the young child and his mother, and came into the land of Israel. But when he heard that ARCELAUS did reign in Judea in the room of his father HEROD, he was afraid to go thither: notwithstanding, being warned of GOD in a dream, he turned aside into the parts of Galilee: and he came and dwelt in a city called Nazareth; that it might be fulfilled which was spoken by the prophets, He shall be called a Nazarene.”

This remarkable passage in the life of our Savior, is thus very briefly told in the sacred volume: but in order to satisfy the eager curiosity of mankind as to the particular events which attended the exiles in their distant journey and long absence, a great number of fictitious accounts were written in the early ages of Christianity, and palmed off upon the world as veritable histories. These are full of miracles and marvels, and being adapted to the superstitious taste of that day, were read with avidity throughout the Christian world. The incidents of these fabulous narratives were seized upon by the artists of the middle ages, as well as at a later period, and made the themes of their sculptures and their paintings. Spain, Italy and Germany—especially in the old Catholic churches—are still full of these representations, executed four or five hundred years ago, as well by the great masters as those of inferior name and fame. Impressed by these pictures, which speak to the soul through the master sense of sight, the popular mind was deeply affected by these scenes; and as the legends on which they were founded were sanctioned by the Church, the fictitious life of CHRIST and the Holy Mother, at last superseded the truth; and so it is to this day with more than half the professors of Christianity in the world.



THE SPOTTED MARTIN.

THE Spotted Martin is a foot and a half in length, and his tail is almost as long as his body; his fur is of a beautiful chestnut color, spotted with white, his tail being marked in the same manner.

This animal belongs to New Holland, and is found near the settlement of Port Jackson. It resembles somewhat the genets and ferrets, and has some of the habits of the common martins. The structure of its feet prevents its climbing trees; but during the night it leaves the holes in the rocks where it has hidden or slept during the day, and sets out in search of the birds, small quadrupeds, and insects, which serve it for food.

As the small animals he seeks for prey are not very numerous in Australia, he is limited to kangaroos, porcupines, ant-eaters, and the duck-billed platypus; and even with a chance at these he frequently makes but a poor supper. In such a case, he descends

upon the sea-coast, and half famished as he is, attacks with voracity the putrid bodies of fish and seals that the waves of the sea have thrown upon the sands, or perchance snatches a wild bird that is brooding along the shore. Sometimes he glides, unperceived, amid the hen-roosts of the colonists, and makes a dainty meal of their chickens and eggs, just like a ferret or weasel. All the martins are very voracious, and this one we are describing does full justice to the traditions of the family in this respect.



THE
FIRST FROST
OF
AUTUMN.*

AT evening it rose in the hollow glade
Where wild flowers blushed 'mid silence and shade ;
Where, hid from the gaze of the garish noon,
They were slyly wooed by the trembling moon.
It rose—for the guardian zephyrs had flown,
And left the valley that night alone.

* The beautiful variety of brilliant colors displayed by our North American forests, on the approach of autumn, has attracted universal attention and excited universal admiration. The cause of the sudden change in the leaves from green to yellow, red, crimson, brown and purple, has been popularly ascribed to the frost, and though this is doubtless erroneous, it serves well enough the purposes of poetry, which seeks only to affect the imagination, and not to build up a system of science.

No sigh was borne from the leafy hill,
No murmur came from the lapsing rill ;
The boughs of the willow in silence wept,
And the aspen leaves in that Sabbath slept.
The valley dreamed, and the fairy lute
Of the whispering reed by the brook was mute.
The slender rush o'er the glassy rill,
As a marble shaft was erect and still,
And no airy sylph on the mirror wave
A dimpling trace of its footstep gave.
The moon shone down, but the shadows deep
Of the pensile flowers were hushèd in sleep.
The pulse was still in that vale of bloom,
And the Spirit rose from its marshy tomb :
It rose o'er the breast of a silver spring,
Where the mist at morn shook its snowy wing,
And robed like the dew, when it wooes the flowers,
It stole away to their secret bowers.

With a lover's sigh, and a zephyr's breath,
It whispered bliss, but its work was death.
It kissed the lip of a rose asleep,
And left it there on its stem to weep :
It froze the drop on a lily's leaf,
And the shivering blossom was bowed in grief.
O'er the gentian it breathed, and the withered flower
Fell blackened and scathed in its lonely bower :
It stooped to the aster, all blooming around,
And kissed the buds as they slept on the ground.
They slept, but no morrow could waken their bloom,
And shrouded by moonlight, they lay in their tomb.

The Frost-spirit went like the lover light,
In search of fresh beauty and bloom that night.
Its wing was plumed by the moon's cold ray,
And noiseless it flew o'er the hills away.

It flew, yet its dallying fingers played,
With a thrilling touch through the maple's shade ;
It toyed with the leaves of the sturdy oak ;
It sighed o'er the aspen, and whispering spoke
To the bending sumach, that stooped to throw
Its chequering shade o'er the brook below.
It kissed the leaves of the beech, and breathed
O'er the arching elm, with its ivy wreathed ;
It climbed to the ash on the mountain's height ;
It flew to the meadow, and hovering light
O'er leafy forest and fragrant dell,
It bound them all in its silvery spell.
Each spreading bough heard the whispered bliss,
And gave its cheek to the gallant's kiss —
Though, giving, the leaves disdainfully shook,
As if refusing the boon they took.

Who dreamed that the morning's light would speak,
And show that kiss on the blushing cheek ? —
For in silence the fairy work went through,
And no crowing owl of the scandal knew ;
No watch-dog broke from his slumbers light,
To tell the tale to the listening night.
But that which in secret is darkly done,
Is oft displayed by the morrow's sun ;
And thus the leaves in the light revealed,
With their glowing hues, what the night concealed.
The sweet, frail flowers, that once welcomed the morn,
Now drooped in their bowers, all shriveled and lorn ;
While the hardier trees shook their leaves in the blast,
Though tell-tale colors were over them cast.
The maple blushed deep as a maiden's cheek,
And the oak confessed what it would not speak.
The beech stood mute, but a purple hue
O'er its glossy robe was a witness true.

The elm and the ivy, with varying dyes,
Protesting their innocence, looked to the skies ;
And the sumach rouged deeper, as stooping to look,
It glanced at the colors that flared in the brook.
The delicate aspen grew nervous and pale,
As the tittering forest seemed full of the tale ;
And the lofty ash, though it tossed up its bough
With a puritan air, on the mountain's brow,
Bore a purple tinge o'er its leafy fold,
And the hidden revel was gayly told!



THE PECCARY.

THE Peccaries belong to the hog family, and are found in South America and Mexico. They are of two kinds, the collared and the white-lipped. The former has been domesticated, but is in flesh and fertility, much inferior to our swine.

Of the white-lipped species, we have some curious accounts. They are wild, and congregate in numerous bands, sometimes amounting, it is said, to more than a thousand individuals of all ages. Thus united, they frequently traverse extensive districts, the whole troop occupying an extent of a league in length, and directed in their march, if the accounts of the natives are to be credited, by a leader, who takes his station at the head of the foremost rank. Should they be impeded in their progress by a river, the chief stops for a moment, and then plunges boldly into the stream, followed by all the rest of the troop. The breadth of the river, or the rapidity of the current, appear to be but trifling obstacles in their way, and are overcome with the greatest facility.

On reaching the opposite bank, they proceed directly on their course, and continue their march even through the plantations, which, unfortunately for their owners, may happen to lie in their way, and which they sometimes completely devastate by rooting in the ground for their favorite food, or devouring such fruit as they find there. If they meet with anything unusual in their way, they make a terrific clattering with their teeth, and stop and examine the object of their alarm. When they have ascertained that there is no danger, they continue their route without further delay; but if a huntsman should venture to attack them when they are thus assembled in large numbers, he is sure to be surrounded by multitudes, and torn to pieces by their tusks, if he is so unwise as to neglect his only chance of escape, which consists in climbing a tree, and thus getting fairly out of their reach. The smaller bands are by no means equally courageous, and always take to flight at the first attack.

In Guyana, SONNINI, as he tells us in his narrative, was surrounded by a band of peccaries, exasperated at the havoc made among them by the muskets of himself and his companions. Betaking himself to a tree, he beheld at his case how they encouraged, by their grunts and by rubbing their snouts together, those which were wounded from the shots, still maintaining their ground, with bristles erect and eyes fiery with rage. They sometimes stood an incessant fusillade of two or three hours before they quitted the battle-field and left their dead to the conquerors.

After such encounters as these, which sometimes take place, comes the festival of the successful and victorious hunters. A great gridiron, so to speak, of sticks fixed in the ground, and some three feet in height, with numerous small branches laid on them in a transverse direction, is got ready. On this sylvan cooking apparatus, the slices of peccary pork are broiled over a slow fire, kept up during the night. SONNINI, in the account of his travels, dwells enthusiastically on these forest feasts, to which he looks back with regret.



THE TOP OF MOUNT HOR, AS SEEN FROM THE CLIFFS OF PETRA.

MOUNT HOR.

THIS mountain is situated on the confines of the ancient Idumea, and is a part of the mountain tract that bears the name of Scir, in the Scriptures. It rises amid a wilderness of lofty peaks, presenting from its summit, an unrivaled view, embracing the rocky eminences which enclose Petra, at the south-east, the valley of El Ghor, through which the Jordan flows, and the Dead Sea, into which it empties, at the north, with the country around ; all of which are consecrated by associations with Bible history.

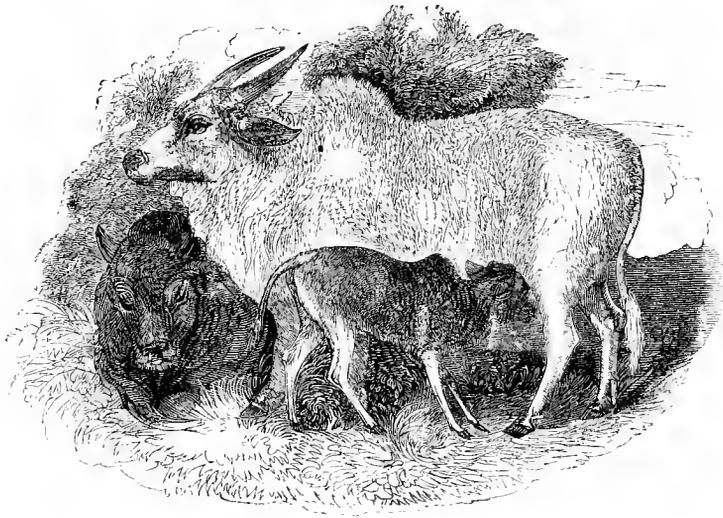
Among the hills in the approach to Petra, Mount Hor, swelling far above the rest, presents a sublime appearance ; and the interest with which we regard it is heightened by the remarkable events which occurred there, as related in the Bible. After the Israelites had wandered nearly forty years in the wilderness, they approached the borders of the land of Canaan. At this point, the sacred narrative, (Numbers, chapter xx), proceeds thus :

“ And MOSES sent messengers from Kadesh unto the king of Edom, Thus saith thy brother Israel, Thou knowest all the travail that hath befallen us : how our fathers went down into Egypt, and we have dwelt in Egypt a long time ; and the Egyptians vexed us and our fathers : and when we cried unto the LORD, he heard our voice, and sent an angel, and hath brought us forth out of Egypt : and behold, we are in Kadesh, a city in the uttermost of thy border. Let us pass, I pray thee, through thy country : we will not pass through the fields, or through the vineyards, neither will we drink of the water of the wells : we will go by the king’s high way, we will not turn to the right hand nor to the left, until we have passed thy borders. And Edom said unto him, Thou shalt not pass by me, lest I come out against thee with the sword. And the children of Israel said unto him, We will go by the high way : and if I and my cattle drink of thy water, then I will pay for it : I will only, without doing any thing else, go through on my feet. And he said, Thou shalt not go through. And Edom came out against him with much people, and with a strong hand.

“ Thus Edom refused to give Israel passage through his border : wherefore Israel turned away from him. And the children of Israel, even the whole congregation, journeyed from Kadesh, and came unto Mount Hor. And the LORD spake unto MOSES and AARON in Mount Hor, by the coast of the land of Edom, saying, AARON shall be gathered unto his people : for he shall not enter into the land which I have given unto the children of Israel, because ye rebelled against my word at the water of Meribah. Take AARON and ELEAZAR his son, and bring them up unto Mount Hor : and strip AARON of his garments, and put them upon ELEAZAR his son : and AARON shall be gathered unto his people, and shall die there. And MOSES did as the LORD commanded : and they went up into Mount Hor in the sight of all the congregation. And MOSES stripped AARON of his garments, and put them upon ELEAZAR his son ; and AARON died there in the the mount : and MOSES and ELEAZAR came down from the top of the mount. And when all the congregation saw that AARON was

dead, they mourned for AARON thirty days, even all the house of Israel."

It is not surprising that an event so striking should have marked this mountain as one of peculiar interest, in all future time. The very spot where the great patriarch is supposed to have been buried, is pointed out, and still bears the name of AARON'S Tomb. Over this, there is a building, erected many centuries ago, consisting of a cupola resembling a Mahometan saint's sepulchre. The iron railing, which formerly protected the vault from the unhallowed touch, is now broken down, and all may approach it. The visitors, however, are obliged to descend into the sepulchre with naked feet, although the place is supposed to abound in vipers and scorpions. The ascent of the mountain is steep and difficult; and though flights of steps and stairs, in some places, relieve the ascent, still, as the tomb stands on the brow of the mountain, the visitor is often obliged to climb on his hands and knees. The place is held in veneration by both Mahometans and Christians. and hence many pilgrims visit it.



THE ZEBU.

THE ox family consists of a variety of species, including not only the diversified domestic breeds, of various countries, but the wild bull of Poland, several kinds of wild buffalo in Africa and Asia, the yak, or grunting ox of India, the musk ox, of the polar regions of North America, and the bison of our western prairies. Formerly, these were all regarded as varieties only of the same species, but this opinion is now abandoned.

Among these several races, the Zebu or Indian Ox, is an object of peculiar interest. It varies in size and formation, more even than other domestic cattle; but in general, it is almost as large as our common kinds, has short retreating horns, with a fatty lump on the shoulder, and a dewlap nearly sweeping the ground. The limbs are light and delicate, and it appears to be a good traveler. It is used under the saddle, and in former times, when

it was bred and trained with care, it performed journeys of fifty or sixty miles in a day.

Among the Hindoos, some of the zebus seem to lead a charmed life, it being a sin to slaughter them, though the people often work them. There are particular bulls which are regarded with veneration and honor, wander about at their ease, taking their pleasure and their food when and where they list. Of the "Sacred Bulls of Benares," the holy city of the Hindoos, BAYARD TAYLOR gives us the following account :

"The narrow streets of this city are obstructed, in the vicinity of the temple, with numbers of the sacred bulls. The place swarms with these animals; which are as great a nuisance to it as the mendicant friars are to Rome. They are knowing bulls, perfectly conscious of their sacred character, and presume upon it to commit all sorts of depredations. They are the terror of the dealers in fruits and vegetables, for, although not always exempted from blows, no one can stand before their horns, and these they do not scruple to use, if necessary to secure their end.

"Sometimes, on their foraging expeditions, they boldly enter the houses, march up stairs, and take a stroll on the flat roofs, where they may be seen looking down with a quiet interest on the passing crowds below. From these eminences they take a survey of the surrounding country, calculate its resources, and having selected one of the richest spots within their circle of vision, descend straightway, and set off in a bee-line for the place, which they never fail to find.

"When the fields look promising on the other side of the Ganges, they march down to the river banks, and prevent any passengers from going on board the ferry-boats until they are permitted to enter. They cross, and remain there until the supplies are exhausted, when they force a passage back in the same manner. The gardens of the English residents frequently suffer from their depredations, and the only effectual way of guarding against them is to yoke them at once, and keep them at hard labor

for a day or two, which so utterly disgusts them with the place, that they never return to it. It is also affirmed that they carefully avoid the neighborhood of those butchers who supply the tables of the English, having observed that some of their brethren disappeared in a miraculous manner, after frequenting such localities."

GOOD NIGHT.

THE sun has sunk behind the hills,
The shadows o'er the landscape creep :
A drowsy sound the woodland fills,
And nature folds her arms to sleep :
Good night—good night.

The chattering jay has ceased his din—
The noisy robin sings no more—
The crow his mountain haunt within,
Dreams 'mid the forest's surly roar :
Good night—good night.

The sunlit cloud floats dim and pale ;
The dew is falling soft and still ;
The mist hangs trembling o'er the vale,
And silence broods o'er yonder mill :
Good night—good night.

The rose, so ruddy in the light,
Bends on its stem all rayless now,
And by its side the lily white
A sister shadow, seems to bow :
Good night—good night.

The bat may wheel on silent wing—
The fox his guilty vigils keep—
The boding owl his dirges sing ;
But love and innocence will sleep ;
Good night—good night!





MOUNT SINAI.

THE Mount Sinai of the Scriptures, is generally supposed to be identical with the mountain called by the Arabs *Djibbel Mousa*, or Mountain of MOSES, or simply *El Tor*—the Mountain—in the peninsula between the two Gulfs of Suez and Akaba, in about latitude $28^{\circ} 25'$ north, longitude $34^{\circ} 10'$ east, and two hundred and sixty miles south-east of Cairo. The group of mountains to which Sinai belongs, and which also includes Mount Horeb, Mount St. CATHERINE, and other remarkable summits, is surrounded on all sides by deserts, occupied only by tribes of Bedouins, or wandering Arabs. These mountains are penetrated by deep chasms, edged by bare perpendicular ledges of rocks, and the whole has a singularly wild and sterile appearance.

The convent of St. CATHERINE, founded by the emperor JUSTIN-

IAN, is built on the site where a small church had been erected by the Empress HELENA, and where, according to tradition, GOD appeared to MOSES in the burning bush, saying "Put off thy shoes from off thy feet, for the place where thou standest is holy ground." It occupies a valley on the slope of the mountain, and is the halting place whence pilgrims set out to ascend to the summit. Being exposed to the attacks of the Arabs, it looks more like a fortress than a convent. It is an irregular, quadrangular edifice, surrounded by high and solid walls, and covers a considerable extent of ground. To prevent being surprised by their troublesome neighbors, the occupants have caused the entrance gate to be built up, and it is very rarely opened. On ordinary occasions, all access to the convent is by an entrance about thirty feet from the ground, to which travelers, provisions, &c., are raised in a basket made fast to a rope, pulled up by a windlass.

The interior of the convent presents little that is remarkable, all the apartments and chapels being constructed of rough stone, without symmetry or order, and communicating with each other by crooked and dark passages, the whole bearing the appearance of a small town. The well, furnishing an inexhaustible supply of pure water, is shown by the brethren of the convent, as that of JETHRO, the father-in-law of MOSES, to which the great lawgiver led his flocks, while he was yet living in obscurity, in the land of Midian.

The Church of the Transfiguration alone possesses any pretensions to magnificence. It is eighty feet in length, and fifty-three in breadth, paved with marble, and adorned with a variety of figures. The event to which it relates, is represented in mosaic. But the grand treasure of this church, and that which is supposed by zealous Catholics to confer on it peculiar sanctity and importance, is the possession of the relics of St. CATHERINE, which—according to tradition—were carried by angels to the neighboring mountain, which still bears her name, these being subsequently collected and deposited in a marble sarcophagus in this building! The skeleton of a hand, covered with rings and jewels, is the only portion of the remains of the person of the saint, that is exhibited to her faithful

votaries. Mount Sinai is almost as prominent in the sacred history of the Mohammedans as of the Jews ; and it is a curious fact, that there is a Mohammedan mosque within the precincts of the convent we have described. Attached to the latter is an excellent garden, which, being at a little distance, is reached by a subterraneous passage secured by iron gates. It produces fruits, plants, and vegetables, in the greatest profusion. The climate is temperate, in consequence of the elevation, and snow even falls in winter.

The ascent to the mountains, which lies through a ravine to the south-west, commences close to the convent. It is steep, but the labor of ascending has been greatly facilitated by rude steps, cut in the rock. At the height of about five hundred feet from the convent, is a spring of fresh and cold water, covered by a rock, which protects it from the sun and rain. After ascending a little higher, the traveler gains the summit of Mount Horeb, which forms a kind of breast, from which Sinai rises. "Continuing our route from this halting place," says LABORDE, "by a path still more rugged and steep than before, we arrived in about forty-five minutes at the summit of Sinai, the apex of a peak not more than fifty yards across at its widest part." The height of Mount Sinai has been variously estimated ; but it is probably about 9, 000 feet above the level of the sea, and above 2,500 feet above the convent of St. Catherine.

On the summit of the mountain is a dilapidated church, which tradition represents as founded on the spot where, amid thunder and lightning, and the smoke of the agitated rocks, MOSES received the Decalogue from the hands of THE ALMIGHTY : (Exodus, chapter xx). Truth, however, is seldom unaccompanied by error, and but a few yards distant from the church are the ruins of a mosque ; this mountain, by a singular coincidence, being hallowed alike in the estimation of Jews, Christians, and Mohammedans.

"It seems," says SIR FREDERICK HENNIKER, "to a person on the summit of Sinai, as if the whole of Arabia Petræa had once been an ocean of lava, and that while its waves were literally running

mountains high, it had suddenly been commanded to stand still." Mount Sinai itself, Mount St. CATHERINE, which is still higher, and the adjacent mountains, rise in sharp, conical, granite peaks, and from their steep and shattered sides, huge masses have been thrown down. The prospect from the summit of Sinai is most extensive; the Gulf of Akaba on one hand, and that of Suez on the other, with Mount Agrib on the Egyptian coast, are distinctly visible. Barrenness and desolation are, however, its grand characteristics. "No villages and castles, as in Europe, animate the picture; no forests, lakes, or falls of water, break the silence and monotony of the scene. All has the appearance of a vast and desolate wilderness, either gray, darkly brown, or wholly black." But it is the associations connected with the mountain, and the recollection of the astonishing events, of which it is believed to have been the theater, that inspire those feelings of awe and veneration felt by all who have either beheld or ascended Mount Sinai.

Considerable doubts have, however, been entertained, whether the mountain now described, be really the Mount Sinai of the Pentateuch. It might be expected that the summit of the mountain should exhibit some traces of the stupendous phenomena that are said to have accompanied the manifestations of the Divine presence. But, according to BURCKHARDT, neither Sinai, nor any of the adjoining summits, present any traces of volcanic action. It is supposed by some that the *Djibbel Katerin*, or Mount St. CATHERINE, has the best title to be regarded as the true Sinai.

There are really, however, no means by which to arrive at any satisfactory conclusions on the subject. All that can with confidence be stated—for monkish legends and traditions go for nothing—is, that Mount Sinai must be somewhere in this vicinity; and, that although the hypothesis that the *Djibbel Mousa* and the Sinai of the Bible are identical, be not free from difficulties, it is as much so, perhaps, as any other that has been advanced in its stead.

The "Rock of Moses," of which a sketch is given at the head of this article, lies in a valley of Mount Horeb, and parallel to

that in which the convent of Saint Catherine is situated. It is fifteen feet long, ten wide, and twelve high. This huge mass of stone is believed by the pilgrims, and also by the Arabs, to be the actual rock smitten by MOSES, Exodus xvii, 5, 6 :

“ And the LORD said unto MOSES, Go on before the people, and take with thee of the elders of Israel ; and thy rod, wherewith thou smotest the river, take in thine hand and go. Behold, I will stand before thee on the rock in Horeb ; and thou shalt smite the rock, and there shall come water out of it, that the people may drink. And MOSES did so in the sight of the elders of Israel. And he called the name of the place Massah, and Meribah, because of the chidings of the children of Israel, and because they tempted the LORD, saying, Is the LORD among us, or not ? ”

The reverence for this traditional relic, is said to be scarcely less among the rude Bedouins than among the Christians.

SUBJUGATION AND DOMESTICATION OF ANIMALS.

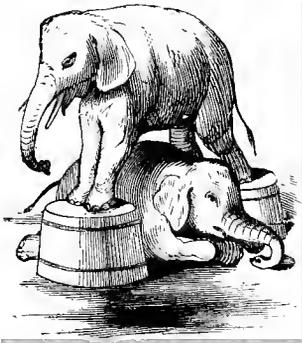
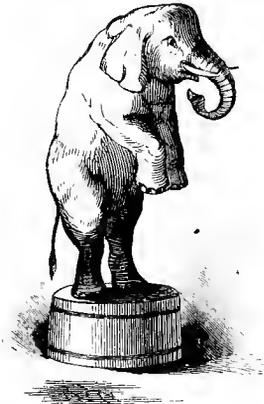
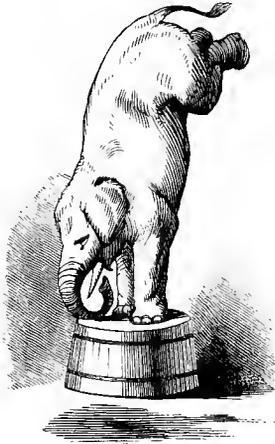
IMPULSE is the exciting power in animals, and this they seek to gratify in defiance of every obstacle ; but they, nevertheless, often yield to circumstances directly at variance with this impulse, particularly if they are sagacious enough to perceive that these tend to avert some immediate evil, or to procure some more remote benefit.



An elephant that had received a flesh wound from a ball in one of the wars of India, after being conducted two or three times to the hospital, where he extended himself to be treated, used afterwards to go alone. The surgeon did whatever he thought necessary, applying even sometimes fire to the wound ; and though the pain made the animal utter the most plaintive groans, he never expressed any other token than that of gratitude to this person, who, by momentary tor-

ments endeavored, and in the end effected, his cure.

A remarkable instance of the training of elephants, was exhibited in New York, at the Broadway Theater, in the winter of 1856-7. These animals took part in a dramatic piece called the "Usurper of Siam," during which they performed the most extraordinary feats, such as standing upon a tub, upon their fore



legs, their heels in the air ; and then reversing this process, by standing upon their hind legs, having the attitude of a fat, decrepid old man. One of them would lie down between two tubs, and the other would stand over him upon them. In another case, in order to extricate the hero of the story from imprisonment, one of the elephants lay down, the other put his fore feet upon him, and, thus mounted, stretched out his trunk to the window of the prisoner. By this means the latter was able to descend along the head, neck, and back of the elephant, to the ground. These astonishing results were obtained by a long series of training, in which these animals were subjected to alternate coaxing and threats, rewards and punishments.

Thus animals are made to subject their passions and powers not only to the disposition but to the will of man, and thereby contribute to his pleasure and profit. But it is to be observed that there would be no possibility of subjugating them, were there not a strong principle of submission implanted in them. To take advantage of this, man must be acquainted with their several properties and characters, and must himself have attained to a certain degree of civilization. The savage

racés which support themselves on fruits and roots, as well as those which subsist on fish, have consequently no domestic animals; while the hunter has his dog for his companion, and the shepherd and the husbandman are surrounded by their flocks and herds.

In earlier years, it was generally believed that herbivorous animals possessed a more gentle and docile character than the carnivores. The gazelle was the picture of gentleness and beauty, and the hind and other animals, with their swift and graceful gait, and large beaming eyes, were the emblems of timidity and softness; while deadly cruelty and violence were ascribed to the tiger, the wolf, and the hyena. But, by the acute and persevering observations of CUVIER, the character of these animals has been placed in a clearer light, and the long adopted opinion has not only been discarded, but reversed. The full-grown males of the ruminants are wild and ungovernable, and are not to be moved to gentleness and gratitude by the kindest treatment; for even if they recognise their attendant, they show no attachment to him, and if he be not always on his guard with them, and they are not restrained by fear, they are ever ready to inflict some injury on him.

“Repeatedly,” says CUVIER, “an herbivorous animal, notwithstanding its apparent gentleness, breaks out into a fit of frightful rage; while the carnivorous beast, true to its character, never deceives by any outward semblance. When he contemplates mischief, he proclaims it by his manner and actions; and when he is disposed to gentleness, he proves it in the same manner.” The carnivorous animals attach themselves to their keepers, and are thankful for their kind offices; and even the hyena, the blood-thirsty monster, as he has been described by all naturalists since the days of BUFFON, crouches, when gently treated, like a dog at the feet of its master, allows itself to be caressed and fed by him, and shows the greatest attachment and obedience.

The cause is obvious, and consists in the fact that ruminants generally have very limited powers of intelligence; while the carnivores possess them in a high and refined degree, and display

them in a favorable rather than in a noxious light. Animals, therefore, which stand at zero in the scale of intelligence, are not to be tamed ; and it is only where the glimmerings of intelligence are visible, that we begin to find the task of taming possible.

The first authenticated instances among these lower animals, are to be found in the family of the spiders. PELISSON tamed a spider in his prison ; and the daughter of the COUNT OF BEARN kept one imprisoned in a little bottle, and fed it with flies, till at last it took them from between her fingers. Ascending to a higher grade, we find that fish can be tamed. A multitude of sea-fish are kept in the ponds at Port Nessok, which have become so tame that they come open-mouthed in crowds to the banks when any person approaches. Their sense of hearing is so acute, that they recognize the steps of their keeper ; the pond seems alive, and the whole population, swarming into activity, crowds simultaneously to one spot, scuffling over one another, each one trying to reach the surface, and pressing on as if they would devour the keeper, in their impatience to receive their accustomed food at his hands. Some fish are so tame that they feed boldly from the hand ; and we are told of one great codfish, the patriarch of the pond, which would heave itself out of the water, and, laying its head on a stone, permit itself to be patted, while it snapped at its food.

Reptiles are capable of being tamed also. A green tree frog has been so tamed as to allow itself to be carried about the room on the finger to catch flies, and to return to its post after having made its spring. In the Rio San Domingo, on the western coast of Africa, M. BRUE was astonished to find the crocodiles, usually considered such ferocious animals, perfectly harmless, insomuch that the children played with them, mounted on their backs, and even beat them, without danger, or any appearance of resentment. This gentleness of disposition, he says, proceeded from their having been always kept well fed, and from the attention paid to them by the natives ; for in all other parts of Africa they attack indiscriminately men and animals.

The alligator, when caught young, may, in some measure, be domesticated. Dr. BRICKELL saw one in a large pond before a planter's house. It remained nearly half a year, during which time it was regularly fed with the entrails of fowls and raw meat. It frequently came into the house, where it would remain for a short time, and then return again to its shelter in the pond. It was supposed at last to have stolen away to a creek near the plantation, for it was one day missing, and from that time was never seen. Mr. WHITE, in his "Natural History of Selbourne," in speaking of an old tortoise, called Timothy, says that it distinguished those persons from whom it was accustomed to receive attention; and whenever its mistress, who had waited on it for more than thirty years, came in sight, it hobbled, with awkward alacrity, towards her, whilst to strangers it was altogether inattentive.

Mr. ST. JOHN once saw a tamed rattle-snake, as gentle as it is possible to conceive a reptile to be. It went to the water and swam whenever it pleased; and when the boys to whom it belonged called it back, their summons was readily obeyed. It had been deprived of its fangs. They often stroked it with a soft brush, and this friction seemed to cause the most pleasing sensations, for it would turn on its back to enjoy it, as a cat does before the fire.

The common snake is easily tamed, and may be made to distinguish those who caress and feed it. Mr. BELL had one which knew him from all other persons; and when let out of his box would immediately come to him, and crawl under the sleeve of his coat, where he was fond of lying perfectly still, enjoying the warmth. It was accustomed to come to his hand for a draught of milk every morning at breakfast, which it always did of its own accord; but it would fly from strangers, and hiss if they meddled with it. Another person, it is stated, kept one in the same manner for a considerable time, and allowed it to nestle in his breast. A man of the name of WILKINSON, in New South Wales, used to carry snakes about with him in his naked breast, and in his hat, and suffer them to nestle in his bed.

That degree of moral ductility and capacity of education which taming exhibits, seems to be a general quality of the animal kind, as the fiercest have been subject to it. Even the tiger, which may be considered as the fiercest of the fierce, has exhibited this improvability. So has the savage and voracious hyena, and the leopard likewise. The wolf has also shown that it possesses what may be termed affectionate qualities. The baboons become vigilant guardians of their protector's property.

THOMPSON, to whom we are indebted for most of the observations on the qualities of animals in this volume, says, "These facts prove that there is nothing in the nature of the wildest animals to make their future gentleness and sociability either impossible or improbable. We see by the dog and cat that the carnivores may be mild and friendly; as we find those which feed on grass may be wild. Even the devourers and their prey may, by kind and judicious management, be trained to live peaceably and harmlessly together. Nothing appears more effectual to produce this pleasing melioration than patient and persevering, kind and gentle treatment. They are now wild and savage, from the appointed circumstances amid which they are at present ordained to live; and when this state of the universe shall be altered, their moral transformation will become a natural appendage to the great social and intellectual revolution which the Hebrew prophets attach to the ulterior ages."

The jackal, when taken young, acquires the same affectionate disposition as the dog. The lion has been repeatedly tamed, and so has the fox. RUBENS had a tame lion four weeks in his room to paint from. The late Mr. KEAN kept a tame puma at large in his house. PENNANT saw an hyena as tame as a dog. The ounce is tamed to hunt, and becomes as tractable as a pointer. The large tiger-cat is easily tamed. The mountain lynx has mild and gentle manners. The Egyptian ichneumon may be softened so as to be kept in a house like a cat. The otter may be taught to catch fish for its master. The ferret is domesticated, and employed to catch rabbits. The weasel may be trained to follow a person

anywhere. We see the bear repeatedly in our streets. The badger may be also made docile if caught young. The raccoon is easily tamed, and sportive, but unlucky and inquisitive, like a monkey. The rhinoceros and hippopotamus may be tamed in some degree.

The tiger, if taken young, may be domesticated ; one, six weeks old, was taken on board the *Pitt*, East Indiaman, many years ago, and arrived in England before it had quite completed its first year. It was as playful as a kitten, and frequently slept with the sailors in their hammocks ; it would run out on the bowsprit, climb about the ship like a cat, and play with a dog there. Deposited in the Tower of London, it continued thus to be perfectly good-natured, and was never guilty of any savage tricks. It permitted a puppy terrier and a mastiff to be successively its inmates, and recognised with delight the ship's carpenter, who came to see him two years after they had been separated—licking his hands, and fawning on him like a cat.

The Faquirs of Hindostan frequently go about with tame tigers. Bishop HEBER mentions that Mr. TRAIL, in India, had a hyena for several years which followed him like a dog, and fawned on his acquaintance. Mrs. BOWDITCH, widow of the Ashantee traveler, had a tame leopard, of which a long and most interesting account is to be found in LONDON'S "Magazine of Natural History." GESNER mentions that FRANCIS I kept one, which he used for hunting. It was carried before him by an attendant on a horse. Mr. BARROW procured a young one in Africa, which became instantly tame, and as playful as a kitten.

CUVIER describes a young wolf that was brought up like a young dog ; it became familiar with every person whom he was in the habit of seeing, followed his master everywhere, was obedient to his voice, and differed in nothing from the tamest dog. Its owner gave him to the Royal Menagerie at Paris, and was affectionately recognised by it eighteen months afterwards. When, after another absence of three years, he went to it, though it was dark, it knew him by his voice ; placed its fore-paws on

his shoulders and licked his face, and became ill and pined because he went away.

KOLBEN states that the baboons at the Cape, if brought up while young with milk, become as watchful over their master's things as a house dog. LE VAILLAIN declares of the one he had, that it was more watchful than any of his dogs, and frequently warned him of the approach of predatory animals, when the dogs seemed unconscious that they were near. FATHER CARLI, in his History of Angola, mentions that he had taught monkeys to attend him, and to guard him, while sleeping, against thieves and rats, and to fetch water.

In 1827, M. PELLETAU, Director of the African Company at Senegal, trained a lion caught in the forest there, to be very tractable, and to live in amity with the other animals which his master kept. He slept in the same place with sheep, dogs, cats, monkeys, geese, and ducks. When he was eight months old, a terrier brought forth two puppies in his bed, which excited a great interest in him, and he caressed them as if he was their parent.

At New Hargard, in Germany, the landlord of an inn placed on the floor a large dish of soup, and then gave a loud whistle; immediately a mastiff, an Angora cat, an old raven, and a large rat with a bell around its neck, entered the room, and fed out of the dish together. JOHN AUSTIN, who exhibited his domestic menagerie in the streets of London, some years since, occupied himself for a long time in training creatures of opposite natures to live together in contentment and affection. Cats, rats, mice, hawks, rabbits, Guinea-pigs, owls, pigeons, starlings, and sparrows, all live in harmony together. He effected this amity by keeping them all well fed, and by accustoming them to each other at a very early period of their lives.

As regards the power of subduing the animal mind by human ingenuity, the Reverend H. TOWNSEND mentions a man in Ireland, who would make any horse, however vicious or unruly, become, in half an hour, gentle and tractable, and permanently so. When sent for, he ordered the stable door to be shut, and not to be

opened until he gave the signal. After being alone with the horse for half an hour, during which little or no bustle was heard, he ordered the door to be unclosed. The refractory horse then appeared lying down, and the man by his side, playing with him as familiarly as a child with a puppy. He was tried again with a trooper's horse, that would not stand to be shod, and completely succeeded. Mr. TOWNSEND adds, that the animal appeared to be terrified whenever SULLIVAN either spoke or looked at him.

The application of the various means in use for taming animals must depend greatly on the character and disposition of the individual animal to be tamed ; for where kindness and gentleness are necessary with the timid, firmness and correction are essential to the bold and surly. COWPER, in describing his three hares, says, that each had a character of its own : Puss was tamed by gentle usage ; Tiney was not to be tamed at all ; and Bess had a courage and confidence that made him tame from the beginning. The science both of horse and dog-breaking rests entirely on this rule, for till the breaker thoroughly understands the character of the animal he has in hand, his task can be attended with no good result, and the misapplication of his powers, through misconception of character, may end in rendering his charge perfectly unserviceable and worthless.

Hunger, fear, dread, and the deprivation of sleep are, under certain circumstances, the most powerful auxiliaries in subduing and taming animals. Exhausted nature or servile submission produce a policy, which it is the duty of art to improve. As soon as confidence is established, and the feeling of dependence implanted, and custom and good treatment have made the society of man necessary to an animal, perfect dominion has been obtained, and the animals submit to compulsion and even to punishment without resistance ; their proper inclinations are in fact paralysed. But till brutal violence, or age and decayed powers, have subdued and broken the animal's spirit, some care and forbearance are necessary to keep the latent passions within bounds. The unruly

horse and goaded bull, lashed into a rage, and perhaps madness, by cruelty, or undue severity, give fearful proofs of their defiance of the authority, whose word before was law.

Domestication is the result of the acquired or natural tameness of social animals ; and, according to CUVIER, none but such animals as live in societies in their natural state, can be domesticated ; for, as he says, " if all animals resembled the lion, the fox, or the hyena, which seek solitude, and even avoid their congeners, we should have no domestic animals. We might, perhaps, by perseverance, create races from among them, which, like the cat, would accustom themselves to man and his dwellings ;" but if the cat accustoms itself to human intercourse, it is not properly a domestic animal, a member of the household ; it receives kindnesses, but is neither submissive, docile, nor serviceable, like true domestic animals. A high range of mental powers, a ready submission to the will of man, a gentleness of character, fear of punishment, and gratitude for benefits, are capable of taming an animal, but are not sufficient to domesticate it, as the disposition thereto requires not only a strong social impulse, but the possession of certain inclinations. All social animals are not capable of being domesticated, as monkeys, which are both social and intelligent ; but whose excitable and restless characters prevent them from being entirely subservient.

All the animals that we have succeeded in domesticating, compose societies of greater or lesser magnitude, in a state of nature.

When, by means of benefits, we have succeeded in gaining the attachment of individuals of a social race, we have then converted and applied the impulse which connected them to each other to our own advantage. The habit of living and of associating with us, becomes a necessary part of their existence, and an adaptation of the social impulse ; the pet sheep, brought up by the hand, follows its protector as instinctively as it would the flock, had it been reared in the fold. The nature of an animal is in no respect annulled or changed ; but man, on the contrary,

makes their nature subservient to his own purposes: domestication is, therefore, nothing more than a simple adaptation and peculiar embodiment of the social impulse.

We see in the actions of cows, goats, and sheep, when they are separated from their herds and flocks, how greatly they are distressed in being denied their impulse, which is a conclusive evidence that society is an actual want with them. The author saw a solitary sheep leap a high gate, to join a flock which was being driven into an adjoining field. As long as an individual can satisfy this want, it is tractable and gentle; but it becomes fractious and obstinate when its gratification is denied. Domestic animals only yield that natural obedience which, in a state of nature, they rendered to the leader of their body; and we only obtain a greater power and control, when we tempt their appetites, and limit those inclinations which form their natural bias.

Animals which have belonged successively to several owners, and whose natural inclinations have become consequently blunted or altogether defunct, obey every one indifferently; while those which have known but one master, recognize only him, and refuse obedience to every other individual, and even betray hostility. The elephant will only acknowledge the authority of the mahout to whom he has been accustomed; many horses will only permit one particular individual to mount or even to approach them; dogs, which have altogether attached themselves to one master, are often dangerous to other persons; and frequently, it is not safe to go among a herd of cattle without the protection of its own herdsman.

It would be necessary to recommence the business of taming with each successive generation, if the bodily and mental changes which animals have undergone in the continued process of domestication, had not become so engrafted as to be propagated with them. These acquired characteristics have gathered fresh strength in each succeeding generation, till at length they have assumed a permanent stamp. Certain dispositions have become hereditary

in each race, by human skill and exertions ; and as a proof of the perfection to which this science has been brought, it is easy, by skillful application, to breed races possessing peculiar powers and endowments. BUFFON says that the main cause of the degeneracy in the primeval race of dogs, and of the production of new species, is to be found in their mental dispositions, and their submission to human control.

The dog assimilates itself to those with whom it lives, and to the positions in which it is placed, and hence arise the distinguishing traits between the shepherd's dog and the hound, the parlor dog and the cur. The dogs of the North American Indians bear a strong resemblance to the wolf and the fox ; and those of the northern inhabitants of Siberia, which pass the whole year in the open air, not only resemble the wolf in form, but even in its howl. The sledge dogs of the Kamtschatdales, which are neither housed nor cared for, are not to be deterred, by the severest punishment, from stealing everything which they can by possibility lay hold of.

Human intercourse, and the mode of treatment, influence materially the extent to which domestication may be carried, and its operation on the animal mind. The cattle in the Tyrol possess more mind, because they are treated with humanity and affection ; and for the same reason, in the Swiss Alps, they are more lively and joyous among themselves, and more attached to their herdsmen, than in those countries where little attention is paid to them. In some parts of Limousin, where the swine are carefully attended to, they are more cleanly, docile, and attached, than is ordinarily the nature of their race.

It is unquestionable that the number of our domestic animals might be considerably increased, by proper judgment and an intimate knowledge of the habits of animals, and that thus, other races might be made subservient to our interests. The seal possesses a far higher degree of intelligence than the rodents, and than most of the ruminants ; and as it attaches and accustoms itself readily to man, CUVIER expresses his surprise that the

Ichthyophagi have not trained it to assist them in fishing. He gives it as his opinion that nearly all the pachyderms might be tamed, and laments that the tapir is still unreclaimed, as it is larger and more gentle than the swine, and would consequently become a most useful domestic animal. It is feared, and not without good reason, that, in consequence of its defenceless powers, and the search that is made after it as an article of food in America, and the extension of the population, it will soon be extirpated.

With respect to the domestication of the seal, a remarkable instance of it, mixed up with a dreadful tale of Irish superstition, is related in the "Wild Sports of the West." "About forty years ago, a young seal was taken in Clew Bay, and domesticated in the house of a gentleman which was situated on the seashore. It grew apace, became familiar with the servants, and attached to the house and family. Its habits were innocent and gentle; it played with the children, came at its master's call, and, as the old man described it, was fond as a dog and playful as a kitten. Daily the seal went out to fish, and, after providing for his own wants, frequently brought in a salmon or a turbot to his master. His delight in the summer was to bask in the sun, and in the winter to lie before the fire, or, if permitted, to creep into the large oven, which at that time formed the regular appendage of an Irish kitchen.

"For four years, the seal had been thus domesticated, when, unfortunately, a disease, called in that country the *crippawn*—a kind of paralytic affection of the limbs which generally ends fatally—attacked some black cattle belonging to the master of the house; some died, others became infected, and the customary cure, produced by changing them to drier pasture, failed. A wise woman was consulted; and the hag assured the credulous owner that the mortality among his cows was occasioned by his retaining an unclean beast about his habitation—the harmless and amusing seal. It must be made away with directly, or the *crippawn* would continue, and her charms be unequal to avert the malady. The

superstitious wretch consented to the hag's proposal : the seal was put on board a boat, carried out beyond Clare Island, and there committed to the deep, to manage for himself as he best could. The boat returned, the family retired to rest ; the next morning a servant awakened her master to tell him that the seal was quietly sleeping in the oven. The poor animal, over-night, came back to his beloved home, erept through an open window, and took possession of his favorite resting-place.

"Next morning, another cow was reported to be unwell. The seal must now be finally removed. A Galway fishing-boat was leaving Westport on her return home, and the master undertook to carry off the seal, and not put him overboard until he had gone some leagues beyond Innis Boffin. It was done. A day and night passed ; the second evening closed—the servant was raking the fire for the night—something scratched gently at the door—it was of course the house-dog—she opened it, and in came the seal ! Wearied with his long and unusual voyage, he testified, by a peculiar cry expressive of pleasure, his delight to find himself at home ; then stretching himself before the glowing embers of the hearth, he fell into a deep sleep.

"The master of the house was immediately apprized of this unexpected and unwelcome visit. In this exigency, the old dame was awakened and consulted ; she averred that it was always unlucky to kill a seal, but suggested that the animal should be deprived of sight, and a third time carried out to sea. To this hellish proposition, the besotted wretch who owned the house consented, and the affectionate and confiding creature was cruelly robbed of sight, on the hearth for which he had resigned his native element ! Next morning, writhing in agony, the mutilated seal was embarked, taken outside Clare Island, and for the last time committed to the waves.

"A week passed over, and things became worse instead of better : the cattle of the truculent wretch died fast, and the infernal hag gave him the pleasurable tidings that her arts were useless, and that the destructive visitation upon his cattle exceeded her skill

and cure. On the eighth night after the seal had been devoted to the Atlantic, it blew tremendously. In the pauses of the storm, a wailing noise at times was faintly heard at the door: the servants, who slept in the kitchen, concluded that the *banshee* had come to forewarn them of an approaching death, and buried their heads in the bed coverings. When morning broke, the door was opened: the seal was there lying dead upon the threshold! The skeleton of the once plump animal—for, poor beast, it perished from hunger, being incapacitated from blindness to procure its customary food—was buried in a sand-hill, and from that moment, misfortunes followed the abettors and perpetrators of this inhuman deed.

“The detestable hag, who had denounced the inoffensive seal, was, within a twelvemonth, hanged for the murder of her own grandchild. Every thing about this devoted house melted away; sheep rotted, cattle died, and the corn was blighted. Of several children, none reached maturity; and the savage proprietor survived every thing he loved or cared for. He died *blind* and miserable. There is not a stone of that accursed building standing upon another. The property has passed to a family of a different name; and the series of incessant calamities which pursued all concerned in this cruel deed, is as romantic as true.”

During the time that rumored invasions by the French caused all parts of the coast of Britain to be fortified, a small party on one of the little islands in the Frith of Forth, above Edinburgh, amused themselves by taming a seal. It had all the affection and playfulness of a dog. It fished for itself, and sometimes for its masters. It fawned about them, licked their hands, and, if it did not accompany those who made an excursion in the boat, it was sure to meet them on their return. It always came to their hut to sleep, and conducted itself as if it felt it was one of the party. Sometimes it would snatch up a stick or a brush, and scamper off to the water, where it swam about with the plunder in its mouth, often approaching the shore till within reach of its observers, and then it would be off to a distance.

But though it seemed to take delight in teasing them in that way, it always ultimately came back with whatever it had taken, and laid it at their feet, fawning and fondling all the while. Indeed, if they did not give chase, it seldom remained long in the water, but came back apparently disappointed at being deprived of its sport. When they went to Leith for orders or stores, the seal generally accompanied them, swimming all the way at the side or stern of the boat; and when the boat was made fast to the pier at Leith, it took up its position inside, and kept watch till they returned. Fish was not its only food; it could eat many things, and was very fond of bread and milk. There is no saying how far its training might have been carried, but it fell out of a bed, and was killed while still young.

There is every reason to believe that the whole race of the solipedes might be tamed as effectually as the horse and the ass, and that most of the species of the numerous family of the ruminants might be made serviceable, either as beasts of burden or for the value of their covering, as the llama and vicugna, whose fleeces are in high estimation.

In training an animal, we seek, either for purposes of profit or of gratification, to draw out its powers, and to mould them according to our will; to teach it to move or place itself in a particular manner, to utter a sound, or to perform certain actions, which by constant repetitions, become so familiar to it, that it fulfills them at a mere signal. The success of the task depends considerably on the temperament of the animal, as also on its natural habits, which in some cases are entirely opposed to the attempt. Kindness and fear are the great instruments employed, which, if misplaced from not understanding the character of the animal, have the effect of rendering it worthless. Encouragement to the timid, and coercion to the bold, but in all cases an abstinence from violence and impatience, are necessary.

Training is a process of explanation, by which one must endeavor to awaken ideas in the animal, and to make them accord with those of the trainer. The animal must not only be sensible

of the will of its trainer, but must be made to feel that no injury is intended to it; this is altogether indispensable, as a contrary course which inculcates terror makes it shy and stubborn. On this principle, dog-breakers never strike nor intimidate the dogs entrusted to them. In educating the ox for the plow, Mr. COBBETT recommended that "all violence and rough language should be avoided. If he be stubborn, there should be no blows and no loud scolding. Stop; pat him; pat the other ox; and he will presently move on again. If he lie down, let him lie till he is tired; and when he chooses to get up, treat him very gently, as if he had been doing every thing that was right. By these means, a young ox will in a few days be broken to his labor. With gentle treatment, he is always of the same temper, always of the same aptitude to labor."

Mr. TURNER says, that on the same principle, an experienced cavalry officer told him he did not fear the most vicious horse and would soon cure it. He was asked as to his means, and his answer was, "Always by mild and gentle treatment and forbearing patience. If you whip them, you make them bad-tempered and continually vicious; but steady kindness and occasional humoring, as far as was safe, with a hard run now and then, to let their spirit exhaust itself, constituted always the most successful system."

In order to secure the obedience of an animal, its wants and inclinations must be humored, and a perfect confidence established; and, besides, the breaker, to gain its good will, should train and feed it himself, allowing it occasionally to feel hunger in order that it may be more sensible of the attention. BURDACH relates an anecdote of a very fine but unmanageable horse in India, which attacked every one who approached him, but was finally subdued by a groom going up to him three or four times a day disguised in a black dress, an unusual color for that country, and taking his food away and beating him; while another groom pretended to drive the intruder away, at the same time that he restored the food with abundant caresses.

It is of the greatest importance to excite and secure the attention of the animal, and for this reason, breakers take both horses and dogs into quiet and retired spots, where nothing can occur to disturb or distract them. An action is produced on the mind of an animal by perpetually occupying him with one's self ; he soon learns to understand the modulations of the voice, and knows whether blame or praise is intended, and whether rest or exertion is enjoined. This gentle treatment makes him soon understand each word and gesture of his master's, and he becomes confident, willing, obedient, and docile.

Many animals are trained to perform certain actions under the influence of fear. At one period, in Belgium, dogs were taught to carry smuggled goods across the frontier into France. After having been frequently beaten by a person dressed up in the uniform of a custom-house officer, they acquired such a dread of any one in that dress, that they were always on their guard, and could not be caught by the real officials. In the same manner, the Russian soldiers in the Caucasus have trained their dogs to keep watch against any surprise by the Circassians. When the dogs are being fed, a man in a Circassian dress takes their food from them and beats them, and thus the dogs, having acquired a deadly animosity against the whole tribe, give instant alarm as soon as they perceive the presence of one of them.

We are daily witnesses of the docility and cheerful obedience of our domestic animals : whole herds allow themselves to be driven by a child ; the dog denies its inclination, and allows its prey to be taken from it. An elephant that had broken loose was retaken, but broke away in a stormy night, and again escaped ; after ten years, she was driven by some elephant hunters with a herd of wild ones into an enclosure. She was recognized, and called by name, to which she paid some attention, and after a time came to the side of the enclosure and received food from the hand. She retired and seemed angry when taken by the ear and ordered to lie down, but finally a mahout succeeded in getting on her back and driving her about the enclosure.

He ordered her to lie down, which she instantly did, nor did she rise till she was desired. He fed her from his seat, gave her his stick to hold, which she took with her trunk and put into her mouth, kept, and then returned it, as she was directed, and as she had formerly been accustomed to do.

Another, which belonged to a gentleman at Calcutta, broke loose from her keeper, and was lost in the woods. The excuses which the keeper made were not admitted. It was supposed that he had sold the elephant; his wife and family therefore were sold for slaves, and he was himself condemned to work upon the roads. About twelve years afterwards, this man was ordered into the country to assist in catching wild elephants. The keeper fancied he saw his long-lost beast in a group that was before him. He was determined to go up to it; nor could the strongest representations of the danger dissuade him from his purpose. When he approached the creature, she knew him; and giving him three salutes, by waving her trunk in the air, knelt down and received him on her back. She afterwards assisted in securing the other elephants, and likewise brought with her three young ones, which she had produced during her absence. The keeper recovered his character; and as a recompense for his sufferings and intrepidity, had an annuity settled on him for life.

Some young camels, traveling with one of the British armies in India, had occasion to cross the Jumna in a flat-bottomed boat; the novelty of the thing excited their fears to such a degree that it seemed impossible to drive or to induce them to enter the boat spontaneously; upon which, one of the mahouts called to his elephant, and desired him to drive them in. The animal immediately put on a furious appearance, trumpeted with his proboscis, shook his ears, reared, struck the ground to the right and left, and blew the dust in clouds towards them; and so effectually subdued one great fear in the refractory camels by exciting a greater, that they bolted into the boat in the greatest hurry, when the elephant reassumed his composure, and deliberately walked back to his post.

The same animal being desired to remove the branch of a tree, he did so, and another, and a third in succession; but being directed to tear off another still higher, he looked up, stretched his proboscis, and caught only a twig or two and some leaves; he was urged again, he shook his ears, and gave a piping sound of displeasure; but the mahout insisting, after another vain attempt, he caught the bearing pole of a dooly—(a kind of palanquin)—and shook it with violence, making a poor sick soldier immediately start out of it. The hint was sufficient—he would not be trifled with.

The mahouts gain such influence over these animals, that they might be suspected of having compelled their affections by spells and medicines. Captain SKINNER, in his "Excursions in India," relates the following anecdote: "Some fault had been found with the driver of a baggage elephant belonging to my regiment, and he was dismissed. The elephant had received his lesson, and would suffer no other driver to come near him. Several were procured, one after the other, with excellent characters for kindness and management, but the gentlest creature seemed suddenly transformed into the most ungovernable. A month had passed without any return to rule, when the discharged driver was again taken into service, and the elephant, delighted to see him, became once more fit to use. I have known the same tricks played by horses."

The elephant, when tamed, becomes the most gentle and most obedient of all domestic animals. He is so fond of his keeper, that he caresses him, and anticipates his commands. He soon learns to comprehend signs, and even to understand the expression of sounds. He distinguishes the tones of command, of anger, or of approbation, and regulates his actions accordingly. He never mistakes the voice of his master. He receives his orders with attention, executes them with prudence and eagerness, but without any degree of precipitation, for his movements are always measured, and his character seems to partake of the gravity of his bulk. He easily learns to bend his knees for the accommodation

of those who mount him. He caresses his friends with his trunk ; salutes with it such people as are pointed out to him, uses it for raising burdens, and assists in loading himself. A word is sufficient to guide him, if he has had time to acquire a complete acquaintance with his conductor, and to put entire confidence in him.

Punishment and reward vary extremely in their natures according to circumstances ; the lesson is a pleasure to the sporting dog because he is released from confinement and allowed to range ; the horse, on the contrary, looks to his stall as the reward for his task, and shows no alarm at the report of a pistol if it announces the end of his labor. But in all cases instruction is the easiest when it is in accordance with the nature and disposition of the animal, and thus birds are readily taught to pipe a simple melody, and dogs, if employed according to their respective qualifications, require comparatively little training. The pelican and cormorant are trained to fish, and the falcon to hunt ; the only difficulty lies in making their natures subject to human control. The Baschkirs to the present day employ the falcon in the chase of hares, foxes, and wolves.

But if it be intended to teach animals to perform actions entirely at variance with their natural habits and instincts, much labor and art are both necessary, for among other things they must be made to learn that one action is dependent on another, and that one thing being done, another follows as a consequence. Thus the snake-tamers in the East teach their snakes to rear themselves, or to dance, as they call it, when they hear the sound of their little pipe. The bear, too, is taught to dance by being placed on iron plates, which being heated, compel him to raise his feet alternately ; and as this process is accompanied with music, he learns to rear himself up and to move about in a kind of dancing manner whenever he hears the sounds of music. Dogs and other animals that have been taught tricks are trained to be observant of some particular movement of their master's body, or the position of his leg, to indicate to them the card they are to

select, or the exact point they are to make. Some which have been taught by blowing in their ears, require no other signal than the action of the lips to direct their movements.

A cat was exhibited in London in 1828, that had been trained to beat a drum, strike on an anvil, draw water from a well, ring bells, and roast coffee. The "learned pig," which was well known as making the round of most public fairs, could pick out from an alphabet on the ground, on being ordered, and without mistake, the letters that were wanted for the name of any persons present, and also the figures of the hour. The watch was placed to its eye, but the secret directing signs must have been previously established between it and its master. It went round a paper dial on the floor, and placed its snout first on the hour, and then, in another circuit, on the minutes. There was no visible concert that could be traced, so that the assisting tokens were therefore the more intellectual.

A curious exhibition took place a few years since in France. Two Italians had a number of pigeons which were placed in cages, and from ten to twelve of the same color were put together. By dint of great patience and perseverance they had been taught several feats of the most varied nature, and quite opposed to their usual habits. As soon as the cages were opened, the pigeons ascended, mixed together and flew away; but on a signal, those of the same color separated from the rest and came back together, each flight entering the appropriate cage. Carpets of different colors were placed upon the ground, and nets being spread, each flight on a given signal went to the carpet, or to the net pointed out for it. A flight of pigeons were then let loose, and a man having fired over them, they instantly flew to him and entered his game bag. This bird, which never before had been seen to mix in martial exercises, placed itself before the gun which was about to be fired at it, and did not move when it was discharged; it even took a lighted match in its beak, and perched itself upon a cannon, which it discharged by applying the lighted match to the touch-hole.

These few simple examples are sufficient to prove that animals are prompt and willing in receiving instruction, but many have an intuitive perception of what is expected of them, and of the duty they owe to their masters. LICHTENSTEIN states that it is not unusual, at the Cape, for several dogs to go out on a self-hunting expedition, and having run down their game, for one of them to return home, and by its restless solicitations to induce some person to follow him to fetch the booty; while the others remain on the spot to guard it from predatory animals, contenting themselves by licking the blood, and waiting for the entrails as their share of the feast. PERON declares that the English seal-hunters on the South Seas had dogs which performed an equally sagacious part. AZARA saw dogs in Paraguay which did the duty of herdsmen, driving out the flocks of sheep and goats to their pastures, attending, and defending them all day, and driving them home in the evening.

It would be easy to deduce many more examples of the powers of training, and of the facilities of acquirement in animals, but the subject is almost too familiar, and proofs surround us on every side illustrative of the benefits we receive, of the services we gain, and of the pleasures we enjoy, by our associations with the animal world, of which even the most unthinking must be susceptible.



A ROMAN WOMAN.

CITIES OF ITALY.

THE more renowned cities of Italy are not only strikingly different from those places in this country called cities, but they are, in certain respects, different from all the other cities of the world. Some are peculiar from local circumstances, and all are marked by antiquity ; most are representatives of ages gone by, preserving alike, remnants of past history and manners and customs which have faded away. All are filled with boundless treasures of art ; all present mournful contrasts between past glory and present decay. To an American, they are so

distinct from anything and everything he has been accustomed to associate with the idea of cities, as to be subjects of startling interest and untiring curiosity. How different is Rome from New York! the one living only in the past, the other in the present: the one a tomb of the mighty dead, the other the echoing arena of active, energetic life: the one with palaces and churches, filled with images of gods, heroes, and saints, the exploded myths of antiquity; the other crowded with ships and steamers, and holding intercourse with all the world; the focus of lightning telegraphs that overspread a continent; the dépôt of railroads that radiate to every point of the compass; the ringing anvil of a hundred foundries; the busy workshop of a thousand useful arts; the commercial emporium of the New World! How startling is the contrast between Rome, the type of dead and dying Italy, and New York, the representative of young, vigorous America! And yet this contrast is the source of that half-wondering, half reverend interest, with which the people of this country, above all others, look upon the leading cities of the Old World, and especially those which have largely figured in its earlier history. In a work like this, which seeks to bring before its readers some of the curiosities of history and art, as well as of nature, a few words descriptive of the principal cities of Italy, should find a place.

Rome.

Rome is situated on both sides of the Tiber, a small, muddy, and winding stream, 300 feet in width, whose general course here is from northwest to southeast. It is surrounded by a wall about fourteen miles in circuit, being entered by twelve gates. Not more than a third part of the enclosed area is covered with buildings; the rest consisting of ruins, gardens, and fields. The older part of the ancient city, where the principal ruins are found, are on the southern side, but chiefly within the walls. The ground occupied by the city is generally low, scarcely more

than twenty feet above the level of the river. Of the seven hills which make so prominent a figure in ancient history, the Palatine alone appears now to be of considerable elevation. It comprises a space of about forty acres, and once had precipitous edges, but these are now graded away. The Capitoline hill comprises about sixteen acres, and has steep sides. All the rest are easy of ascent, and are, in fact, mere eminences.

Rome, the modern city, impresses the beholder as dull and dirty, and, with few exceptions, meanly built. Most of the streets are narrow, crooked, and badly lighted. The chief exception is the Corso, which extends in a straight line for more than a mile, from the Porta del Popolo to the foot of the Capitoline hill. This is about fifty feet in width, with narrow, broken, and inconvenient side-walks. It is lined with a number of palaces, exhibiting little external beauty, but which, within, display immense treasures of art, and other signs of luxury. Two other streets—the Strada di Ripetta, and the Strada del Babuino—diverging from the open space before the Pope's palace, are long, straight, and tolerably wide. With these exceptions, the streets are mean looking, the buildings having a shabby and dilapidated appearance. The private houses are usually from three to five storeys in height, built of tufa or brick, and plastered over. With these are intermixed many huge old buildings, once called palaces, which contrast strangely with the surrounding slight, mean tenements, by their bulk, height, and air of antique grandeur. Most of them are, however, degraded by dilapidated and absurd ornaments. In consequence of the decay of the families to which these once proud edifices belonged, many of them are now turned into hotels, or ecclesiastical colleges, or are let to foreign ambassadors and wealthy strangers. Of those which have escaped this fate, the lower story is sometimes let for shops, and sometimes retained for stables, coach-houses, and servants' rooms. The second story is generally a picture gallery, consisting of a suite of rooms, all opening into each other, and richly adorned with marble and painted ceilings. The owner of the building occupies

the upper storeys, throwing open his galleries to artists and visitors, who are expected to give small sums to the servants; the money thus obtained contributing to the support of the proprietor.

Of these ancient but now impoverished palaces, there are said to be three hundred; but many are of inferior magnitude, and most are utterly degraded from their original use. The houses of the mass of the people, are, in general, mean and comfortless. The habits of those who occupy them, conform to the squalidness of their abodes. In passing through the streets, a stranger cannot but feel oppressed at the general spectacle of filth, poverty, and degradation that pervades the city.

Among the public buildings of modern Rome, the Campidoglio, or modern capitol, deserves notice, as being one of the best architectural works of MICHAEL ANGELO; it also contains the Dying Gladiator, and some other of the most noted groups of statuary in the world. The road to it is by a labyrinth of narrow, dirty streets, leading from the Corso to two flights of steps, at the foot of one of which are two basaltic lions. At the top are colossal equestrian statues of CASTOR and POLLUX, on a line with which stand several other statues and trophies. Opposite the steps is the Senator's palace; the two other sides being occupied by the Palazzo di Conservatori, and the Museo Capitolino, the garden of which overhangs the Tarpeian rock,

"Fittest goal of treason's race,
The promontory whence the traitor's leap,
Cured all ambition."

But, owing to the accumulation of soil at the bottom, this leap might now be taken without any very extraordinary risk.

The Vatican, the most ancient and by far the most celebrated of the Papal palaces, is a mass of buildings erected at various times, by different popes, and is said to cover a space about 1,200 feet in length, by 1,000 in breadth, and to comprise 4,000

apartments. "The effect, however," says BURTON, "is anything but pleasing ; from no point of view does it present any extent of front, or magnificence of design ; while its proximity to St. Peter's interferes most unfortunately with the view of that building."

The interior consists of a suite of galleries of small breadth, which, if placed in a continuous line, would extend two miles in length. It contains a countless multitude of inscriptions, statues, busts, relievos, urns, sarcophagi, and vases, to say nothing of its literary and numismatic treasures, its books, manuscripts, drawings ; the number of which the visitor can only guess at, by counting the presses that conceal them from his sight. Taken altogether, it is by far the richest museum in Europe, and the precious objects it contains are magnificently lodged ; for, when the church was rich, she patronized the arts liberally, both by buying and building ; and even now the posthumous benevolence of popes and cardinals occasionally expends itself in erecting a new gallery, or embellishing an old one. The collection of sculptures is beyond all comparison the largest and most valuable in Europe, comprising, among other great works, the unequalled group of LAOCOON and his sons, which even MICHAEL ANGELO despaired of being able to restore ; the celebrated APOLLO BELVIDERE, found at Actium near the close of the fifteenth century ; the well-known group of the Nile and his offspring ; the Belvidere Torso of HERCULES and HEBE ; a noble statue of ADONIS, and another of MARCELLUS, with an excellent bust of PIUS VII, by CANOVA. The library of the Vatican is alleged to comprise about eighty thousand printed books, and thirty-five thousand manuscripts ; but, in point of fact, its literary riches are unknown, the catalogues having never been completed. Among the paintings are several of the grandest productions of the great Italian masters, especially RAPHAEL, DOMINICHINO, TTIAN, and GULIO ROMANO.

The churches in Rome are numerous, and many of them are alike costly and beautiful, distinguished for the elegance of their architecture and the splendor of their interior decorations. At

the head of these stands the matchless structure of St. Peter's. BYRON, in a strain of poetic fervor, speaks of it :

“Thou, of temples old, or altars new,
 Standest alone, with nothing like to thee—
 Worthiest of God, the holy and the true.
 Since Zion's desolation, when that He
 Forsook his former city, what could be,
 Of earthly structures in his honor piled,
 Of a sublimer aspect? . Majesty,
 Power, glory, strength, and beauty, all are aisled
 In this eternal ark of worship undefiled!”

Nevertheless, this edifice seems rather like a palace, to feed the pride of man, than a temple to lift the soul in chastened humiliation to God. It is a superb museum of art, a gorgeous display of rich marbles, costly mosaics, grand paintings, noble sculptures, all subsidiary to a sublime architecture. The general effect is that of imposing grandeur, decked in a style of dazzling magnificence. It is royal, but not religious: it is a fit place for the proud king-pontiff, in his robes, his pride, and his power; but not for the successor of St. PETER, the humble, fisherman-Apostle. As a mere specimen of art, as a triumph of human skill and human conception, St. Peter's is indeed an object worthy of unbounded admiration. It was begun in 1506, and completed in 1614. It covers nearly five acres of ground, and cost seventy-five millions of dollars. It is, unquestionably, the noblest building ever reared by human hands: “the only work of art,” as Madame DE STAEL observes, “which produces an impression of grandeur akin to that which we receive from the works of nature.”

Of the other churches we have not space to give a description. The classical monuments of the city are its chief attraction. The most imposing of these are the Forum, Palace of the Cæsars, Baths of CARACALLA, and the Coliseum. Though within the walls, on the southern side of the city, and beyond the present center of population, all these are gigantic structures; in their enormous

extent and huge massiveness, entirely beyond all modern ideas of architecture. They are, however, of a barbarous character. They show indeed the amazing power and wealth of the emperors who constructed these works, but they also display the actual poverty of art, for there is not one of them that can furnish a useful suggestion to even a house-carpenter.

The vain and transitory nature of the ideas and institutions which gave birth to these miracles of labor, strikes the reflecting mind with a deep and painful sense of humiliation. The Coliseum, the most sublime monument of accumulated human toil, regarded as to its gigantic proportions, was erected for amusements now held to be alike cruel and revolting; the baths of CARACALLA — whole acres covered with mounds of brick — were constructed to minister to fashionable luxuries, which, at the present day, would be regarded as infamous. In modern times, the same accommodation would be obtained with one twentieth part of the labor expended upon these establishments. The vanity, the boasting, the ostentation of conquerors which gave birth to the triumphal arches, would at this day be looked upon with universal contempt. The temples were erected to gods which have vanished into thin air. The aqueducts, whose ruins stretch across the gloomy Campagna, looking like long lines of marching mastodons, were erected in ignorance of that familiar fact, visible to any one who looks into a tea-pot, that water will rise to its level!

Just without the walls of the city are a number of villas, chiefly built by cardinals, whose riches, taste, leisure and learning, conspired to create these beautiful retreats. The Villa Borghese includes pleasure-grounds that are a favorite resort of the Romans; the mansion, with its admirable collection of pictures, of marbles and festoons, is even more attractive. The Villa Albani, planned by the cardinal of that name, contains an exceedingly choice and valuable collection of articles, illustrative of art and history.

In another direction, that is, on the south-eastern side, are objects of a very different character, but still more absorbing interest. Here is the Appian Way of ancient Rome, some of the

very paving stones, worn with the wheels of the time of the Cæsars, being still visible. On both sides of this, there is a series of tombs, more than four miles in length. These are mostly destroyed or in a state of partial decay, showing, however, that here was a city of the dead. A few are so far preserved as to prove that they belonged to some of the nobler families of ancient Rome. The most celebrated is that of CECILIA METELLA, the daughter of QUINTUS METELLUS, and wife of CRASSUS, erected about 66 B. C. It consists of a circular tower, nearly seventy feet in diameter, and from its solidity seeming built for eternity. LORD BYRON thus describes this interesting monument :

“There is a stern round tower of other days,
 Firm as a fortress with its fence of stone,
 Such as an army’s baffled strength delays,
 Standing with half its battlements alone,
 And with two thousand years of ivy grown,
 The garland of eternity, where wave
 The green leaves over all by time o’erthrown.
 What was this tower of strength? within its cave
 What treasure lay so locked, so hid? A woman’s grave!
 But who was she, the lady of the dead,
 Tombed in a palace? Was she chaste and fair?
 Worthy a king’s — or more — a Roman’s bed?
 What race of chiefs and heroes did she bear?
 What daughter of her beauties was the heir?
 How lived — how loved — how died she? Was she not
 So honored and conspicuously there,
 Where meaner relics must not dare to rot
 Placed to commemorate a more than mortal lot?
 Perchance she died in youth; it may be bowed
 With woes far heavier than the proudest tomb
 That weighed upon her gentle dust; a cloud
 Might gather o’er her beauty, and a gloom
 In her dark eyes, prophetic of the doom
 Heaven gives its favorites — early death; yet shed
 A sunset charm around her, and illumine
 With hectic light the sleeping of the dead,
 Of her consuming cheek, the autumnal leaf-like red.

Perchance she died in age—surviving all
 Charms, kindred, children—with the silver play
 Of her long tresses, which might yet recall,
 It may be, still a something of the day
 When they were braided, and her proud array
 And lovely form were envied, praised and eyed
 By Rome—but whither would conjecture stray?
 Thus much alone we know—METELLA died,
 The wealthiest Roman's wife: behold his love or pride!"

One of the most remarkable circumstances connected with Rome is the Campagna, a tract of undulating land, some six or eight miles in width, which encircles it. It is now a mere pasture for sheep, goats and cattle; though once thickly peopled, as the stacks of ruins in various directions attest, it is without human inhabitants, except a few travelers, whose business leads them across it, or shepherds and herdsmen, who visit it by day, but fly from it by night. It is infected by a *malaria*, that entails disease and death upon him who ventures to breathe it at night. The Eternal City is therefore belted by a region of the shadow of death, and this has come upon it in modern times, since it has claimed to be the great light of the Church, the focus of Christianity, the scat of the representative of God on earth!

The inhabitants of Rome are of a very mixed race, and it would be absurd to expect, in the mass, any considerable portion of ancient Roman blood. There is, however, on the southern side of the Tiber, a small district, occupied by people who profess to be lineal descendants of the old Roman stock. They are said to hold intercourse only with each other, and not to marry beyond the limits of their tribe. They are generally of a stout frame, with broad faces, swarthy complexions, large dark eyes, and a somewhat sad and brooding expression of countenance. In general, the men, among the common classes of Rome, wear hats with crowns like a sugar-loaf, very wide cloaks, pieces of cloth tied about the legs with cords, and sandals instead of shoes. The women usually wear a scarlet spencer with sleeves, and for a

head-dress a piece of white linen, thickened on the crown by numerous folds, and with one end hanging down behind to the shoulders. Want of cleanliness is a pervading vice.

The streets, public places, houses and persons of the bulk of the population, would all be improved by a dispensation of scrubbing, washing and combing. Some of the most interesting objects are inaccessible from the accumulation of filth. The appearance of the monks is absolutely disgusting. Their holiness is for the most part invisible, but their dirt and vermin are notorious.

The manners of the upper classes are indicative of extreme indolence. They rise late, and are rarely seen till four in the afternoon, when they take a drive up and down the Corso, which, narrow as it is, may be termed the Broadway of Rome, after which they resort to soirées in private houses. To walk in Rome is unfashionable ; hence, a carriage of some kind is indispensable, even to those of the *noblesse* or gentry, whose limited incomes deny them a comfortable meal.

In the month of May, all the inhabitants that can afford it go to the country for two months, and again in October for the same period, the air of the Campagna being then purified by the rains of April and September. On these occasions, they live in the petty towns, ten or fifteen miles from Rome, their chief amusement consisting in catching little fish and small birds.

The public amusements consist of theatrical amusements, the opera, bull-fights, tumbling, horse-riding and concerts. Religious ceremonies, with occasional frolics on festive occasions, however, furnish the highest entertainments of the people. The Carnival appears to be traditionally descended from the licentious saturnalia of the ancient Romans, blent with the orgies of the feast of CYBELE. On this occasion, rich draperies are hung from the windows, and the streets become the scene of a general masquerade, every one disguising himself as he pleases, and walking about the city in jest and buffoonery. One of the chief amusements is a promiscuous pelting of sugar plums or chalk stones. It is a universal scene of license, intrigue and unbridled mirth, in which

all rank is leveled, and all dignity banished. Such is the great religious festival of the Catholic church at Rome

Venice.

The appearance of this city, from whatever side it may be approached, is striking and singular in the extreme. Owing to the lowness of the islands on which it is built, it seems actually to float upon the sea :

“From out the wave her structures rise,
As from the stroke of the enchanter’s wand.”

It is divided into two principal portions of nearly equal size by the Grand Canal, a serpentine channel, varying from one hundred to one hundred and eighty feet in width, and crossed by the principal bridge of the city, the celebrated *Rialto*.

The various islands which form the foundations of these two grand divisions are connected by numerous bridges, which, being intended only for foot passengers, are very steep, and cut into steps on either side. The canals crossed by these bridges intersect every part of the town, and form the “water streets” of Venice—by far the greater part of the intercourse of the city being carried on by means of gondolas or barges.

But, besides the canals, Venice is every where traversed by streets or passages, which, however, are only from four to six feet in width ; nearly all the principal houses have one of these lanes on one side, and a canal on the other. The latter, however, is the grand thoroughfare, and gondolas or canal boats are here the universal substitute for carriages and horses. They are generally long, narrow, light vessels, painted black, according to a law of the city. Though rowed only by a single gondolier with one oar, they cut their way through the water with extraordinary velocity. In the middle is an apartment furnished with glass windows, blinds, and cushions, for the accommodation of four persons. Some of the gondolas belonging to private families are magnifi-

cently fitted up. The charge for a gondola is about twenty cents an hour ; and with it, one may soon visit every part of the city.

Venice has a large number of private palaces, some of which are in a fine style of architecture. Many of its public edifices are more remarkable for gorgeousness and display, than purity of style and taste. The most celebrated in the city, is the church of St. Mark, exhibiting a mixture of Gothic, Saracenic, and Roman architecture. It seems to be neither a church nor a mosque, but something between the two ; too low for grandeur, too heavy for beauty ; no just proportion being observed among the different parts.

Venice has little to associate it with that period—five centuries ago—when its fleets commanded the Mediterranean, and its merchants controlled the commerce of the world. Every thing is smitten with decay. The whole population is less than one hundred thousand, and is diminishing from year to year. The galleries still present immense treasures of art, but many of the proudest monuments of Venetian glory are in ruins ; nevertheless, most travelers seem to find this city a delightful residence. The manners of the Venetians are said to be marked with licentiousness among the higher classes, and the lower present revolting spectacles of poverty, dirt and degradation. The people, however, are marked with a general character of politeness, good humor and cheerfulness, which make a favorable impression upon a stranger. BYRON has happily summed up the story of this city in a single stanza :

“ In Venice, Tasso’s echoes are no more,
 And silent rows the songless gondolier ;
 Her palaces are crumbling to the shore,
 And music meets not always now the ear.
 Those days are gone — but Beauty still is here.
 States fall — arts fade — but Nature doth not die ;
 Nor yet forget how Venice once was dear,
 The pleasant place of all festivity,
 The revel of the earth, the masque of Italy ! ”



Florence.

We have already given a brief notice of Naples, and though many other cities of Italy abound in topics of interest, we have space only for a description of Florence, alike renowned for its history and its treasures of art. A sketch, written on the spot, some two years since, will give the reader a general idea of this place.

One's first impression on walking through the streets of Florence can hardly be agreeable. They are narrow, irregular, and gloomy. The prevalence of the old lofty palaces, excluding the sun, and permitting only a narrow strip of the sky to appear between their wide projecting eaves, at once strikes the observer. The streets, though universally paved, like those of Leghorn, with flat, irregular slabs of gneiss — thus providing for cleanliness and the easy progress of wheeled vehicles — are mostly without sidewalks, and sloping towards the middle, present, during the rainy season,

a constant ripple of muddy water. As I looked, from a central point, across the Arno, the view had a pitiable resemblance to Paris from the Pont Neuf—as if I saw through a reversed telescope, or in some unhappy dream, the great center of the world's luxury and comfort, dwindled into a paltry and neglected suburb.

It chanced, however, that one dull and drizzly morning, I took my way afoot, through the widest of the narrow streets, careless as to whither it might lead me. Having crossed the Ponte Carraja, I came, after a walk of about twenty minutes, to one of the gates of the city. My pocket guide showed this to be the Porto Romana, situated at the southwesterly angle of the city. I passed out, and falling into an ascending avenue, bordered by towering cypresses, soon came to an open square with a fine building behind it. Upon the green were a body of Austrian troops undergoing the exercise of their morning drill. Turning to the right, and pursuing a spiral course, up and down the hills, I found myself upon the edge of a cliff, the slope of which was covered with villas; from this point I had an admirable view of the valley of the Arno, with Florence at my feet.

Those who are familiar with the topography of the city, will easily comprehend that I had wandered to the enchanting heights of Belosguardo. From this place I had the city and its environs like a map before me. I could trace the river, flowing from northeast to southwest, and could count its six bridges. There was the Cathedral of the Duomo, its dome the largest in the world, rising nearly in the center, and dwarfing nearly all the other monuments into comparative insignificance. I could trace every foot of the walls of the town, forming in their general outline, very nearly a square. The lofty shaft of the Palazzo Vecchio rose up by the side of the Duomo—a spare Squire in the immediate neighborhood of that Falstaff of cupolas. Other prominent spires and antique towers, scattered here and there, told of the supremacy which religion once claimed over the population. The constant music of bells and chimes, which stole faintly and sweetly out of the town to the cliffs of Belosguardo, reminded

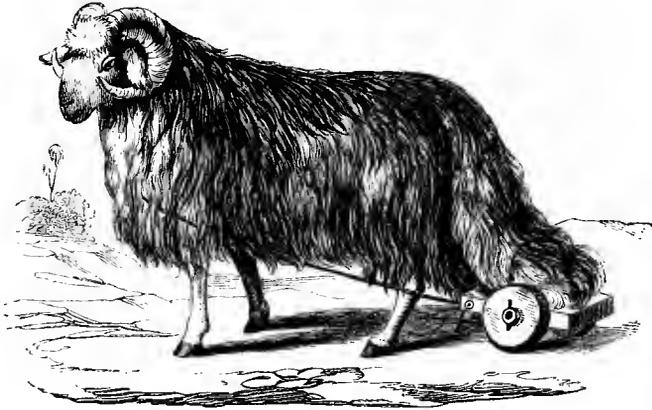
me that it had not altogether lost its influence in modern times. Nearly at my feet was the Pitti Palace, the residence of the Grand Duke, and behind it, in lawn and slope, in precipice and promenade, in flowery parterre and bosky cliff, in peaceful grotto and frowning battlements, in glassy fountains and plunging cascades, all mingled in enchanting variety, lay its unrivaled grounds—the Boboli Gardens—a royal playground five days out of the seven, and a public promenade on Sundays and Thursdays.

Such was Florence in a bird's eye view: a condensed, concise, terse little city, and royal residence, of one hundred thousand inhabitants. The landscape around was at once remarkable and charming. The season was, you will remember, early December. The weather had been wet and chill. But while I was looking upon the scene, the clouds broke apart and lazily floated away, dragging their gilded fringes up the mountain slopes, and slowly disappearing in the distance. To the south, they disclosed the snow-capped peaks of the Morello range, the familiar barometer of the Florentines; and to the east, still more elevated and snowy heights. Between these two spreading branches of the Apennines, lay rolling masses of hills, falling in successive slopes down to the very banks of the Arno.

It is true that the mountain sides were altogether bare, or presented here and there only the ferruginous tints of a few faded dwarf oaks: the hills between the mountains had lost their verdure, save only that the pale olive orchards waved slightly in the morning breeze; the mulberry plantations were stripped of their leaves, or if any remained, they were of a yellow hue; the vine and the fig-tree were leafless. Yet never have I witnessed a landscape which presented a more general aspect of cheerfulness, comfort and content. From the city up to the very top of the hills, and indeed far away among the mountains, there was a constant succession of villas, simple or sumptuous, in the midst of gardens and orchards; of meadows still green, of fields already ripe with the next year's crop. It was in truth an amphitheater

of hills, overspread with tasteful residences embedded in smiling orchards, bounded only by the horizon or by the snow-crested mountains. And over all this was shining a soft golden morning, while on the listening ear came the distant bells of the city, with familiar sounds from the farm-yard, the barking of dogs, and the voices of children at play. If such is the scene in December, what must it be in June, when the air is full of odors, and the nightingale sings in every copse?

Thus far, I have spoken only geographically of the scene. Viewed historically, the prospect was equally remarkable. There, to the north, was Fiesole, going back to the Etruscans, and still presenting Cyclopean vestiges of its Pelasgic population; the heights of San Miniato, an ancient fortress, commanded by MICHAEL ANGELO in the defence of Florence; the Torro Del Gallo, renowned as the site of GALILEO'S Observatory, and the residence of MILTON, alluded to in his description of Satan's Shield; Villa Mozzi, the country seat of the MEDICI family, and celebrated alike in the dark pages of MACHIAVELLI and the poetic outbursts of HALLAM; Vallambrosia, not actually in view, but its hills peering suggestively over other hills, on the verge of the horizon; with a score of other places, all famous in story, and in the annals of poetry and art.



THE FAT-TAILED SHEEP.

WE are so in the habit of regarding the sheep as a tame, useful beast, growing up as a matter of course in nearly every farm yard, and supplying everybody with mutton and wool, that we are scarcely led to inquire into its natural history; and yet this is a field which presents a great variety of curious and pleasing facts.

In the island of Corsica, and some other islands of the Mediterranean, there is a wild animal called mouflon, which is imagined to be the original stock of all the domestic breeds of sheep. The latter are, however, of such variety, amounting perhaps to hundreds, and some of them are of such peculiar and eccentric qualities, as to make this opinion extremely doubtful, if not improbable. It is quite possible, however, that most of the European breeds are descended from the mouflon.

This animal has been known from antiquity, and is described with tolerable accuracy by STRABO and PLINY. It inhabits the mountains, and lives in flocks, its love of society being so strong that if one is left alone it pines away and dies. Its size is con-

siderably above that of the cultivated sheep ; its horns are triangular, becoming blade-shaped at the points. They are so large at the base as nearly to meet and cover the head : their divergence is at right angles. The covering is of two kinds, a short, fine, curly wool, with long, coarse, bristly hair ; the latter giving color to the animal, which is sometimes yellow and sometimes black, and frequently mixed or mottled with these two shades.

The argali is the wild sheep of northern Asia, and so closely resembles the mouflon as to be often confounded with it : some naturalists, indeed, hold that it is but a variety of that animal. In the Rocky Mountains of the United States, there are wild sheep supposed to be identical with the argali.

We come now to some of the more curious varieties of the domestic sheep. The merino, noted for the fineness of its wool, seems to have originated in Spain, and has thence been distributed to this country, and other parts of the world. About forty years ago, there was great speculation in merino sheep, sometimes a whole farm being given for a single ram. The diffusion of this breed has resulted in an extensive production of fine wool, and has thus greatly contributed to the comfort and luxury of society.

The merino, however, is not esteemed for its mutton, and hence other breeds are preferred, especially in England, as being, on the whole, more profitable. Among the many varieties cultivated in that country, are the Lincoln, Tees-water, and Dishley breeds, all noted for their long wool ; the Devonshire Nots, esteemed for thriving upon bleak and barren pastures ; the Southdowns, noted for short, fine fleeces, and rich mutton ; the Hereford, small but handsome, and having fine fleeces and fine flesh ; the Dorset, similar to the Southdowns, and even preferred for similar qualities ; the Norfolk, big and bony, and thriving upon turnips, which abound in that county ; the Cheviot, lovers of the hills, and good for crossing with other breeds ; and the Black-faced, bold, daring rangers of the heaths and mountains of Scotland—of coarse fleeces but excellent for their flesh—thriving upon poor fare, and braving

the severities of winter. This vigorous animal is supposed to be the progenitor of all the British breeds.

Africa seems to be distinguished for breeds of sheep, marked with peculiarities and widely distinct from each other. Among these are found the bearded sheep, living in the mountains of Barbary: it is nearly twice the size of the common sheep; the horns are two feet long, and turned backwards; the color is a rusty black; the hair coarse, like that of a goat, straying in shaggy masses down the sides, to the knees; the cheeks are furnished with long hairs, dividing into two tufts, and forming a beard that might humble the pride of many a modern dandy, whose glory lies in his locks. A cousin of this breed is the long-tailed sheep, found in Central Africa. The Morocco breed is noted for its little ears and horns, the latter curving outwards. The Guinea sheep has pendulous ears, and goitres on the sides of its neck, and frequently is without wool, though it has, instead, a silky mane. The Congo sheep is lank, feeble, and without wool, which is a great mercy, in as much as its country is one of the hottest in the world. Of the famous Angola sheep, there are several varieties; but, in general, they are noted for fine hairy fleeces, a long tail, pendulous ears, and lumps of curdy fat, one under the chin, and the other on the back and sides of the head. These are not diseased parts, but are provisions of nature, similar to the hunches of a camel, which supply the animal with nutriment at those seasons when the vegetation is parched and withered by the heat of the tropical climate which it inhabits.

Lastly, of these curious African breeds, we must notice the Hottentot, or fat-tailed sheep, common in the vicinity of the Cape of Good Hope. This creature has a mass of fatty substance, accumulated on both sides of the tail, sometimes to the weight of twenty pounds. One of these was formerly in the Garden of Plants, at Paris, and its tail was supported by a little car—a board laid on a pair of wheels, which the animal drew behind him. The tail of this species of sheep is esteemed a great delicacy.

Asia has, also, its peculiar races of this useful animal. Among

them is the Astrakhan breed, which produces what are called Siberian lamb-skins, or Crimean furs. These are, in fact, the skins of lambs taken from their mothers before their birth—these mothers being sacrificed for this object—a fact which strikes us as at once cruel and revolting. At such a price, however, the luxury of man is supplied.

In the Caucasus, there are sheep with spiral horns, whose tails trail on the ground; in Siberia, there are breeds with four horns; in Central Asia, there are fat-rumped breeds. In India, there are varieties without wool, and so lean as to look like walking skeletons. China, also, has its breeds of sheep; but in the two latter countries, India and China, the people eat little flesh, and have not much need of warm clothing. Feeding on rice, and clothed in cotton, they pay little attention to the breeding of sheep; and hence we are not surprised to find among them, these animals without wool and almost without flesh.



THE GREAT CEMETERY OF SKUTARI.

SKUTARI.

SKUTARI, with a population of forty or fifty thousand, is at once a town and a suburb of Constantinople, being situated on the Asiatic, or eastern side of the Bosphorus, a mile and a half from Seraglio Point—this being the width of the strait, which here divides the two continents. It is situated on the declivity of several hills, and has a picturesque appearance from the opposite shores. It was constructed in the time of the early Persian monarchy, and received the name of Chrysopolis, or the Golden Town. It was in remote days what it is now, the post-station for carriers arriving from Asia, the rendezvous of caravans for Europe, and the point whence travelers make their departure for all the interior parts of Asia.

Skutari possesses several objects of interest. Among them are

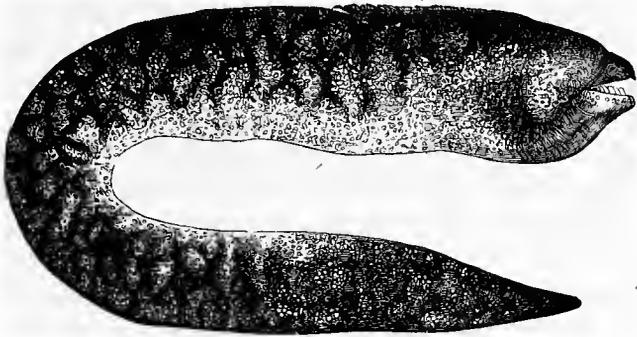
a palace of the Sultan, with extensive gardens; a number of mosques, baths, and convents. Among the latter is that of the Rufai, or howling dervises, who begin their services with a prayer, spreading a lambskin, instead of a carpet, to kneel or sit upon. After the customary prayer, Namaz, repeated five times each day by every mussulman, they seat themselves and pray the Fatha, followed by ejaculations, such as "Blessings on our prophet, the lord of messengers, and on his family and companions; blessings also on Abraham, his family and companions." After this, various ceremonies take place, until at last they whirl round, bending their bodies and reciting verses, while a sort of anthem is performed by a chorus of howlers. The motion is gradually accelerated, and the noise of the chant increased, till the performers seem to become furious, and the whole dance appears but the orgies of a band of infernals. The scene grows more and more wild, the whirling more rapid, and the bellowing, gurgling cries, more vociferous. At this point, some are foaming with enthusiasm, others fall in swoons, and others continue to cry, "Yahu," "Jameded," while the anthem continues, "Oh Mediator! Oh Beloved! Oh Physician of Souls! Oh Thou who wert chosen! Oh Advocate of the Day of Judgment, when men will exclaim, Oh my soul! Oh my soul! and when Thou wilt say, Oh my people! my people!"

Notwithstanding all this apparent ecstasy, it is well known that the whole proceeding is a hoax, designed to impose on the spectators and extort alms from them. The priests who perform in these orgies, are known to be a set of lazy, lying hypocrites, who use religion only as a means of getting a living without useful labor.

The cemeteries of Skutari are the chief depositories of the dead of Constantinople, and are alike extensive and interesting. They are laid out with long lines of cypress trees, which cast a dark but appropriate shade over the scene. And besides, the soil of this place is considered the consecrated ground of Asia, whence the founder of the Ottoman empire sprung, and, spreading his

doctrine with the sword, marched onwards to Europe. Hence the richer and more distinguished inhabitants of Constantinople are buried here, and here are the most costly and beautiful monuments. One tomb, in the midst, always attracts the attention of the stranger: it consists of a canopy resting on six columns, and marks the resting-place of Sultan MAHMOUD'S favorite horse!

Such are the immense numbers that have been entombed here since the founding of Constantinople, that they probably amount to twenty times the present population of the whole Turkish Empire; perhaps they equal the present population of the whole of Europe. No other spot on the globe can rival this Golgotha, in its gloomy triumphs of death and decay!



THE MURAENA.

A CHAPTER upon eels, common eels, unpromising as the subject might seem, would be worthy an insertion in this work, provided we had space; for it has points of curious interest. To say nothing of the astute and learned distinction between broad nosed eels and sharp nosed eels; to leave untouched the distinctions between the grig and the snig; to skip over the unjust prejudice of the vulgar against eels, because they so much resemble in form the great Tempter in the Garden; to eschew the agitating question whether eels are viviparous or oviparous; to leave untold the whole story of their strange migrations: we might still find abundant materials in the habits and history of these creatures, for amusing and profitable dilatation.

For instance: YARRELL, in his "British Fishes," tells us that "the London market is principally supplied with eels from Holland, by Dutch fishermen; their vessels are built with a capacious well, in which large quantities of eels are preserved till wanted. One or more of these vessels may be constantly seen lying at Billingsgate. The others go to Holland for fresh supplies, each bringing a cargo of fifteen to twenty thousand pounds weight of live eels!"

ELLIS, in his "Polynesian Researches," says: "In Otaheite, eels are great favorites, and are tamed and fed till they attain an

enormous size. These pets are kept in large holes in the ground, two or three feet deep, partially filled with water. On the sides of these pits they generally remain, except when called by the keeper to be fed. I have been several times with the young chief, who has sat down by the side of the hole, and by giving a sort of shrill whistle, has brought forth an enormous eel, which has moved upon the surface of the water, and eaten with confidence out of its master's hand!"

I remember, in my early days, to have heard of a man by the name of FOLLET, who had a long aqueduct of bored logs. This became stopped up, and suspecting that it was caused by mud, he caught an eel which fitted the hole, and put it in. The creature, as it seems, went forward, and not being able to turn round, kept going ahead, until at the end of two days he came out at the other end, and thus restored the aqueduct to its original vigor. This is a good illustration of the energy which usually attaches to a career in which it is impossible for the actor to change his course.

Going back to the earlier history of these animals, we are told, by grave authority, that ARISTOTLE believed young eels to spring from mud; PLINY held that they were produced from fragments rubbed off from the bodies of their parents by the rocks; HELMONT insisted that they might be obtained from May dew, and gave the following recipe for the operation: "Cut up two turfs covered with May dew, and lay one upon the other, the grassy sides inwards, and thus expose them to the sun; in a few hours there will spring from them an infinite number of little eels." Horse hair, from the tail of a stallion, when deposited in water, was formerly believed to be a never-failing source of a supply of young eels.

But leaving all these and other curious tales of the vulgar eel, and even skipping over that great favorite of the sea-otter, the conger, I now come to the Muraena, which is, in fact, a kind of huge conger, living and dwelling in the Mediterranean. Let no man speak of seeing eels, till he has seen this. Listen to the following description: "length, five to ten feet; weight, often

one hundred pounds ; jaws equal ; gape moderately large ; teeth long, incurved, sharp, separate, in one row, and a row in the palate ; tongue adherent ; a nasal barb on each side of the snout, and another over each eye ; large mucous orifices encircling both jaws ; eye small but lively ; cheeks tumid ; the skin of a lively yellow, and beautifully mottled with dots and rings of darker shades."

To this formidable description we may add, that the muraena has been a favorite for the table, around the Mediterranean, even from the time of the Ancient Romans. They were kept in fish reservoirs, called *vivaria*, and which, it appears, were subjects of great care and interest with the more wealthy and luxurious citizens of Rome. Every great man, in those days, must have his fish reservoir, as much as his poultry-yard or his larder. On the celebration of one of his triumphs, CESAR feasted his friends upon no less than six thousand of these fishes. It was something, in those days, to be CESAR'S friend, for the muraena has white, delicate flesh, and is of a delicious flavor.



THE DORMOUSE.

THIS pretty little animal, seeming to be half mouse and half squirrel, is common in most parts of Europe, living in dense thickets and bushy dells. There it constructs its easy dormitory, providently laying up its store of acorns, beech mast, corn, young hazel nuts, and the like. It is nocturnal in its habits, and being of a shy disposition, is seldom seen even in countries where it exists in considerable numbers. It takes its food holding it in its hands and sitting on its haunches, like a squirrel; it often suspends itself by its hind feet, in which position it feeds as easily and comfortably as in the more ordinary one. Towards the winter, it becomes exceedingly fat; and having laid up a store of food, retires to its little nest, and coiling itself into a ball, with the tail over the head and back, becomes perfectly torpid. A mild day calls it into transient life; it then

takes a fresh supply of food, and relapses into its former slumber. Finally awakening in the spring, at which time it has lost much of its fat, it enters upon its usual habits, and the enjoyment of the conjugal and paternal affections. The young, which are generally about four in number, are born blind ; but in a few days the eyes are opened, and in a short time they are enabled to seek their food independently of the parent's care.

We are told by a writer on this subject, that one of them having been taken in its nest in the middle of December, was in a dormant state, but the heat of its captor's hand, and the warmth of the room, completely revived it. It then ran about the room nimbly, scaling the furniture, and finding no difficulty in ascending and descending the polished backs of the chairs, and leaping from chair to chair with great agility. On being set at liberty, it sprang at least two yards to a table. It did not seem alarmed at being taken into the hand. In the evening, it was placed with its nest in a box, and the next morning had relapsed into torpidity.

We have an account of another dormouse which had been sent a distance of one hundred and forty miles, apparently but little disturbed by its ride. It slept many months in its snug dormitory, which was a box lined with wool ; and when it awoke, it ate readily of nuts and apples. It was easily alarmed, being more timid than tame ; but showed no signs of anger on being taken in the hand. As it slept the greater part of the day, its habits could not easily be observed ; but towards evening it woke up, and was very lively and frolicsome, running, on being let out of its cage, up the bell-rope, where it would sit for hours in the folds of the knot, timidly watching the movements of those around.



MAY DAY IN NEW ENGLAND.

MAY DAY.

OUR old Saxon ancestors, amid their wild and savage manners, appear to have cherished some pleasing and gentle customs; to the days of the week they gave the names of their gods: Wednesday from WODEN, Thursday from THOR, Friday from FRIGA, &c. The seasons also attracted their notice, and were honored with appropriate celebrations.

The English descendants of these fine old sea-rovers and land robbers, participated in this taste for marking days and seasons;



MAY DAY IN LOUISIANA.

but they softened the ceremonies which they derived from their ancestors, generally giving them a cheerful and frequently a convivial character. It appears that the customs of Rome, which were often of a tasteful and poetic character, had their influence in many respects, upon the British people. Thus, no doubt, the manner in which May day has been celebrated in England, for so many centuries, is copied in part from the Roman celebration of the festival of *FLOBA*, which took place in the latter days of April and first of

May. This goddess was a very ancient deity of Italy, and was worshiped there long before the Romans. Throughout the world, in fact, from the earliest times, some festival, generally connected with religion, was adopted in the spring, to express the joy inspired by the returning season of flowers. We see the vestiges of this pleasing custom still visible in most countries of Europe.

In England, as well as elsewhere, it has somewhat faded away ; but, in former times, May day was celebrated there with the heartiness of old Saxon manners, blent with the elegance of Italian taste and sentiment. Three or four centuries ago, this festival was looked forward to by all ranks, classes, and ages, as specially devoted to genial sport and merriment. CHAUCER, in his " Court of Love," says, that early on the first of May, " fourth goth al the Court, both most and lest, to fetche the flouris freshe and branche and blome." HENRY VIII and his queen are described as going on May day, to Shooter's Hill, where they were met by a party, consisting of two hundred of the king's guard, representing ROBIN HOOD and his archers bold, who after discharging their arrows to show their skill, invited the royal party to see their mode of life. Accordingly, amid the winding of horns, the king and queen and suite accompanied them unto the road, under the hill, where an arbor of green boughs received them, the ground being covered with flowers and sweet herbs. Here they all partook of wine and venison, such as the old ballads tell us the outlaws contrived to have in plenteous store. On the return of the party, they were met by Lady MAY and Lady FLORA, both richly appareled, and in a gorgeous chariot drawn by five horses, each ridden by a beautiful dame.

These good old hearty customs have fallen into disuse in our degenerate days ; no longer do kings and queens and nobles and ladyes faire, go forth upon the first of May, " to fetche flouris freshe and branche and blome ;" still, the villagers of England, young and old, gather to the lawn and crown their May Queen, as told in the touching ballad of TENNYSON, entitled

"The May Queen."

"You must wake and call me early—call me early, mother dear;
To-morrow'll be the happiest time of all the glad new year:
Of all the glad new year, mother, the maddest, merriest day:
For I'm to be Queen o' the May, mother—I'm to be Queen o'
the May!

"Little EFFIE shall go with me to-morrow to the green,
And you'll be there, too, mother, to see me made the queen;
For the shepherd lads on every side, will come from far away,
And I'm to be Queen o' the May, mother—I'm to be Queen o'
the May.

"The honey-suckle round the porch has woven its wavy bowers,
And by the meadow-trenches blow the faint, sweet, cuckoo-flowers;
And the wild marsh-marygold shines like fire in swamps and hol-
lows gray;
And I'm to be Queen o' the May, mother—I'm to be Queen o'
the May.

"The night winds come and go, mother, upon the meadow grass,
And the happy stars above them seem to brighten as they pass;
There will not be a drop of rain the whole of the live-long day!
And I'm to be Queen o' the May, mother—I'm to be Queen o'
the May.

"All the valley, mother, will be fresh and green, and still,
And the cowslip and the crowfoot are over all the hill,
And the rivulet in the flowery dale will merrily glance and play;
For I'm to be Queen o' the May, mother—I'm to be Queen o'
the May.

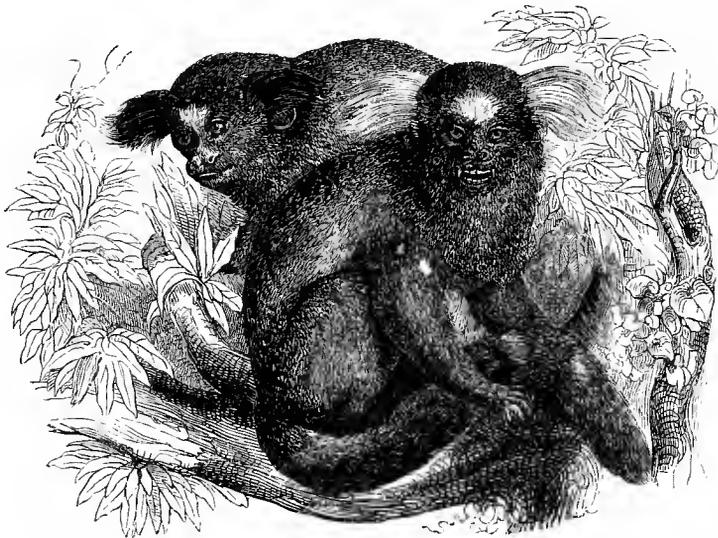
"So you must wake and call me early—call me early, mother
dear!
To-morrow'll be the happiest time of all the glad new year;
To-morrow'll be of all the year, the maddest, merriest day,
For I'm to be Queen o' the May, mother—I'm to be Queen o'
the May!

In this country, I am sorry to say, that we have no general, national celebration of May day. This is partly owing to our somewhat cold and calculating manners; we of the North think it won't pay, and they of the South are too easy and languid to find a relish in it. And beside, nature itself is somewhat against us. In New England, May day morn, comes with a chill breath, perhaps tinged with frost; scarce a flower has yet dared to peep forth, save here and there a sly daisy or an adventurous dandelion. Occasionally, a hopeful group of girls and boys, imbued with THOMSON'S Seasons, and not mindful of the seasons as given in the truth-telling "Farmers' Almanac," sally forth early on the first of May, and shivering as they go, hunt for blossoms over hill and dale, yet generally with a most lame and impotent conclusion.

In the more southern portions of our country, in Louisiana and Texas, the climate is semi-tropical, and on May day, the season of bud and bloom is past. Where the frogs sing in February and the robins hatch in March, roses, and azalias, and rhododendrons, have begun to fade in May. At this period, the whole air is faint with perfume; and the heart grown fat and lazy with peas, tomatoes and melons, is much more inclined to indulge itself with MORPHEUS, than to go forth at sunrise to the worship of FLORA. May day at the two extremities of our country, is out of date; too early at one end, and too late at the other. What, then, is to be done? for after all we ought to have a May day. Thanksgiving and the Fourth of July are good things; but they are not enough for this great country. Can nothing be done? Can enterprising, adventurous, inventive Young America, do nothing? We cannot alter the laws of nature, and thus change the seasons, but we have telegraphs, steamers, locomotives, and may overcome distance. Why not, then, choose a central point of this flowery kingdom that God has given us—say Richmond, in Virginia, the Paradise of this country—and there hold a holiday, to which on the first of May, the North, the South, and the Center, may wreath themselves in flowers; and, in happy national fraternity,

choose a May Queen, and dance and sing, and rejoice, in the spirit of our ancestors!

Think of this, Young America ; and if you adopt the suggestion, fear not that we of the North, and they of the South, will fail to be there upon the great occasion ?



THE MARMOSET.

THIS little fellow, though a monkey, has really some pretensions to beauty. Its body is only eight inches long, and though its tail is eleven inches, it is not larger than our common gray squirrel. Its color is olive gray, becoming almost black on the head and shoulders. The face is nearly a flesh color. It is a native of Guiana and Brazil, where it feeds on fruits, seeds, roots, insects, and small birds. The banana is its favorite food. In captivity, it eats biscuit, greens, fruit and insects. It will steal gold fish from a fountain, and easily makes acquaintance with eels, which it devours with a relish. It is a delicate little creature, and if taken to a northern climate, seems to be in an almost constant shiver. In such a case, it finds great comfort in its long furry tail, which it winds around its body.

Some curious anecdotes are told of this creature. F. CUVIER

had one which produced three young ones at a birth. Seeming to think this too many, she immediately ate off the head of one of them! Lady ROLLE had a marmoset, which every day was put on the table at dessert, where it sat and took its share of cake!



THE OTTER.

THIS animal has a character altogether too marked to be omitted in our gallery of notabilities. There are several species, but the common otter is the subject of our sketch. Its proper food is fish, and nothing in nature shows more beautiful adaptation of means to ends, than its structure, in view of its intended mode of life. Its legs are short and fin-like; its feet oary, and its tail serves as a rudder. Its fur, short, thick and fine, keeps its body at a proper temperature. It is easy and elegant in its movements, entering the water with the silence of a shadow and sporting about in its depths with the velocity of an arrow.

It is a voracious animal, and when fish is scarce, sometimes quits its haunts along the ponds and rivers, and visits the barn-

yard, making sucking-pigs, lambs and poultry its prey. Though more common in fresh water, it often lives along the sea shore. It is capable of domestication and attachment, and it has been suggested that it might be advantageously trained to catch fish. GOLDSMITH tells us of one, which, at the word of command, entered a gentleman's pond, drove the fish into a corner, and having seized the largest, brought it out to his master. One belonging to a Scotch widow, visited the neighboring streams, and having caught a fish, carried it home to his mistress.

These creatures are very playful, and in their wild state amuse themselves by sliding down the slippery banks of their ponds, seeming greatly to enjoy the sport. Mr. MONTEITH, in Scotland owned one, which behaved very well in general, but he often stole away of a moonlight night, where he frolicked with his fellows, or had a turn at fishing in the river. In the morning, like other young hypocrites, who are out late o' nights, he was in his kennel, wearing a very sober face, and saying nothing of his pranks. Another, kept by an English lady, grew very fond of his mistress, fondled her feet, and even went so far occasionally as to salute her cheek !



KAMTSCHATKA.

AT the north-eastern extremity of Asia, is a peninsula, bearing the above name, some eight hundred miles in length, and which may be considered as one of the most curious portions of the earth's surface. The coast is generally abrupt and rocky; and, when seen from the sea, presents an appearance inexpressibly bleak, barren and desolate. A few plains are found in the interior, but two thirds of the surface are occupied by a volcanic range of mountains, some of which are eleven thousand feet in height, and several of which are in a state of constant activity. Around these perpetual fires is an everlasting bed of snow and ice, thus presenting the striking spectacle of immense cauldrons of bubbling lava in the bosom of an almost Arctic zone. While such is the interior, the shores are lashed by storms and tempests, such as scarcely visit any other portion of the globe.

Despite these gloomy attributes, this region is not unfruitful. Animal life seems here specially to abound: bears, foxes, lynxes, otters, reindeer, sables, and other quadrupeds, furnish an ample field to the sportsman and the fur-hunter. Fish of many kinds, salmon, cod, herrings, teem in the rivers; seals, walruses and whales,

along the shore, furnish abundance of oil. The eggs and flesh of countless waterfowl contribute to feast the inhabitants. In the valleys, the soil is not unkind, as it yields corn, hemp, potatoes, and cabbage, upon slight cultivation, and but for the natural supply of wild berries and wild plants, and the still more ample store of game, might become the support of the people.

In this remote and half unknown or forgotten land, there is a race of men as peculiar as their country. They are short, stout, and swarthy, with big heads, flat, broad faces, prominent cheekbones, thin lips, lank black hair, and eyes deep sunk in the head. They are honest, frank and hospitable. Their chief employments are hunting and fishing, agriculture being held in little respect. Their abodes are miserable filthy huts, sunk deep in the ground during winter, to ward off the intense cold, and raised on poles during the summer to facilitate the curing of fish, which are hung up on lines to dry. In traveling, they use dogs, of which they have an intelligent and hardy breed, instead of horses; four, six or eight of these animals being hitched to a sledge, in which the rider sits sideways, and which they drag cheerily over the snow. They are constantly stimulated by the driver throwing at them a stick, which he skillfully catches as the sledge advances. Dogs are an essential part of the property of these people, every man having as many as four, and some as many as twenty



THE BLUE JAY.

THIS elegant bird, so happily and humorously described by WILSON, is peculiar to North America. It is distinguished as a kind of beau among the feathered tenants of our woods, by the brilliancy of his dress, and like most other coxcombs,

he makes himself still more conspicuous by his loquacity and the conceit and emphasis of his tones and gestures. He is an almost universal inhabitant of the woods, frequenting the thickest settlements, as well as the deepest recesses of the forest, where his squalling voice often alarms the deer; to the disappointment of the hunter, one of whom told me that in revenge for the impertinence of the race he made it a point to kill every jay he could meet with.

In the charming season of spring, when every thicket pours forth harmony, the part performed by the jay always catches the ear. He appears to be among his fellow-musicians, what the trumpeter is in a band, some of his notes bearing no distant resemblance to the tones of that instrument. These he has the faculty of changing through a great variety of modulations. When disposed for ridicule, there is scarcely a bird whose peculiarities of song he cannot time his notes to. When engaged in the blandishments of love, they resemble the soft chatterings of a duck, and can scarcely be heard at a few paces distant; but no sooner does he discover your approach, than he sets up a sudden and vehement outcry, flying off and screaming with all his might. A stranger might easily mistake his notes for the repeated creakings of an ungreased wheel-barrow. All these he accompanies with various nods, jerks, and other mean and vulgar gesticulations for which the whole tribe of jays are so remarkable.

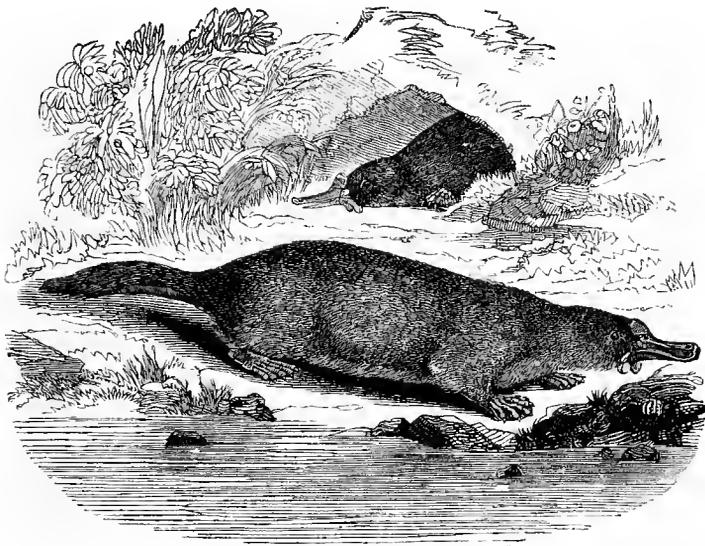
The blue jay builds a large nest on a cedar or apple tree. His favorite food is chestnuts, acorns and Indian corn. He sometimes feeds on bugs and caterpillars, and often plunders orchards, cherry rows and potato patches. He spreads alarm and sorrow around him, by robbing the nests of other birds, sucking the eggs, and frequently devouring the young. In times of great extremity, he will swallow any animal substance that comes in his way.

Of all birds, he is the most bitter enemy to the owl. No sooner has he discovered one of these, than he summons the whole of his noisy and impudent fraternity to his assistance, who surround the glimmering and goggling bird, and attack him from all sides, raising such a shout as may be heard half a mile off; the owl,

meanwhile, returning all these left-handed compliments with a broad, wondering stare. The war becomes louder and louder, and the owl, at length, forced to betake himself to flight, is followed by the whole train of his impish persecutors until driven beyond their jurisdiction.

The blue jay is not only bold and vociferous, but possesses considerable talent for mimicry, and seems to enjoy great satisfaction in mocking and teasing other birds, particularly the sparrow-hawk, imitating his cry whenever he sees him, and squealing out as if caught in his claws. This soon brings a number of the jay tribe around him, who all join in the frolic, darting about the hawk, and feigning the cries of a bird sorely wounded; but this ludicrous farce often ends tragically. The hawk, singling out one of the most insolent and provoking of his tormentors, sweeps upon him in an unguarded moment, and offers him up a sacrifice to his hunger and resentment. In an instant the tune is changed; all the buffoonery of the jays vanishes, and loud and incessant screams proclaim their disaster.

The blue jay has some reputation for the talents which distinguish his cousin, the magpie. One that was brought up in the family of a gentleman in South Carolina had all the tricks and loquacity of a parrot, pilfered everything he could conveniently carry off, and hid them in holes and crevices. He answered to his name, replied with great sociability when called on, could articulate a number of words very distinctly; and when he heard any uncommon noise or loud talking, seemed impatient to contribute to the general festivity, by a display of all the oratorical powers he was possessed of. Many other tales are told in testimony of the talents of this gifted bird.



AUSTRALIA.

NEW HOLLAND and a few neighboring islands, bearing the name of Austral Asia, abridged into Australia, to use a somewhat Irish phrase, is regarded by geographers as a fifth quarter of the globe. In whatever aspect we view it, it is a land of anomalies. We have heard it often said, somewhat irreverently perhaps, of a patch of ground peculiarly rough and irredeemable, that it was made late on Saturday afternoon: as to New Holland, the geologists have come to the conclusion that it was formed subsequent to all the other divisions of the earth.

It is to be observed, also, that the models which nature has loved to repeat and follow, in the vegetable as well as the animal kingdom, are here to a great extent slightly noticed, while new, and strange, and sometimes grotesque devices and combinations are resorted to. Even the geographical features, mountains,

rivers, and plains, are here distributed on principles little analogous to those which mark other continents. The soil varies according to laws unknown in other lands. If the country has the same minerals as others, these, as in the case of gold, coal, and iron, are lavished with an abundance which amounts to eccentricity.

In its botany, New Holland is distinguished by remarkable characteristics. While it has about six thousand species of plants common to other parts of the world, it has at least as many peculiar to itself. Even plants of a common order, here assume proportions altogether anomalous; nettles, ferns, and even grasses having, in some cases, the bulk and the habits of trees. With a single exception, all the trees are evergreen; and, strange to tell, many of them are noted for the inverted position of the leaf, the margin, and not either surface, being directed toward the stem. Lilies, tulips, and honeysuckles, exist in the form of standard trees; odoriferous plants load the air with perfume; and prickly plants cover and bind down the sandy soil of the barrens, so that the winds cannot raise it as is the case in other deserts. Flax, tobacco, a species of cotton, indigo, chicory, and some other common plants, are indigenous; but the country is by nature wholly destitute of the important and multitudinous family of cerealia. The native fruits are few and poor, being confined to raspberries, a species of currants, and a few nuts.

The animal kingdom is marked with still more remarkable singularities. Many animals distributed over the other continents, are unknown to this region; while, in other cases, several distinct kinds are frequently blended in one. Such animals as the bear, lion, tiger, cat, deer, fox, wolf, beaver, marmot, weasel, &c., spread over the rest of the world, are unknown here; while we discover the hydromys, which has the peculiarities of the dormouse, rat, and beaver; and the ornithorynchus, which has the habits of the mole, the feet and bill of a duck, and the internal formation of a reptile. More than three fourths of the quadrupeds are pouched; the great kangaroo, of the size of a calf, standing

at the head, and being, in fact, the largest indigenous animal of the continent. Some of the animals are noted for their ugliness; one of them, the *dasyurus ursinus*, a species of opossum, being called the devil, by the colonists. To this we may add two species, the echidni and the platypus, which, although quadrupeds, have no teats and do not suckle their young.

The ornithology is almost as eccentric. The tribes of singing birds known in other countries, are wanting here. Instead of these, we find a singing pheasant; and a thrush, which, in consideration of its voice, is sometimes called the thunder-bird, or, more frequently, the laughing jackass. An odd compound of music this must be, as it is not easy to reconcile the wailing bray of an ass, with the idea of music which produces laughter. To these oddities, we may add the white eagle, the coal-black swan, the matchless birds of paradise, the ostrich-like emu, with numberless troops of cockatoos, parrots and parroquets, bustards and boobies, swallows and goatsuckers, but all so strange, so peculiar, as hardly to indicate the order to which they belong.

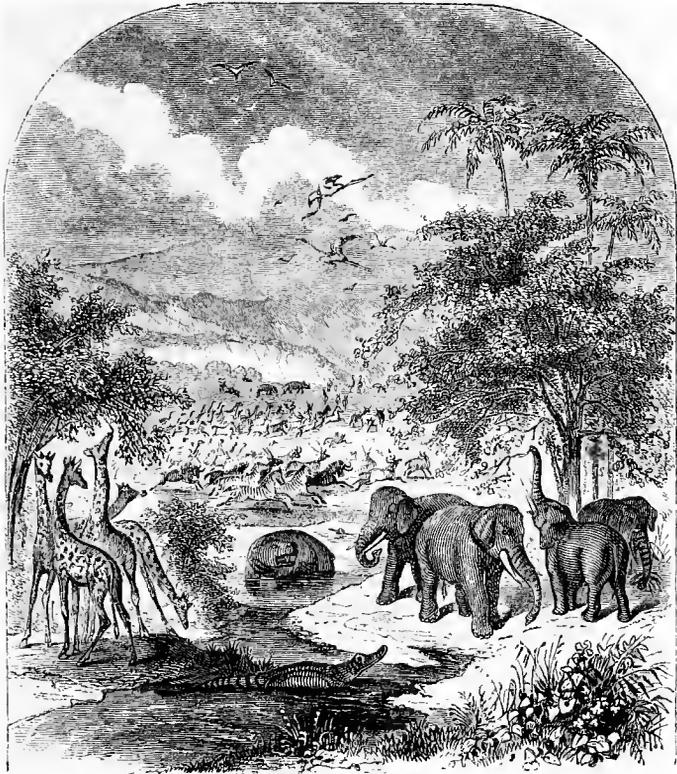
The man of New Holland is no less singular. His skin is of a chocolate color; the hair black, wooly, and growing in small tufts, with a spiral twist; the beard is black, thick, and bushy; the frame puny and weak. He seems a negro, and is yet not a negro. He is without arts, has no idea of agriculture, and goes completely naked. Thus he stands decidedly lowest in the scale of human nature, physical, intellectual, and moral.

As we have already intimated, the geology of Australia indicates that this part of the earth was made later in the week of creation than the other parts of the world. A high authority tells us that, judging from the remarkable fossil osteology of this region, it may be inferred that "though not post diluvian, Australia is geologically much more modern than other portions of the globe." It would not appear, however, from the animal and vegetable kingdom, and from the natives of this last made continent, that nature is always progressive in its creative powers.

BURNS sings :

“Old Nature swears, the lovely dears
Her noblest work she classes O;
Her 'prentice han' she tried on man,
And then she made the lasses O!”

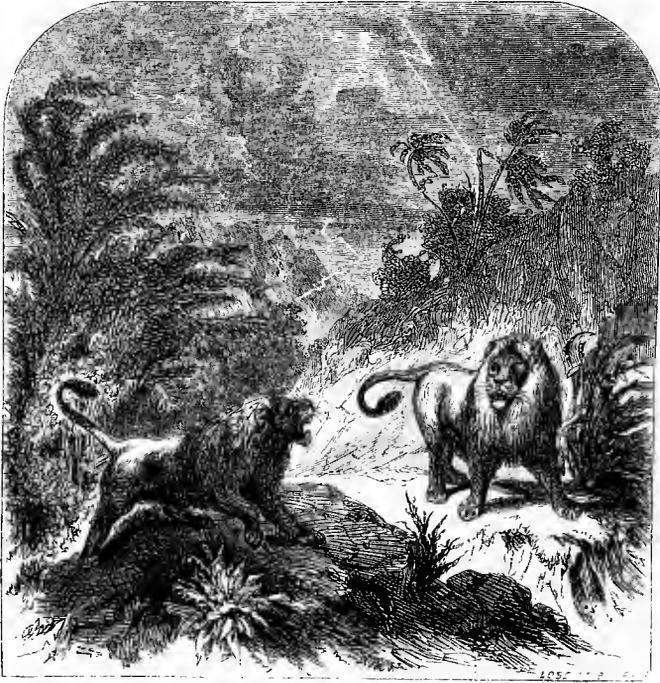
If we may believe, as believe we must, that other continents with their white races of men, and their diversified zoölogy and botany, were made first, and New Holland, with its pouched kangaroos, and breechesless, brainless bushmen, were made last, we think the process pointed out by the poet, from good to better and best, is not the universal law of nature.



ANIMALS OF SOUTHERN AFRICA.

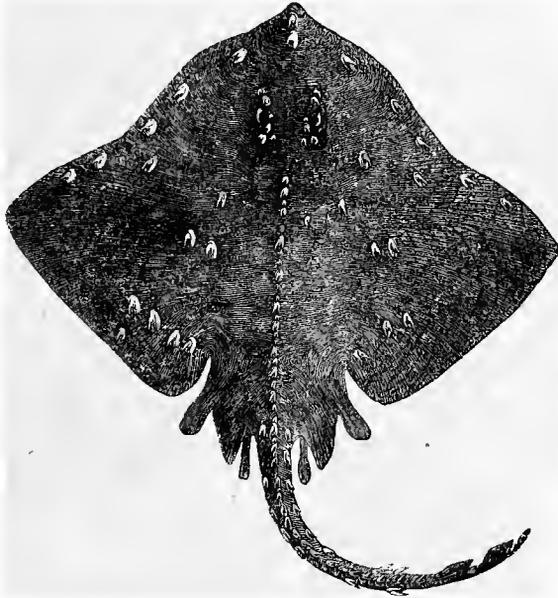
THE days of NIMROD, the mighty hunter, have returned. Mr. CUMMINGS, a Scotchman, went to Southern Africa, a few years since, where he spent some months in shooting elephants, rhinoceroses, hippopotami, and the like. A Frenchman by the name of GERARD, has occupied himself in Northern Africa for even a longer period, in similar sports, though his chief amusement was in hunting the lion.

The pictures of animal life which these adventurers present, are



indeed amazing. Drove of elephants are seen amid the trees, troops of hippopotami wallow in the lakes, giraffes are browsing in the copses, and illimitable plains are streaming with deer, antelopes of various kinds, quaggas, and ostriches. And amid all these, crouching in thickets, or lurking in caves, are numerous lions, sallying forth at night to mingle their voices with the thunder, and to feast by the flash of the lightning.

And in scenes like this prowled our sportsmen, now knocking down an elephant, now a rhinoceros, now a lion, and now a springbok, and all in sport! Could NIMROD have had better game or better luck?



THE THORNBACK.

WE have a few words to say of the Ray family, a pretty numerous tribe of flat fishes—flat and white on the belly, and somewhat raised on the back, and generally of a dark color. The eyes are on the back, yet so situated as to look all around ; the tail is generally long and slender, and sometimes, though not always, furnished with a fin at the extremity. These fishes live on the bottom of the sea, and devour their neighbor flat fish in great quantities, for they are a voracious tribe.

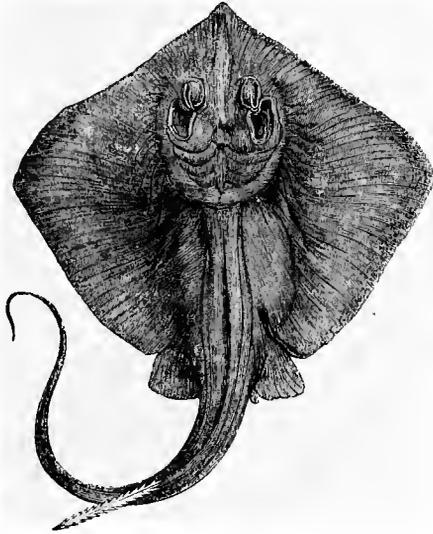
These are the general characteristics, but there are still great diversities, indicated by the names of the leading families ; as horned rays, eagle rays, whip rays, sting rays, skates, long-nosed skates, sharp-nosed skates, flapper skates, the tinkers, the painted rays, the spotted rays, the shagreen rays, the thornback or rough rays, the starry rays, the torpedoes, the beaked rays, the sun fishes,

and many others. As food, some of them are good and some bad ; they vary in size from three to eight hundred pounds.

As to the thornback, of which we give a portrait, it is one of the most reputable of the order, as it is excellent eating, and allows itself to be caught in great numbers, takes salt well, and feeds the poor extensively. There are only two things against it, and these are perhaps capable of explanation or mitigation. In the first place, the female is called the *maid*, which seems, if there be any meaning in it, to be a fling, either at the sex in general, or the thornback females in particular. The ready answer to this is, that all *flings* are worthy of nothing but contempt. The other point is, that the thornback is stuck over, in a remarkable manner, with knobs and bunches, armed with sharp spears or prickles, and as yet no use has been found for them. These are not, however, of a formidable character, not being used for any dangerous purposes, and in point of fact, only giving the fish a sort of respectability among the fishermen, inasmuch as roughness is apt to be considered by simple people a sign of cleverness, especially in cases where all other signs of such virtue are wanting.

The character of the thornback will appear to greater advantage if we compare him with his cousin, the sting ray, of which we give a picture. This fellow, as will be seen, has a long, finless tail, but armed with a barbed spike in the upper side of it. The animal understands perfectly well this curious gift of nature, and uses it with effect. When it meets a fish which it wishes to capture, or is beset by an enemy, it winds its tail around its object of attack, and with a jerk plunges its spear into it. Fishermen who have dealings with this fellow, are very wary of his tricks, for in addition to the wound given by it, this spear operates as a poison on some constitutions, and hence death has ensued from its lacerations.

But even the sting ray is amiable in comparison with the torpedo. This is a common fish in Europe, where it goes under the various names of cramp fish, numb fish, electric ray, cramp ray, &c. This creature, of which there are two or three species,



THE STING RAY.

gives a shock on being touched, more or less intense, like that of an electric battery. The most energetic discharge is obtained by touching the back and belly simultaneously.

These fishes use this power to obtain their food, for on touching another fish they paralyze it. But their size is small, and their battery comparatively weak. On the South American coast is the gymnotus, which has the same electric organization, and being twenty feet long, it will paralyze a horse, deprive a man of sense and motion, and even kill animals of considerable size!

What 'strange, what astonishing marvels, does the study of nature unfold!



LIFE IN THE COUNTRY.

NOTHING has been more debated than the relative advantages of city and country life. The city is the focus of activity, excitement, wealth and splendor; it is the arena of strife for mastery in the pugilism of trade and politics; the

race-course of ambition ; the battle-ground of fierce passions and unscrupulous selfishness. Here are gathered the museums of art, the treasures of literature, the allurements of fashion, the voluptuous excitements of the opera, the theater, and the concert-room. Here are gathered together the master spirits of the forum, the pulpit, and the senate chamber. The very air is tremulous with stimulants ; the heart palpitates in a medium thrilling with the contagious enthusiasm of congregated thousands.

And this seems a large and generous life. No man stands alone ; he sympathizes with the great movement around him. He cannot resist the pressure of a current so seductive, so pervading, so potent. His mind rises to the altitude of the edifices, ascending in seven stories as did the Tower of Babylon, among which he takes his daily walks. He holds communion with ships, and breaths of the sea, which stretch his thoughts over the circumference of the globe ; he is at the terminus of railroads, which bring to him the travel of the four winds ; his ear is at the end of the telegraph, and he hears the lightning whispers of a continent. He is woven in by a thousand threads with society, and feels every shake of its spreading, spidery web, whether suggestive of pleasure or of fear. He is on a tide which bears nothing but life, action, progress—for the dying and the dead sink unnoticed like bubbles, and others rise and take their place upon the surface, so that his heart is constantly charmed with the idea that he and his interests are immortal. When he gathers himself to his home, and evening falls around, it is not night, for the lamps shine in the street and the busy hum of wheels tells of balls, concerts, theaters ; of life, and joy, and pleasure. In his own house he has a fountain of light, which a match ignites and sets darkness and its monitory gloom at defiance. What are the grisly specters of the dark hour, that come to rouse the conscience, and whisper of the time when we must take our walk into the valley of the shadow of death, to him ? And then, how luxuriously his foot falls on the sumptuous carpets ! How complacently does he survey his mirrors, like smooth lakes, multiplying the beautiful objects around !

With what gratification does he gaze on the pictures, and statues, and bronzes, that he has gathered around him. What a sense of pleasure and refinement, mingled with triumph, steals into his heart in the midst of such a scene. How natural is it for him to say, "Soul, thou art rich and increased in goods; take thine ease, for thou art immortal. Thou hast wealth, which is as a wall encompassing a city, and setting fear and danger at defiance. Take thine ease; eat, drink, and sleep in conscious security."

This is life in the city, as it is generally conceived — the great life of the great man. And such are a part of its elements; no doubt, all this may be and occasionally is realized, in a greater or less degree. This is what the ambitious seek, and the successful are supposed to attain. But if it be true, it is not the whole truth. The heart of the rich man — the man who has made his fortune, and glories in his millions, may preach peace to his soul, while there is no peace, there. The surface may be smooth and calm, while beneath it, all is agitated and troubled. And so in fact it usually is, as we shall soon see.

But for the moment, let us take a more general view.

It must be remembered that if the city has its splendor, it has also its degradation; for every palace in Fifth Avenue, there are a hundred hovels of filth, disease, vice, crime, wretchedness, in the Five Points and its contiguous streets. Every man who becomes rich, tramples beneath his feet a hundred competitors; and while he stands before the world in triumph, they hide themselves in poverty and despair. If one man is learned, thousands are ignorant; if a few are wise, many are foolish; if some are refined, multitudes are coarse and vulgar. He who enters the arena of the city, therefore, takes part in a game in which the chances are a thousand to one against him.

But suppose he succeeds. Let us follow him to his house, his palace, his fireside, his home. He seems, indeed, as we have already pictured him, to have all around him that heart could wish; but yet, if we look closely, we shall see that lurking care and discontent are on his brow. He is, perchance, a Bear, and the horns

of some ugly Bull, on 'Change, have gored him ; or, perchance, he is a Bull, and a Bear has taken out a piece of his flesh ; or, what is still worse, he is a dyspeptic, and his digestion, moral and physical, is deranged. Even Madeira that has "been around the Cape," sours on his stomach. The choicest wines, the most luscious viands, distress him. He is fain to go back to the simplicity of his youth ; but alas ! hasty pudding and molasses, so delicious in his boyhood, have lost their flavor. Houses, friends—everything has lost its charm, and he must quit them all for Saratoga, or Paris, or Italy.

"Sated with home, of wife and children tired,
The restless soul is driven abroad to roam ;
Sated abroad, all seen, yet nought admired,
The restless soul is driven to ramble home."

He comes back and builds a seat in the country. He wearies of that, sells out, and returns to the city. He devotes himself to heaping up money, for that is his god. Ere long he dies, and leaves a million or half a million, to be divided between squabbling, imbecile, unworthy heirs.

This, stripped of all disguise, is the great man of the city, the successful man, the envied man ; this is the great life of the metropolis.

Now let us take a turn in the country. The poet has said that God made it, and so he did. Let us breathe its atmosphere, and consider its ways. Here, as in the city, there is diversity of condition. Here are the rich and the poor ; but yet, wealth and poverty do not altogether form the character and course of life. The rich man in the country is simple, and the poor man does not suffer from want. The differences of attire, equipage, food, drink, education, are not ostentatiously displayed ; the different classes live side by side, and in good neighborhood. They and their families visit together, worship together ; their children go to the same schools, partake in the same sports.

Nevertheless, we repeat, there are the rich and the poor in the

country. The great mass are farmers, and live by husbandry. This is a lot which involves patient toil, careful economy, daily, hourly self-denial, even with the thrifty and the prosperous. And after all, success seems to bring but a moderate recompense.

Let us draw the picture of the farmer of the middle class, such as the artist has sketched at the head of this article. We regard him in the midst of his labors. In the center of the scene are his wife and children. Observe them for a moment: the mother and the younger child in her arms, the latter trying to catch the birds in the tree top; the eldest, feeding a lamb; the next, blowing his trumpet, and the next gazing at the puppy as he chases the ducks. How full of satisfaction, simple, pure, unalloyed, is every face! How just, how generous is the seeming content of the father in the background! And the grandfather, calmly, but earnestly reading his Bible, while the dog at his side, like a good shepherd, keeps his eye on the flock! Is not that a pleasant scene? And yet it is true to nature; it is a picture of common country life.

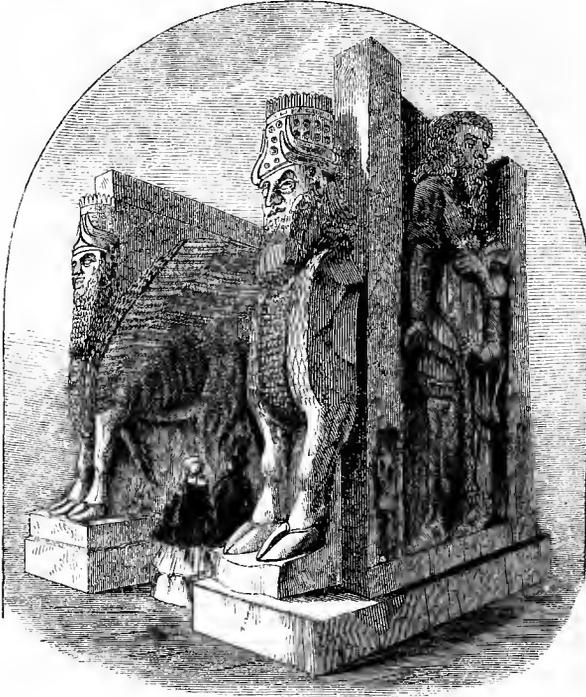
Let us go a little further with the members of this scene. The scope of existence is not confined to the simple spectacle in our sketch: there is history beyond it. The grandfather has done, or nearly done his work. He has lived his three score and ten. He has raised a family; he has brought them up in the fear of God and the love of men. His sons and daughters are fathers and mothers; they are scattered far and wide, and wherever they are, they are sowing the seed of knowledge and virtue. He has been a man of prayer, and the prayer of the righteous availeth much. He has been a good neighbor, a kind friend; he has been a patriot, loving and serving his town, his county, his state, his country. No worldly ambition has corrupted his heart or contaminated his vote. He has fought the good fight. It is evening — the sunset of life — and with firm confidence in God, he is peacefully preparing for his repose.

Let us turn from the past and survey the future. Let us look into the hearts of this father and this mother, the simple farmer and his wife. Is theirs a dull or narrow existence? Cer-

tainly not. There is heaven for them as well as for the inhabitants of the city ; and I suspect in their calm and earnest study of it, in the Great Book, it is even more real, ample and glorious than to those who seem to possess higher advantages. It is the pure in spirit, not the rich in purse, or pride, or person, who shall see God.

And then the mother, the father ; what a world of emotion in the future of their children, in their feeding, clothing, training, education. How do parental hope, and confidence, and affection sustain, and cheer, and ennoble the toil of years, that has for its object the happiness of those whom God has given us !

And then the love and duty of the wife ; the manly, generous, earnest devotion of the husband : how do these things sustain, and feed, and enlarge the heart ? And beside : these persons are members of society, and have opened before them a widening circle of duty and gratification. Is this a narrow life ? Is it, indeed, a hard, barren, repulsive life ? Compare the health, the peace, the contentment which it brings, with the unwholesome excitement, the false ambition, the moral and physical dyspepsia of city life, and then, even if you prefer the latter, you cannot despise the former.



IMAGES FROM THE RUINS OF NINEVEH.

RUINS OF NINEVEH AND BABYLON.

THE discoveries which have been made within the last few years, by investigating the materials which compose the surface of the earth, are among the most astonishing in the records of human knowledge. The geologists, by examining the layers of rock and soil which form the crust of the globe, have acquired the art of reading them as others would the leaves of a book; and understanding the marks upon them as a kind of writing, they are able to interpret them, and deduce therefrom the history of the structure of the globe. The result is indeed amazing: by this means we have now a science which gives us the

most clear and satisfactory proofs of revolutions which have taken place, not only in the rocks, soils, lands, islands, continents and seas of the earth, but of entire races of plants and animals which lived and died long before the present order of things.

While such has been the result of geological investigation, equally interesting discoveries have been made by examining the ruins of ancient cities. The hidden tombs of Egypt have furnished their wondrous revelations, and more recently the vestiges of Nineveh and Babylon have unfolded their treasures. The researches of LAYARD and BOTTA, upon the site of the former city, have already made us acquainted with many things pertaining to the history of Assyria, which before were either hidden or obscure, and at the same time, they have in a manner waked this ancient people from their graves, and made them move before us, thus instructing us in their manners and customs, thoughts and feelings, as displayed in war, in religion, in public and in private life.

The explorations among the vestiges of Babylon, which are still going on, are not less important. Already have the learned men succeeded in reading the inscriptions which, by a strange instinct, the ancient Babylonians impressed on the bricks employed in building their edifices; and, what is equally important, they have translated some of the cuneiform records upon the cylinders found in the ruins. From these sources, many gaps in history have been supplied, and many facts, before unknown, have been revealed. No doubt others of equal interest will soon be disclosed.

Among the curious and interesting discoveries at Babylon, it has been ascertained that the celebrated mound of ruins called Birš Nimrood, was a temple either built or restored by NEBU-CHADNEZZAR. Every brick was stamped with a mould bearing his name. The edifice was in seven stories, called the Seven Spheres, each dedicated to a particular planet, and of a particular color. In the corners of the stories were found cylinders, inscribed with writing, of which the following is a translation :

“I am NABU-KUDURI-UZUR, King of Babylon, the established

governor, he who pays homage to MERODACH, adorer of the gods, glorifier of NABU, the supreme chief, he who cultivates worship in honor of the great gods, the subduer of the disobedient man, repairer of the temples of Bit-Shaggeth and Bit-Tzida, the eldest son of NABU-PAL-UZAR, King of Babylon.

“Behold now, MERODACH, my great lord, has established men of strength, and has urged me to repair his buildings. NABU, the guardian over the heavens and the earth, has committed to my hands the scepter of royalty, therefore. Bit-Shaggeth, the palace of the heavens and the earth, for MERODACH, the supreme chief of the gods, and Bit-Kua, the shrine of his divinity, and adorned with shining gold, I have appointed them. Bit-Tzida, also, I have firmly built. With silver, and gold, and a facing of stone; with wood of fir, and plane, and pine, I have completed it.

“The building named the Planisphere, which was the wonder of Babylon, I have made and finished. With bricks enriched with lapis-lazuli, I have exalted its head. Behold now the building named the Stages of the Seven Spheres, which was the wonder of Borsippa, had been built by a former king. He had completed forty-two cubits of height, but he did not finish its head. From the lapse of time, it had become ruined; they had not taken care of the exits of the waters, so the rain and wet had penetrated into the brick work. The casing of burnt brick had bulged out, and the terraces of crude brick lay scattered in heaps; then MERODACH, my great lord, inclined my heart to repair the building. I did not change its site, nor did I destroy its foundation platform; but, in a fortunate month, and upon an auspicious day, I undertook the building of the two brick terraces, and the burnt brick casing of the temple. I strengthened its foundation, and I placed a titular record on the part I had rebuilt. I set my hand to build it up, and to exalt its summit. As it had been in ancient times, so I built up its structure; as it had been in former days, thus I exalted its head.

“NABU, the strengthener of his children, he who ministers to the gods, and MERODACH, the supporter of sovereignty, may they

cause this my work to be established for ever ; may it last through the seven ages ; and may the stability of my throne and the antiquity of my empire, secure against strangers and triumphant over many foes, continue to the end of time. Under the guardianship of the Regent who presides over the spheres of heaven and the earth, may the length of my days pass on in due course. I invoke MERODACH, the king of the heavens and the earth, that this my work may be preserved for me, under thy care, in honor and respect. May NABU-KUDURI-UZUR, the royal architect, remain under thy protection."



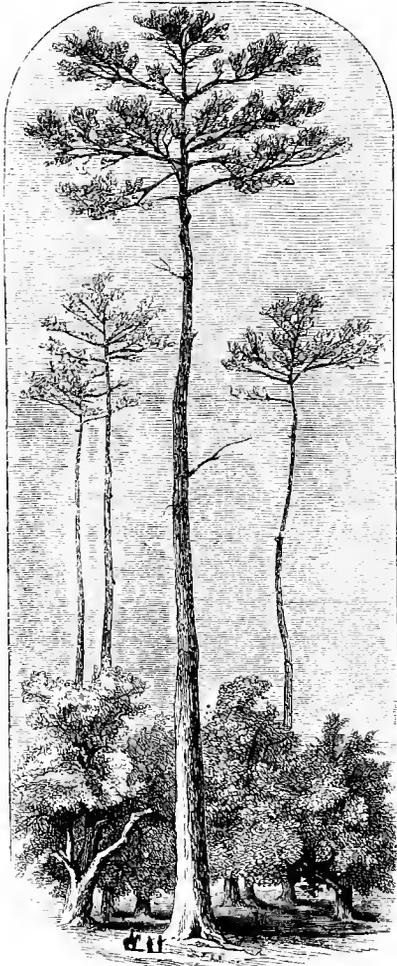
THE ANGEL FISH.

AMES, no doubt, often are given in a spirit of contradiction, and hence this hideous tenant of the sea, whose portrait is here given, is called the Angel of the Deep. Its character, it must be admitted, corresponds with its looks; for it belongs to the family of the sharks, and though not one of the worst of that wolfish race, it is bad enough. It is an aggravating circumstance, that it is not fit to eat—a fact which, indeed, by a strange system of nature, applies to many other voracious and predaceous animals, as hyenas, wolves, tigers, vultures, and the like. If we ask what such a fish is made for, we are at a loss to answer, unless we adopt the conclusion that its mission is to eat up other fishes; which, in point of fact, is doing little more than to give a history of his life and conduct. This, after all, is not specially against this creature; for it would be difficult to assign any better reason for the creation of many other species. Among men, even, there are wolves, and sharks, and angel fish, who subsist chiefly by feeding on their own species, and for whose existence no better reason can be given than that they devour other people.

The importance of the angel fish, is derived chiefly from his

connections, which, although they are not amiable, must be considered as among the most powerful of fishes, and, therefore, as clearly belonging to the aristocracy of the sea. Their characters are indicated in their names, as the dog shark, the black-mouthed dog shark, the white shark, the fox shark, the blue shark, the miller's dog, the smooth hound, the bone dog, the Greenland shark, the hammer-headed shark, &c. These are manifestly the dukes, earls, viscounts, marquises, and F. F. V's of the ocean. The title of the angel fish to be ranked among the nobility of the deep, is sufficiently vindicated by its relationship to these races, it being among fishes as among men, that power, irrespective of virtue, bestows rank.

THE WASHINGTON CEDARS OF CALIFORNIA.



THESE trees, which are the tallest ever known, are situated about eighty miles east of Stockton, on the hills at the foot of the Sierra Nevada range, some four thousand feet above the level of the sea. The forests in this region are without undergrowth; the land is smooth, and beautifully diversified with rounded hills and lawn-like valleys; and these are embellished with myriads of exquisite flowers, more lovely than any garden ever grew. The trees are sometimes of oak, and sometimes of pine, and so imposing is their magnitude, that Dr. BUSHNELL, who visited the place in 1856, says that it seemed to him like the "Park of the Almighty."

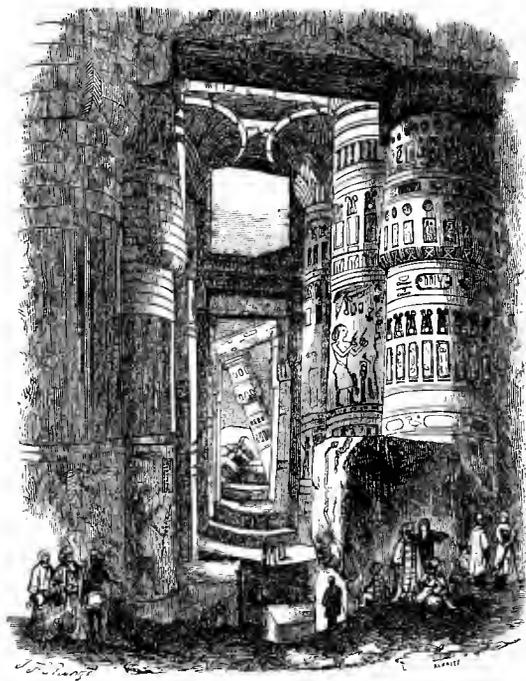
As you advance toward the "great trees," the forest gradually grows still more lofty, till finally, descending gently along a western slope, among the lines of lesser groves, you come to the gate of the real giants themselves. Here, between two

trees, five hundred feet high, as Dr. BUSHNELL tells us, is the Big Tree Hotel, kept by Mr. DAVIS. Within a space of about fifty acres, the whole group, consisting now of only ninety trees, is included : nearly all are within a circle of ten acres. One has been cut down, and the diameter was thirty-one feet, at the ground !

The magnitude of these fine trees, entirely beyond the growth of any others on record, is in itself astonishing ; but our curiosity is increased when we inquire why it is that they are here, and here only. The soil is a rich bottom, but in no other visible respect peculiar. Why are there but ninety of these Anakims of the forest ? Of the myriad seeds that have been sprinkled, why have so few been fruitful ?

" It will be very difficult," says Dr. BUSHNELL, " for any one not assisted by actual sight, and even who is so assisted, to form a conception or receive a just impression of these gigantic growths. Even when he is thrilled with the sense of their sublimity, he will not take their true measure. We measured an enormous sugar pine recently felled, about a mile before we reached the place. Sixty feet from the ground it was six feet in diameter, and it was two hundred and fifty feet high. It really seemed that nothing could be greater. But we applied our measure to one of the prostrate giants, whose dimensions, as it lay upon the ground, we could better take the sense of, apart from all definite measures ; and found that, two hundred and fifty feet from the ground, it was six feet in diameter. The top was rotted and gone, but it could not have been less than three hundred and twenty-five or three hundred and fifty feet in height. And yet this tree was only eighteen feet in diameter, while the Big Tree was thirty-one, as I have stated."

Upon counting the grains of one of these trees that had been cut down, it was found to be thirteen hundred years old ; so that when GREGORY was consolidating the papal supremacy ; when MOHAMMED was nursing at his mother's breast ; when old BELSARIUS was knocking right and left at his enemies ; this tree was sprouting into its small immortality of thirteen centuries !



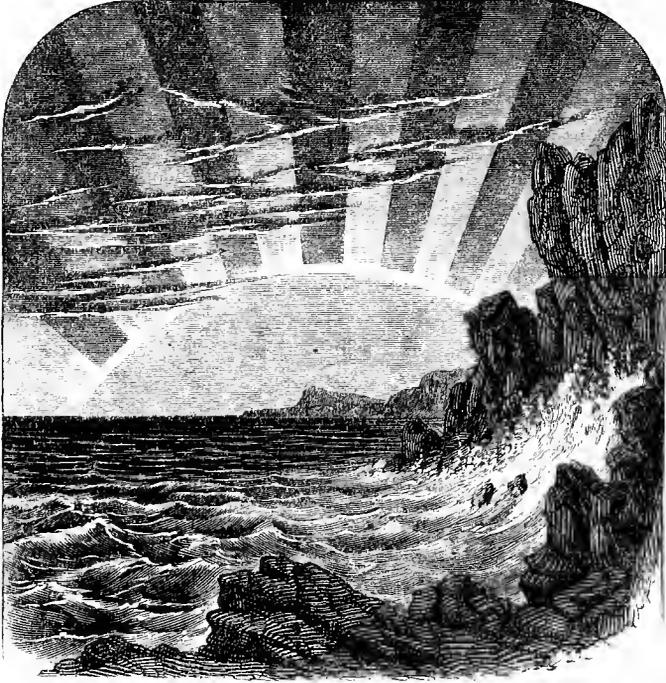
THE HALL OF COLUMNS AT KARNAC.

It has been well observed that next to the Pyramids, the Hall of Columns in the Temple-palace of Karnac, is the most wonderful relic of Egyptian art. From the inscriptions, we learn that it was founded some sixteen hundred years B. C., by MENEPTAH-OSIRI I, father of RAMESSES the Great. Its area is three hundred and forty-one feet by one hundred and sixty-four. The massive stone roof was supported by one hundred and thirty-four giant columns, ranged in sixteen rows; most of them are nine feet in diameter, and about forty-three in height. Those of the external avenue are eleven feet six inches in diameter, and seventy feet high. The architrave and roof were nearly a hundred feet in height. The diameter of the capitals at their widest spread, was twenty-two feet.

It is easy to detail the dimensions of this building, but no description can convey an idea of its sublime effect. What massive grandeur in the vistas of these enormous pillars ; what scenic effect in the gradations of the chiaroscuro, and the gleamings of occasional lights, thrown with infinite skill of design athwart the aisles ! And all these objects, walls, columns, architraves, ceilings, every surface exposed to the eye, were overspread with intaglio sculptures of gods and heroes and hieroglyphics, once painted in vivid colors, and many of them are now as bright as at the time of their execution. Majestic in ruins, what must this edifice have been in its perfection ?

And yet we are speaking only of a hall, an appendage of a single edifice.

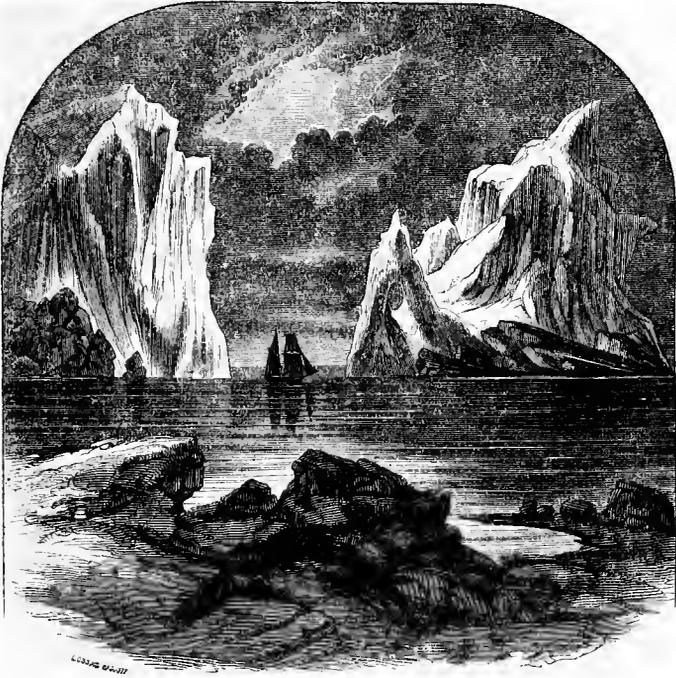
Egypt is indeed the land of architectural wonders !



THE OPEN POLAR SEA, DISCOVERED BY KANK'S EXPEDITION.

THE POLAR REGIONS.

THE history of Man upon the Sea, including his enterprise, his discoveries, and his disasters upon that element, would form a library of adventure, courage, vicissitude, and suffering, which would surpass all the tales of imaginary wonder and romance. The details of the attempts to discover a passage from the Atlantic to the Pacific, through the Arctic Ocean, would fill volumes of intensely interesting history. HUDSON, BUTTON, DAVIS, COOK, in earlier days, and ROSS, PARRY, FRANKLIN, and others more recently, have displayed among these frozen seas, a skill, daring, and perseverance in the highest degree



SCENE IN THE POLAR SEAS.

heroic. The battles of chivalry, with knights clad in steel and monsters armed with magic, were on the land, where man is master : but these voyages were battles on the sea — the element which belongs to the tempest. They were in a climate which freezes the blood ; where water becomes rocks, and rocks mountains, which move on the surface of the waters ; where night often reigns for half the year ; where strange meteors dance and whisper in the air ; where even the compass, the sailor's appointed guide, forgets its allegiance, and dips and wanders as if drawn within the spell of an unseen and unknown god. It is in these regions, that these gallant men, shaming the chivalry of the middle ages, pursued their high career.

Two of these, HUDSON and FRANKLIN, have given up their lives in these noble ventures. The fate of the latter has excited the

sympathy of generous minds throughout the world. In 1845, he went in command of an expedition to pursue the route opened by the skillful and energetic PARRY, a short time before. He had two ships — the Erebus and Terror; he had one hundred and thirty-eight men, and provisions for four years. They entered the Polar Sea, and have never since been seen.

After a time, great uneasiness was felt as to their fate. Several expeditions were dispatched from England in search of them. No tidings came, and uneasiness settled into anxiety; and there was one circumstance which gave this a romantic ardor: Lady FRANKLIN'S devotion, her exertions, her appeals, her hope — that faltered not while others despaired — communicated to the public mind something of her own intensity of feeling in regard to the fate of her husband and his companions. The world looked on the lost Arctic adventurers, through her eyes and her heart. The electric spark came across the water, and kindled in generous souls on this side of the Atlantic. GRINNELL fitted out an expedition, and KANE accompanied it. It returned, and another followed, yet without success. The public know and feel at what cost, in the death of the lamented KANE, this latter service was rendered.

To that we shall presently return. But we must say a few words more on a topic which passing events suggest. While we write, the news comes that the Maid of Saragossa is dead.* Her name was AUGUSTINA, to which was added, OF ZARAGOZA. When young she distinguished herself greatly in the memorable siege of Saragossa, by assisting the artillerymen in the very thickest of the fight, in firing on the French. The siege in question, prolonged to sixty-two days, ended by capitulation on the 20th of February, 1809, when the French, who had been commanded during its progress, by Marshals LANNES, MORTIER, MONCEY and JUNOT, entered the town. Readers of Childe Harold will recall the stanzas in which

* She died and was buried at Ceuta, June, 1857. She was twenty-two at the time of the siege, and she died at the age of seventy. She was made a sub-lieutenant, and received several decorations for her services. When BYRON was at Seville, he often saw her on the Prado.

BYRON renders the name and fame of this heroine, immortal. We quote the poet's description of her prowess :

“Is it for this the Spanish maid, aroused,
 Hangs on the willow her unstrung guitar,
 And all unsexed, the anlace hath espoused,
 Sung the loud song and dared the deed of war?
 And she, whom once the semblance of a scar
 Appalled, and owlets 'larum chilled with dread,
 Now views the column-scattering bay'net jar,
 The falchion flash, and o'er the yet warm dead
 Stalks with MINERVA'S step where MARS might quake to tread!

“Ye who shall marvel when you hear her tale,
 Oh! had you known her in her softer hour,
 Marked her black eye that mocks her coal-black veil,
 Heard her light, lively tones in lady's bower,
 Seen her long locks that foil the painter's power,
 Her fairy form, with more than female grace,
 Scarce would you deem that Saragossa's tower
 Beheld her smile in Danger's Gorgon face,
 Thin the closed ranks, and lead in glory's fearful chase.

“Her lover sinks—she sheds no ill-timed tear;
 Her chief is slain—she fills his fatal post;
 Her fellows flee—she checks their base career;
 The foe retires—she heads the sallying host:
 Who can appease like her a lover's ghost?
 Who can avenge so well a leader's fall?
 What maid retrieve when man's flushed hope is lost?
 Who hang so fiercely on the flying Gaul,
 Foiled by a woman's hand, before a battered wall?”

This remarkable instance of devotion to a noble sentiment, has been rivaled by two recent but still very different instances of heroism, both of which have found a fitting memorial in a late address delivered by Mr. EVERETT.

“Witness,” says he, “that heroic, ay, that angelic vestal, FLORENCE NIGHTINGALE, who beneath the eyes of admiring Europe

and admiring Asia, walked, with serene unconcern, for more than a twelvemonth, the pestilential wards of a hospital; witness our not less heroic countrywoman MARY PATTEN, whose name is hardly known to the public, the wife of a merchant shipmaster, who, far off on the lonely Pacific, with no eye to witness and no voice to cheer her, when her husband was taken down by illness, now tended him in his cabin, as none but a devoted wife can tend a stricken husband; now took his place on the quarter-deck of his forlorn vessel; took her observation every day with the sextant, laid down the ship's course on the chart, cheered and encouraged the desponding crew, arrested the mutinous chief mate, who was for creeping into the nearest port, and who, on the score of seamanship alone, was not worthy to kiss the dust beneath the feet of the lion-hearted little woman; and who, poor young wife as she was, hardly twenty years of age, and already overshadowed with the sacred primal sorrow of her sex, yet with a strong will and a stout heart, steered her husband's vessel through storm and through calm, from Cape Horn to San Francisco!"

These are the beautiful deeds of woman! And LADY FRANKLIN'S heart was of that high order, which brings her into companionship with these glories of her sex. Even yet she despairs not of her husband and his men. Dead to others, he is living to her. It was right that noble hearts should have been touched with something of her enthusiasm, especially as science and humanity joined in the feeling. It was worthy of KANE that he listened to the appeal. He has perished, but his fame is secure. The truthful words of the preacher, at his funeral,* we may well record, as a fitting epitaph over his grave.

"Death discloses the human estimate of character. That mournful pageant which for days past has been wending its way hither, across the solemn main, along our mighty rivers, through cities clad in habiliments of grief, with the learned, the noble, and the

* The funeral of Dr. KANE took place at Philadelphia, March 12, 1857, the sermon being preached by the Rev. C. W. SHIELDS.

good mingling in its train, is but the honest tribute of hearts that could have no emotions but respect and love. To us belongs the sad privilege of at length closing the national obsequies in his native city, and at the grave of his kindred. Fittingly we have suffered his honored remains to repose a few pensive hours at the shrine where patriotism gathers its fairest memories and choicest honors. Now, at last, we bear them—thankful to the Providence by which they have been preserved from mishap and peril—to the sacred altar at which he was reared.

“I do not forget, my friends, the severer solemnities of the place and presence. I remind you of their claim. How empty the applause of mortals as vaunted in the car of Heaven! How idle the distinctions among creatures involved in a common insignificance by death and sin! What a mockery the flimsy shows with which we cover up the realities of judgment and eternity! The thought may well temper the pride of our grief, yet it need not stanch its flow. No, I should but feel that the goodness of that God, by whose munificent hand his creature was endowed, had been wronged, did we not pause to reflect awhile upon his virtues and drop some manly and Christian tears over his early grave.

“ELISHA KENT KANE—a name now to be pronounced in the simple dignity of history—was bred in the lap of science and trained in the school of peril, that he might consecrate himself to a philanthropic purpose, to which, so young, he has fallen a martyr. The story of his life is already a fire-side tale. Multitudes, in admiring fancy, have retraced its foot-prints. Now that that brief career is closed in death, we recur to it, with a mournful fondness, from the daring exploits which formed the pastime of his youth, to the graver tasks to which he brought his developed manhood. Though born to ease and elegance, when but a young student, used to academic tastes and honors, we see him breaking away from the refinements of life into the rough paths of privation and danger. Through distant and varied regions, we follow him in his pursuit of scientific discovery and adventure. On the

borders of China—within the unexplored depths of the crater of Luzon—in India and Ceylon—in the islands of the Pacific—by the sources of the Nile—amid the frowning sphynxes of Egypt, and the classic ruins of Greece—along the fevered coast of Africa, on the embattled plains of Mexico—we behold him everywhere blending the enthusiasm of the scholar with the daring of the soldier and the research of the man of science. Yet these were but the preparatory trials through which Providence was leading him, to an object worthy of his matured powers and noblest aims. Suddenly he becomes a center of universal interest. With the prayers and hopes of his country following after him, he disappears from the abodes of men, on a pilgrimage of patience and love, into the icy solitudes of the North. Within the shadow of two sunless winters his fate is wrapped from our view. At length, like one come back from another world, he returns to thrill us with the marvels of his escape, and transport us, by his graphic pen, into scenes we scarcely realize as belonging to the earth we inhabit. All classes are penetrated and touched by the story so simply, so modestly, so eloquently told. The nation takes him to its heart with patriotic pride. In hopeful fancy, a still brighter career is pictured before him ; when, alas ! the vision, while yet it dazzles, dissolves in tears. We awake to the sense of a loss which no cotemporary, at his age, could occasion !”



THE FLY SHOOTER.

CURIOUS CHARACTERISTICS OF ANIMALS.

WE have already given numerous illustrations of the endowments of animals, but the subject is not yet exhausted. We have still before us, in the work from which we have already borrowed so largely on this subject, many curious views, suggestions, and anecdotes, which we think will amuse, if not surprise our readers.

Instinct.

There has been much learned discussion as to what that power or principle in animals, which we call instinct, really is. Some have supposed it an impulse which has its seat in the nervous system of the stomach. ADDISON considers it as the immediate direction of Providence, and such an operation of the Supreme Being as that which determines all the portions of matter to their proper center. He says, "I look upon instinct as upon the principle of gravitation in bodies, which is not to be explained by any known qualities inherent in the bodies themselves, nor form any

laws of mechanism, but as an immediate impression from the first mover, and the divine energy acting in the creatures."

The more philosophical opinion is, that instinct is a principle of the mind, varying in its nature according to the wants of the various creatures on whom it is bestowed. In all animals there are the natural impulses of self-preservation and propagation. The object of migration is to secure self-preservation, subsistence, propagation; building seeks to provide for protection of self and offspring; concealment aims at the provision of food, and the securing of the nest or other shelter; combativeness arouses itself in self-defence, in seeking food, in the passions at the pairing time, in the protection of the young. These various movements appear in many cases to be instinctive, and in others, to be guided by something that partakes of reflection; but where the first ends, or the latter begins, we cannot tell. Until we are able to define the nature of mind, we cannot trace the origin and nature of instinct. So much we can determine, that it is allied to mind, and with animals and man himself, is the guiding principle of life, until higher faculties are developed to supersede it. With all our philosophy, we can only trace its operations, we cannot penetrate its essence or its source.

The endowment of instinct is manifest in the human species. The nursling seeks its mother's breast, and the child stretches forth its hands when about to fall. In adults it is equally conspicuous; for although it is but dimly shadowed forth before the reason is developed and the mental faculties are expanded, and is always inferior to that of animals, yet it is ever active for preservation and protection against bodily injury. It is an unconscious craving, which urges us to assuage the thirst of summer and of fever with acid drinks; to seek one remedy and to refuse another. The sensations of fatigue or of excitement, impel us to take either rest or exertion. It is chiefly in the organs of motion that the effects of instinct are most prominent. We shudder involuntarily at any painful contact, and attempt to avoid it, even if it be only the momentary annoyance of an insect; we close the

eyelids against a too dazzling light, at the approach of any foreign object, against smoke and dust, and even against vapor and fog, The adult, like the child, stretches forth his arms to protect himself when falling ; we recover our balance by an inflection of the body ; and whether precipitated from a height, or falling into the water, we clutch at the first substance that presents itself.

Instinct, as an inferior faculty of the mind, so indispensable to man in his uncivilized and infant state, ceases to assist him as manhood advances, and the mental powers acquire their full development ; but it ever maintains its influence over the animal world, and by an inherent power, seems to direct creatures but newly born — when weak and helpless, without knowledge of means and ends, without instruction or experience, without practice or trial, when awakening into life, without the least consciousness of external nature — to the performance of the most wonderful actions. Instinct guides them to their proper element, teaches them to avoid the ambush of enemies, and to preserve their ephemeral life from threatening and positive dangers, It prompts them to provide for their young, which in numberless instances they will never see ; to build habitations, whose arrangements and construction astonish even the most indifferent observer, to wander over mountains and seas to distant hemispheres, whose nature is strange to them, and from which many never return. The goodness of Providence thus compensates them for the want of the higher intellectual attributes, and puts them in a position to fulfill the part assigned to them in the creation, in the most perfect, the easiest, and the surest manner.

The operation of instinct in animals is exceedingly curious. GALEN took a young kid the instant it was born, and before it saw its mother, and carrying it into a room, placed before it wine, oil, honey, milk, corn, and fruit. The little animal first got upon its legs, and shook and stretched itself : and presently, after smelling at the various articles, drank heartily of the milk. After some two months, different plants and leaves were given to it, which it equally smelled, and refusing altogether some, it ate

of the others, and concluded by chewing the cud. A chicken which WALL had hatched by artificial heat, saw a spider, and springing at it, seized it as if from previous practice. Other chickens hatched by the same method, scratch the earth in search of food, in the same manner as those hatched and accompanied by a hen.

The eggs of Asiatic and African singing-birds, have been hatched by the European goldfinch, and the young have preserved the song of their race, and, subsequently, adopted their mode of building. Young ducks, reared under a hen, take to the water as soon as they are hatched, obviously without any experience or prompting, to seek the proper food with which that element alone produces. CUVIER saw a young beaver, which had been brought up by a woman, carrying some sticks, from which it had eaten the bark, into a corner, and pile them together; and on earth being given to it, it kneaded it together over the sticks in a compact form, and drove other sticks in at the top. Mimicry, one of the instincts of the monkey tribe, is often carried so far by these creatures, that they sacrifice their lives in pursuing it.

The dealings of instinct are extremely complicated; and if we watch the proceedings of only one insect, we cannot fail of being astonished at the series of combinations brought into play, as in the case of the spider, to procure its subsistence. All spiders are furnished at the extremity of the belly with four or six leaf-like protuberances, or spinners, each of which is furnished with a multitude of tubes, so numerous and exquisitely fine that, according to REAUMUR, a space not bigger than the pointed end of a pin is furnished with a thousand of them. Hence from each spinner proceeds a compound thread, and at the distance of about one tenth of an inch from the point of the spinners, these threads again unite, and form the thread which we see, and which the spider makes use of in forming its web. Thus, a spider's thread, even when so fine as almost to elude our senses, is not a single line, but a rope composed of at least four thousand strands. Of such tenuity, although placed beyond all doubt by LEUWENHOEK'S



microscopical observations, our imagination is too faint to form even a conception : our faculties are indeed often overwhelmed by a consciousness of the imperfection of our senses, when used for the purpose of scrutinizing the works of nature.

All instinct is innate, independent of experience, and abundantly bestowed on the young of every animal in proportion to its wants. In the higher order of animals it seems to be the initial point of intellectual action and the exercise of reason. In others it remains the same, with little or no improvement. The tame squirrel hoards up the food which it will never require nor touch ; tame ravens conceal morsels of food, though abundance is always before them ; fowls scratch for food on the paved surface of a yard.

Tenacity of Life.

Among the lower animals this faculty is the most remarkable in the polypi ; they may be pounded in a mortar, split up, turned

inside out like a glove, and divided into parts, without injury to life ; fire alone is fatal to them. It is now about a hundred years since TREMBLEY made us acquainted with these animals, and first discovered their indestructibility. The subject has subsequently been taken up by other natural historians, who have followed up these experiments, and have even gone so far as to produce monsters by grafting. If they be turned inside out, they attempt to replace themselves, and if unsuccessfully, the outer surface assumes the properties and powers of the inner, and the reverse. If the effort be partially successful only, the part turned back disappears in twenty-four hours in that part of the body it embraces, in such a manner that the arms which projected behind, are now fixed in the center of the body ; the original opening also disappears, and in the room of feelers, a new mouth is formed, to which new feelers attach themselves, and this new mouth feeds immediately !

Crabs and lobsters reproduce lost members, and according to MENGE, a slight injury, or the loss of a limb, does not necessarily entail death on spiders ; but, on the contrary, as long as they cast their skins, the lost feelers and joints are replaced, and to a perfect extent while the animal is yet young.

Flies, found drowned in a cask of Madeira wine, revived ; and crickets, thrown into water, and allowed to remain for several days, were resuscitated by GEUBEL, who covered them with pulverized chalk, and at the expiration of some hours, the palpi and antennæ showed signs of life, and, finally, the insects entirely recovered their power, and flew off. Resuscitation has also occurred after they have been subjected to an elastic fluid, like nitrogen gas, and then exposed to the air ; and several species of the *cerambyx*, and many others of the coleopterous insects, recover after having been in spirits of wine for many hours.

Some insects will live a long time after the loss of some important portion of their bodies. A *Carabus granulatus* has been seen to run without a head ; and a *Cerceris*, deprived of its head at the moment it was inserting itself into the cell of a bee, to deposit its eggs, continued its attempt, and turned back to it after it was

placed in an opposite direction. Crickets will live for a couple of days without heads, and will linger for several hours when deprived of their entrails; and wasps will attempt to sting after their bodies are divided.

Ascending higher in the animal world, we find that reptiles, and many species of fish, can endure the most violent injuries. Eels are proverbially difficult to kill; and the shark preserves its vitality after every cruelty has been heaped upon it.

The tenacious power of life in the frog, is beyond measure extraordinary; it is neither affected by the exhaustion of an air-pump, nor destroyed when frozen into a solid mass. The *Triton cristatus* has the power of reproducing parts and joints of which it has been deprived, and even an eye; the tail and feet have been known to replace themselves six times in the course of one summer, so that six hundred and eighty-seven new bones were produced. If the *Salamandra maculata* be deprived of its head, the trunk remains standing on its feet, and turns on being touched. Tortoises, from which the brain has been abstracted, wander about for months with closed eyes, feeling their way, and have survived for twenty-three days without a head. AZARA caught two without heads in a river in Paraguay, but they escaped backwards with as much speed and address, as if they had been uninjured!

Temperature.

A conformable temperature is necessary to the existence of most animals. Although many live and enjoy themselves in the polar regions, and under ice, yet the greatest number prefer warmth, and seek to protect themselves from variable temperature, and especially from cold. Their construction is a great predisposing cause. Most of the plants in a mild climate are smooth and bare in their stems, bark, and leaves, while those of cold and boisterous countries are rough and hairy, and the same rule applies to animals: covering is indispensable to protection.

A peculiar property belongs to furred animals on the approach of inclement seasons, an increase, namely, in the fur, in proportion to the coldness of the region. The coat of the Norwegian horses is much longer than that of the German. Its continuance depends entirely on the length of the cold season; thus, the Alpine horses preserve their winter coats from six to seven months in Switzerland, from eight to nine in Norway, in Lapland ten months, and in Greenland throughout the year. According to EICHWALD, the aurochs, or wild bull, still found, though rare, in the forests of Poland, acquires its new coat only a few days before the setting in of the winter, and loses it as rapidly on the first return of thaw.

Insects are to be found in the greatest extremes. REAUMUR and DEGEER found the larvæ of gnats in ice. Captain BUCHAN saw a frozen lake which, in the evening, was still and hard, but as soon as the sun had dissolved the surface in the morning, it was in a state of animation, owing, as appeared on close inspection, to myriads of flies let loose, while many still remained fixed and frozen round. ELLIS also mentions that a large black mass like coal or peat, dissolved, when thrown upon the fire, into a cloud of musketoës. HUMBOLDT found beetles far above the line of perpetual snow, in the Cordilleras. Several springtails live on the snow, and impart to it a black or red color. On the other hand, Dr. REEVE found larvæ, supposed to be those of the crane fly, in a hot spring, at 205° of Fahrenheit, and PERTY discovered caddis larvæ in a spring in Wales, at 150° of temperature.

Among fish, the bream, if packed in snow, can be preserved alive for a considerable time; and carp, after having been frozen so hard as to require the force of an ax to divide them, have recovered on being thawed. Frogs and toads can endure a surprising degree of cold. GAIMARD made repeated experiments on the latter in Iceland in the winter of 1828-'29, and found that they could be frozen so hard that the spaces between the muscles were filled with ice, that all functions ceased, and that they could be broken in pieces without exertion, and yet on being ex-

posed to a warm temperature, they recovered their vitality in the space of ten minutes, and were perfectly lively.

Many animals leave their accustomed haunts as the cold sets in. The chamois and ibex, which frequent the highest mountains, particularly those with a northern aspect, during the summer months, betake themselves in winter to the southern sides and the valleys; the stag, the roe, and the reindeer, leave also the elevated land for sheltered plains and coverts, and in extreme cold even approach human habitations. Birds, too, under similar circumstances, seek the same shelter, and seem to claim the protection of man.

The northern birds wing their way to the south, and many mammalia shift their quarters; the seal leaves Greenland and Spitzbergen for the shores of Iceland; the bison, the American black bear, and the kulan, or wild ass of Tartary, wander northwards in summer, and southwards in winter.

Some animals avail themselves of the means offered them by man to protect themselves, and others seek his presence for the purpose. Snakes, in the East, are often found coiled up under the coverings of beds, and even on the bodies of people asleep; and cats, which can bear vicissitudes of temperature, prefer warmth, and nestle willingly in beds. Monkeys will fetch of themselves the blanket appropriated to them, and dogs scrape and arrange their straw, so as to secure the greatest warmth.

Hybernation.

Hybernation is the means by which animals are enabled to avoid the susceptibilities to which they are subject, from the variations of temperature: the action of life ceases in the outward parts, and maintains so faint a hold in the inward, that it is altogether suspended, and in the vegetable world it sinks even to a lower degree. Animals in this state, and rolled up so as to retain as much as possible of their own warmth, are enabled to endure the extremities of cold. Snails hybernate in holes and

crevices with a southern aspect, the opening of the shell being closed up with a strong chalk-like covering or operculum ; and worms become torpid, after having penetrated to the depth of three or four feet in the earth, at the close of the autumn ; but, as soon as the earth is released by the thaw, and is softened by the mildness and warmth of spring, they appear on the surface in vast numbers.

Most of the true spiders pass the winter in a benumbed state in holes and in the crevices of trees ; and the hunter spider spins itself a little bag, which it closes at both ends in some secure shelter. Most insects hibernate, leaving their accustomed haunts towards the close of autumn, and seek well-sheltered spots, under stones and moss, under the bark, and in the decayed wood of trees, in the depth of the earth, and, like the water-beetles, in the slime of marshes. Many which live in communities, hibernate also, together, as if thereby to increase the temperature.

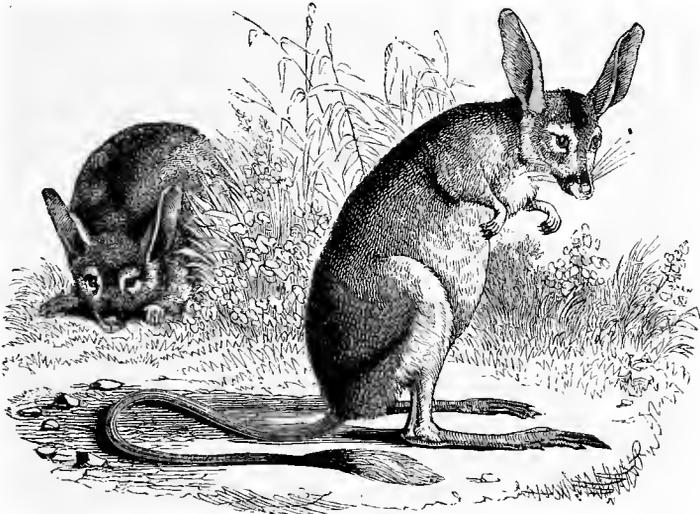
Fish withdraw chiefly into the depths at the approach of winter, and many bury themselves in the mud, rising occasionally to the surface, and to holes in the ice in frozen streams, to breathe.

Lizards hibernate in cavities and holes in the earth, and frogs conceal themselves in the mud ; and snakes and tortoises make subterranean retreats, the latter, particularly, digging for themselves holes, and covering themselves by a laborious process.

Of all the varieties of instinct, hibernation is one of the most wonderful. Dr. VIREY remarks suggestively, on the subject, " is it anything else but the manifestation, without, of that same wisdom which directs, in the interior of our body, all our vital functions ? "

Form and Color.

Both of these are the effect of plastic life, and independent of the animals themselves ; and, as in abundant instances, they assimilate with those of surrounding objects, animals are thereby enabled to escape the search of their enemies. This is particularly the case with insects, many of which repose on those sub-



THE JERBOA.

stances which bear the greatest resemblance in color to their own bodies. Thus, moths settle by day on the stems of trees, from whose gray and mottled bark they are not easily to be distinguished. The green grasshopper is with difficulty seen on the grass, and the brown ones, and crickets, harmonize in color with the parched plants of the heath.

Among fish, the frog-fish, the sole, and other flat fish, are not to be distinguished from the mud on which they lie.

The caterpillar of a moth is said to assume the color of the lichens upon which it feeds, being gray when it feeds on a gray one, and always yellow when it feeds on a yellow one. The caterpillar of the coronet moth, which feeds upon the privet, is so exactly of the color of the underside of the leaf, to which it usually clings during the day, that a person may have the leaf in his hand without discovering the caterpillar. It would not be difficult to enumerate many other examples; in some instances the protection is carried much further, for many of the caterpillars which feed on green leaves resemble in color the gray or

brown bark of the branches where they usually rest when not feeding.

The surprising wisdom of these and similar arrangements in the economy of nature, points clearly to the hand of a beneficent Creator, which is stretched forth even over the most defenceless of his creatures.

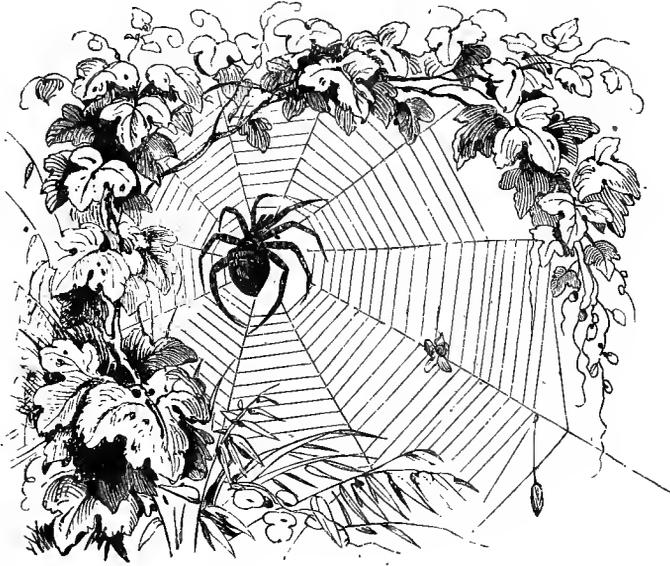
Modes of Escape from Danger.

Most animals escape danger by fleeing from it. Birds and insects have wings to aid them, not only in pursuing their prey and performing their migrations, but in escaping from their enemies. The various modes by which rapid locomotion is attained in quadrupeds, are amazing evidences of the wisdom and resources of the creative power. What a difference between the mechanism of the deer, the hare, and the jerboa, all noted for speed, and relying upon speed for preservation from danger.

But difference of structure is not the only source of diversity in the means of escape, among the animal tribes. The cuttle fish blackens and poisons the water, so as to blind and sicken his pursuers; while the polecat and skunk, make the air intolerable to those who intrude upon them. Several species of bugs, also, render themselves unapproachable,* by bathing themselves in abominable odors. The torpedo is provided with an electrical battery; the bees, wasps, and hornets, with stings; the adders, and other serpents, with deadly poison: all as means of defence, and in some cases, also, as the instruments of securing their prey.

Artifices, and Use of Natural Weapons.

Many animals keep themselves motionless, and counterfeit death, in times of danger. The centipede, when touched, twists itself together; and the large hairy caterpillar of the tiger moth, rolls itself up, and slips through the fingers of the hand that seizes it. The common rose beetle extends its legs, and assumes altogether



the appearance of death ; the pillchafer, on the other hand, contracts its legs, and may be mistaken for a ball of sheep's dung. Other insects let themselves fall among the grass, where they cannot be distinguished from the soil. The spider, if he cannot escape, rolls himself into a ball, and seems without life. The death-watch counterfeits death so obstinately, that it allows itself to be mutilated, to be torn limb from limb, to be pierced, and even roasted, without change of posture.

Among fish, the captured sturgeon remains quiet and passive in the net, while the perch feigns death and floats on its back ; the carp thrusts itself into the mud, in order that the net may pass over it, or it makes prodigious springs to clear it, if the bottom be stony.

Many birds crouch close and motionless on the ground when a human being approaches them, without making an effort to escape by flight. Thus the quail thrusts its head between the clods of earth, and avoids detection, from its great similarity in color to

the soil ; in this state, if perceived, it will allow itself to be seized. The goatsucker, as it sits crouched on the branch of a tree, is not to be distinguished from the bark ; the ptarmigan and willow-grouse nestle motionless on the surface of the snow, and cannot be readily perceived.

The squirrel, when pursued, flies to the highest tree, climbing up the side interposed to the sportsman, and clings with compressed body to the stem. In the same manner, the wild cat and the fox save themselves by extending themselves suddenly among the fallen leaves, or on a broken trunk in a thicket, till the chase has passed by them. A similar artifice is resorted to by the opossum ; and it is recorded that tigers, bruised and wounded by the elephant, have counterfeited death, to avoid further punishment.

Crabs and lobsters have powerful weapons, both offensive and defensive, in their claws. The land-crabs of the Bahamas, when terrified, run back in a confused and disorderly manner, holding up and clattering their nippers with a threatening attitude, and if they are suffered to catch hold of the hand, they will sometimes tear off a piece of the skin. Sea-crabs are naturally quarrelsome, and have serious contests together, by means of their formidable claws, with which they lay hold of their adversary's legs, and wherever they seize, it is not easy to make them forego their hold. The animal seized has, therefore, no alternative but to leave part of the leg behind in token of victory. A crab, when irritated, and made to seize one of its own small claws with a large one, does not distinguish that it is itself the aggressor, but exerts its strength, and cracks the shell of the small claw. Feeling itself wounded, it casts off the piece in the usual place, but continues to retain the hold with the great claw for a long time afterwards.

Some insects are extremely pugnacious, and even display a spirit of cannibalism towards each other. To make two male crickets fight, the Chinese place them in an earthen bowl, about six or eight inches in diameter. The owner of each tickles his cricket with a feather, which makes them both run round the

bowl different ways, frequently meeting and jostling one another as they pass. After several meetings in this way, they at length become exasperated, and fight with great fury, until they literally tear each other limb from limb.

The feet, the bill, and the wings, are the weapons of defence of birds; and, among the predaceous tribes, they are of immense power and importance. LE VAILLANT tells us that he was witness to an engagement between the secretary falcon and a serpent. The battle was obstinate, and conducted with equal address on both sides. But the serpent at length feeling the inferiority of its strength, employed in its attempt to gain its hole, all the cunning which is attributed to its tribe; while the bird, apparently guessing its design, stopped it on a sudden, and cut off its retreat, by placing himself before it at a single leap. On whatever side the reptile endeavored to make its escape, its enemy still appeared before it. Then, uniting at once bravery and cunning, the serpent erected itself boldly to intimidate the bird; and, hissing dreadfully, displayed its menacing throat, inflamed eyes, and a head swollen with rage and venom. Sometimes this threatening appearance produced a momentary suspension of hostilities; but the bird soon returned to the charge, and, covering his body with one of his wings as a buckler, struck his enemy with the bony protuberance of the other. He saw it at last stagger and fall; the conqueror then fell upon it to dispatch it, and with one stroke of his bill laid open its skull.

To detail the various devices resorted to by animals to obtain food, would require a volume. Some of them set traps, as the ant lion; the spider spreads nets, the cats lie in wait, the fox steals in by night, the falcons pounce on their prey. The fly-shooter, of Java, is a real hunter, and using his mouth for a gun, his breath for powder, and a drop of water for a bullet, takes an unerring aim and brings down his prey. Thus we find in a fish the only instance in the animal kingdom of the use of a propulsive weapon, analogous to the destructive engines of man, from the bow and arrow to the cannon.



WALRUS ATTACKED BY ESQUIMAUX.

In connection with this subject, ST. PIERRE conveys a happy illustration of the adaptation of animals to the provision which Providence has made for feeding them. "The sluggish cow," says he, "pastures in the cavity of the valley; the bounding sheep on the declivity of the hill; the scrambling goat browses among the shrubs of the rocks; the hen, with attentive eye, picks up every grain that is lost in the field; the pigeon, on rapid wing, collects a similar tribute from the refuse of the grove; and the frugal bee turns to account even the small dust on the flower: there is no part of the earth where the whole vegetable crop may not be reaped. Those plants which are rejected by one, are a delicacy to the other; and even among the finny tribes contribute to their fatness. The hog devours the horse-tail and hen-bane; the goat, the thistle and the hemlock. All return in the evening

to the habitation of man, with murmurs, with bleatings, with cries of joy, bringing back to him the delicious tribute of innumerable plants, transformed by a process the most inconceivable, into honey, milk, butter, eggs, and cream."

The care of animals for their young, also draws forth the most wonderful instincts and powers. Insects deposit their eggs in spots where they will be safely hatched. All spiders enclose their eggs in a web, and many of them in a cocoon. The earwig hatches her eggs with the assiduity of a hen. Some fishes ascend rivers thousands of miles, and shoot up falls and cataracts, to deposit their spawn beyond the reach of those which would devour them. In the case of the Surinam toad, the female drops her eggs on the ground; they are then gathered up by the male, placed in receptacles provided on the back of the mother, where they are hatched. The rattlesnake swallows her young ones in time of danger, and throws them out when the emergency is past. Many birds flutter as if wounded, before a man, dog, or cat, so as to withdraw them from her nest, or her young. The elaborate ingenuity of birds in building their nests, the patience with which they hatch their eggs, and their devotion in feeding them, have always excited the admiration of observing and reflecting minds.

The walrus, an uncouth animal, living in the chill waters of the polar regions, seems to be the very personification of stupidity; and yet we are told that the affection of these creatures for their young is truly affecting. Captain Cook tells us the following incident, which occurred in his last voyage, when he was returning from Behring's Straits:

"In the afternoon we hoisted out the boats, and sent them in pursuit of the sea-horses that surrounded us. Our people were more successful than they had been before, returning with three large ones, and a young one. The gentlemen who went on this party, were witnesses of several remarkable instances of parental affection in these animals. On the approach of our boats towards the ice, they all took their cubs under their fins, and endeavored to escape with them into the sea. Several whose young were

killed and wounded, and were left floating on the surface, rose again and carried them down, sometimes just as our people were going to take them into the boat ; and they might be traced bearing them to a great distance through the water, which was colored with their blood. We afterwards observed them up at times above the surface, as if for air, and again diving under it, with a dreadful bellowing. The female, in particular, whose young had been destroyed and taken into the boat, became so enraged that she attacked the cutter, and stuck her tusks through the bottom of it."

Even the ponderous whale shows a similar devotion to its offspring. Many instances have been recorded by navigators, in which the mothers have sacrificed their own lives to save their young ones, and cases have happened in which whales, in revenge for the capture of their calves, have rushed madly upon the ships which they deemed the cause of their distress and reduced them to a state of wreck.

