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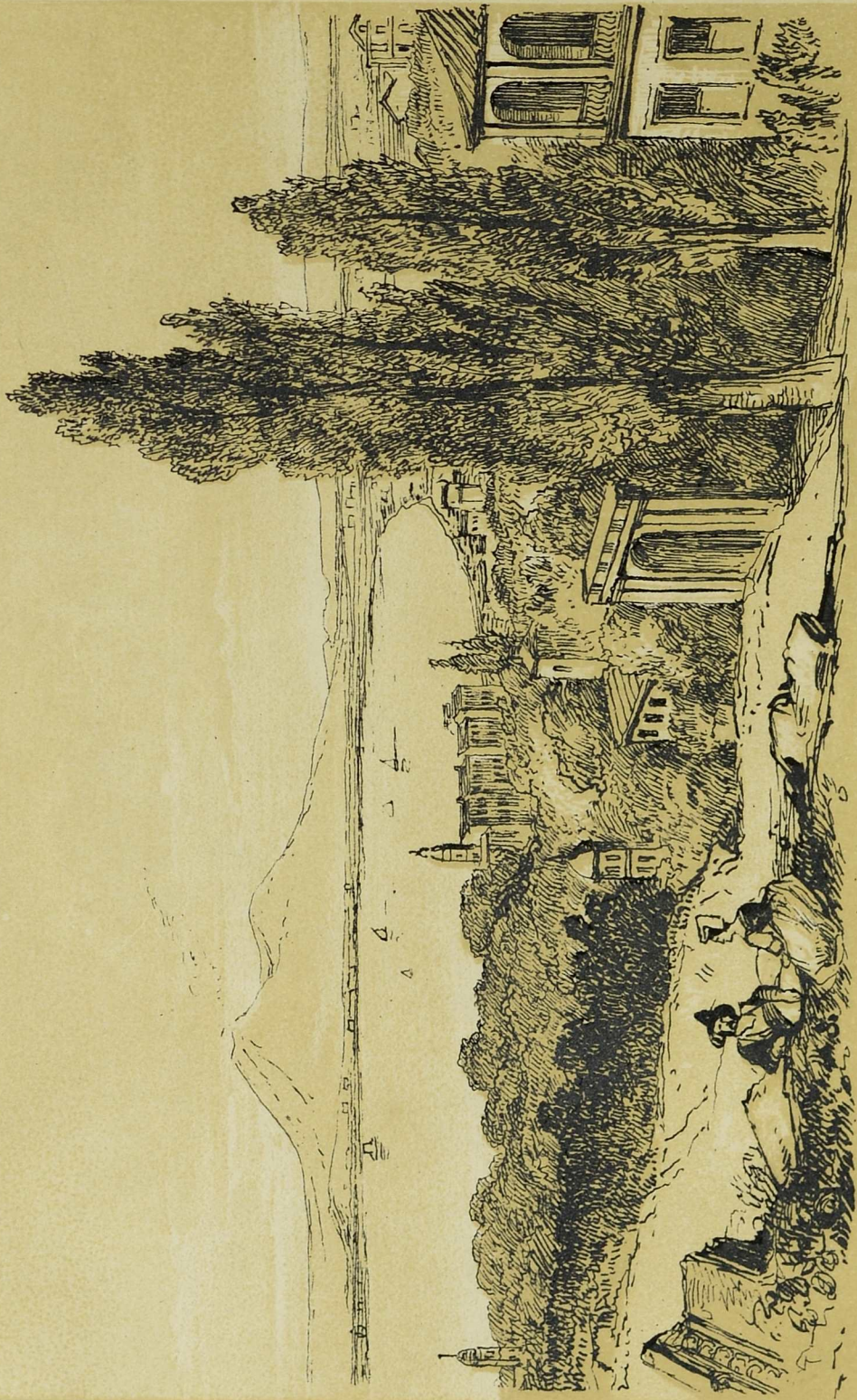
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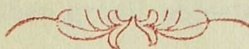
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CURIOSITIES OF NATURE :

As related to his Children .

BY MR. ADAM STOCK.

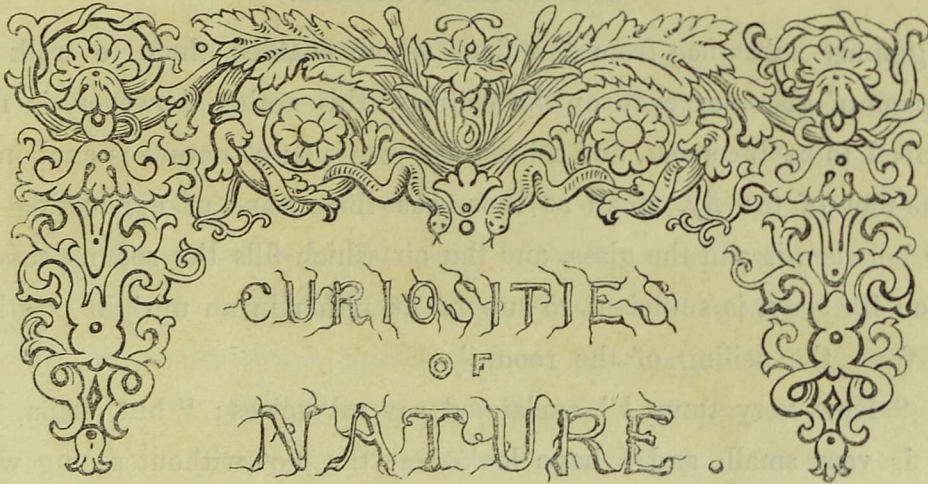
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CURIOSITIES
OF
NATURE.

PART I.

“ I FEAR I shall have some difficulty, my dears, in making you comprehend what I mean by the Curiosities of Nature, for all creation might be included under that head. The little fly crawling up the side of that glass,—the germ in the pea you saw John sowing in the garden last month, and which will throw up a whole handful of young peas next spring,—are equally objects of curiosity with the destructive volcanoes and other grand objects, which it is my intention to describe to you.”

“ Oh! papa,” said little Mary, “ I wanted to ask you how it is that the fly can crawl up the glass, and on the ceiling, as it does; I have seen the cat run up the trees on the lawn, but she has claws, and I don’t think the fly has, for its feet feel quite soft when it lights on one.”

“ I will explain that to you, Mary; for although not exactly what I was going to tell you, it is quite a curiosity of nature. It was long supposed that the fly and many other insects had the power of pressing

a gummy substance from the foot, which enabled them to walk up a pane of glass, or even on the ceiling; this notion, however, is now proved to be incorrect, and a beautiful provision of nature is explained. The foot of the fly, small as it is, has the means of exhausting the air between it and the glass, and the air which fills the room, pressing upon its body, is sufficient to support it, either in an upright position, or from the ceiling of the room."

"How very funny!" exclaimed several voices; "but, papa, the fly is very small, and I have looked at the foot without seeing what you describe; how do you know this?"

"All this is seen through a microscope, an instrument which magnifies the smallest insect so that it looks the size of an elephant, and then the apparatus I have described is visible; but this is only one of thousands of similar instances of the goodness of our Creator. Even the rays of the sun have lately been found to possess powers which seem quite magical, for by exposing to their influence, for one instant, a plate of metal or a sheet of paper, properly prepared, a perfect portrait can be taken of your little face. But what I intended amusing you with, will be better expressed by the word *phenomena*, a Latin word, which, however, you will find explained in your English Dictionary. The first thing I mean to tell you about is the great Deluge, which you read of in the Book of Genesis.

"You will recollect that God revealed to Noah, who was a good man and worshipped him, the intended destruction of the world, in order that he might build an ark, in which himself and all his family, and a male and female of every living thing, might be saved. The cause of the Deluge is thus related in the words of Moses: 'God looked upon the earth, and behold it was corrupt; for all flesh had

corrupted his way upon the earth. And God said unto Noah, the end of all flesh is come before me, and I will destroy them with the earth. Behold I, even I, shall bring a flood of waters upon the earth, to destroy all flesh, wherein is the breath of life, from under heaven; and every thing that is in the earth shall die, every living thing that I have made will I destroy from off the face of the earth.' Such was the warning voice which impelled Noah to prepare the ark. The fulfilment of the judgment is thus described in the next chapter: 'The fountains of the great deep were opened up, the windows of heaven opened; and the rain was upon the earth forty days and forty nights. The waters prevailed exceedingly upon the earth, and all the high hills under heaven were covered. Fifteen cubits upwards did the waters prevail, and the mountains were covered. And all flesh that moved upon the earth, both of fowl, and of cattle, and of beast, and of creeping thing that creepeth upon the earth, and every man, all in whose nostrils was the breath of life, all that was on the dry land perished, and Noah only remained alive, and they that were with him in the ark, for the waters prevailed upon the earth an hundred and fifty days.' Such is the scriptural account of the Deluge, which happened sixteen hundred and fifty-six years after the Creation, and which seems to have overspread the whole face of the earth, sweeping it from north to south, and from east to west, the waters covering the tops of the mountains, and a general destruction overtaking all created things, animate and inanimate, except Noah, his family, and the creatures who were with him in the ark. After the waters had raged a hundred and fifty days, 'God remembered Noah, and made a wind to pass over the earth, and the waters were assuaged. The fountains of the deep, and the windows of heaven were stopped, the rain was

restrained; and, in the seventh month from its commencement, the ark rested on Mount Arrarat, a mountain with two lofty conical peaks, situated in the great chain of the Taurus, about half way between the Caspian and Black Seas; but it was not until the eleventh month that the waters were dried up from the earth, and Noah removed the covering of the ark, when behold the face of the ground was dry. The great waves of the deep had become quiet, the waters had retired within their channels, and the mountains and fields appeared; the world began again, and in the form and shape in which we now see it.

“Such is the story of the Deluge, as it is handed down to us; and it is remarkable that the account of it is not confined to the writings of Moses, but is confirmed by the records of several of the most ancient nations of the world. The Chaldeans give an account of it closely resembling that of Noah. According to this account, Xisuthrus, the tenth of the Chaldean kings, dreamed that the world was to be destroyed by a flood; and he was ordered to write down a history of all things, and bury the writings under ground at Sippara, the City of the Sun; that he should there build a ship, and go into it with his friends, taking with him all fowls and four-footed beasts. Xisuthrus did all this, and, in course of time, his ship rested on a mountain; he came out with his wife and daughter, raised an altar, and having sacrificed to God, he, and those who went out with him, disappeared; but a voice in the air told his friends, that for his great piety and goodness he was to dwell with God.

“Neither were the ancient Egyptians without their written history of this great event, for Plato, the Grecian philosopher, says, that one of their priests read to Solon, the Grecian lawgiver, a history of this

universal flood; the Greeks have an account nearly similar to that of the Chaldees; and the inhabitants of Heliopolis in Syria shewed a chasm, which they said swallowed up the waters of the flood; over this chasm was built the temple of Juno, and at one period water was brought twice every year from the sea, and poured out in the temple, afterwards sinking into the chasm. Even the Americans are said to acknowledge a deluge on their continent; and there are traditions among the Chinese, that Puonca and his family only escaped from a great and universal deluge which happened in that country. Other writers, however, deny that the Chinese have any such traditions.

“ Much controversy has arisen upon the question, whether the account given by Moses is to be taken literally as applying to the whole world, or only to a part of it; but with such universal testimony as we possess, that, at some period since the Creation, all the hills under the whole heavens were covered by the waters, little room is left for doubt; and I will try and explain to you how learned men account it, so as to reconcile the event with the usual course of nature; for even the judgments of God are presumed to be brought about in accordance with natural laws, laid down at the creation of the world. If the Deluge was universal, the quantity of water sufficient to produce such a deluge as is described, would be equal to twenty-two times what is contained in the seas which now divide the earth with the land, and where could such an immense quantity of water come from, or where could it go to? It would have been easy for the Creator of all things to suspend the laws he had made,—the minute account given by Moses leads, however, to no such conclusion; the clouds above, the deeps below, and the bowels of the earth, are the storehouses he directs us to for the means of destruc-

tion, and the natural supply is inadequate, so far as we can comprehend it. In this dilemma, some writers say that God created waters on purpose to make the Deluge, and annihilated them afterwards; others, that the air was changed into water; and others again, that the earth, with all its mountains, stones, and metals were totally dissolved in the waters; and, when they subsided, were reformed in one common mass, thus forming stone, marble, coal, and other substances of which the earth now consists.

“ Another opinion is, that the chief cause of the Deluge was a change at the centre of the earth, by which its position was changed, and the Deluge was produced, in the same way as we sometimes have extraordinary high tides overflowing the whole sea-banks; others have ascribed the Deluge to the influence of a comet, whose tail approached very near to the earth, and had such an effect upon the waters as to produce the inundation, and it is certain, astronomers find by calculation that one of the greatest comets which ever visited our earth must have appeared about this time. Another writer, arguing from the known effects of the sudden admission of water into a mass of burning material, such as a furnace of melted iron, which has more than once produced most destructive effects in iron foundries, accounts for the Deluge, by supposing there were extensive subterranean fires within the earth; and that these fires, increasing in extent, and meeting the waters, produced an earthquake which destroyed the whole earth; by which means, what was before dry land became sea, and the bottom of the sea was so raised, when the Deluge subsided, as to become dry land; by this means he accounts for shells and other objects, which must once have been at the bottom of the sea, being now found on the highest mountains. All these causes, however, would be insufficient to

account for it, on the basis of any known law of nature ; therefore, it is very reasonable to believe that God, having determined to punish a wicked and disobedient people, interposed the strong and naked arm of Omnipotence to effect it. I fear you are hardly able to understand all this now, but by-and-bye you will recollect what I have now told you, and be glad I made you acquainted with what men say about the great Deluge.

PART II.

“ I AM now going to tell you something about earthquakes and volcanoes ; and when you have heard what I have to say, you will rejoice that you were born in Britain, where these are equally unknown ; you will, perhaps, recollect a great talk about an earthquake, which was to destroy London, a year or two ago ; and how St. Paul’s had sunk a certain number of feet on one side, on a certain day ; and how a great number of silly people went away, in order to avoid the impending destruction : but that is all nonsense,—our happy climate if it does not give us the clear blue sky of Italy and other southern countries, and the red glare of an eastern sun, leaves us enjoyments no less delicious, and long may ‘ Young England ’ learn to enjoy them ;—they are found in our hedge-rows, in our meadows richly crowned with verdure, in our cultivated fields, and, above all, in our happy homes and round our sea-coal fires.

“ The volcanoes most celebrated in history are found in Italy and Sicily ; in the Mediterranean Sea ; in Asia, Africa, and America ; and it is curious to remark that they seem to communicate very extensively with each other. Mount Vesuvius is the most celebrated of all.

The fires which produce these devastating effects are supposed to exist to an enormous extent, at a great depth beneath the surface of the earth, and the immediate cause of the eruption is supposed to be the admission of water from the sea; the steam arising from this water, which is very elastic, being in itself sufficient to account for the devastating effects of earthquakes.

“ From the earliest period, Vesuvius has been a word of terror to the inhabitants of the coast of Italy; and the cities now occupying the coast of Italy and the Bay of Naples, are founded on a succession of cities buried under the accumulated lava of centuries. Herculaneum, a city of ancient Rome, on this coast, is now covered, to the depth of seventy feet, by masses of black lava; and Pompeii, at about an hour’s journey from Naples, remains at once to tell its own dreadful story, and present us with a monument of the social manners of the ancient Romans. This city was utterly destroyed in the year 79, and with it multitudes of human beings. The audience filled the theatres both of Herculaneum and Pompeii when the eruption commenced; and so suddenly did destruction come upon them, that, in some cases, they were actually buried in their seats, and at their daily avocations, by the storm of ashes.

“ The eruption, in which these cities were entombed, commenced with a tremendous explosion; a thick volume of smoke issued from the mouth of the volcano, shooting up to a great height, assuming the form and shape of a pine-tree, with its spreading branches, and obscured the whole sky. All this while the volcano was throwing out ashes, gravel, sulphur, and red-hot stones, which fell in such immense quantities, as gradually to cover the towns I have named, blocking up the streets. In the meanwhile universal darkness prevailed, and nothing

was heard but the shrieks of the horror-struck inhabitants; mothers calling for their children, children for their parents, and women for their husbands, from whom they had been separated in the universal uproar; while these wealthy cities, with numbers of their inhabitants, were being buried beneath the ashes and other falling masses issuing from the mountain, the burning lava, flowing over the mouth of the crater, rolled down the sides of the mountain, desolating vineyards, and covering the towns and valleys in its awful course. Thus perished the two elegant cities of Pompeii and Herculaneum, the ruins of which, after being buried and totally forgotten for upwards of sixteen hundred years, were at length discovered by accident,—exhibiting the houses, temples, furniture, and provisions, as they existed two thousand years ago, of a people who once ruled the civilised world, but who now only live in the pages of history.

“Some of the houses, on being opened up, presented numberless proofs how suddenly the eruption took place. The skeleton of a mule and his driver were found where they had been labouring. The bones of the lady, with a gold ring on her finger, was found; and near her the maidens who had attended her. The mother was found clasping her infant, on the spot where the falling masses had hemmed her in; and in one house the owner had taken refuge, with his friends, servants, and treasure, in the cellar; but here, as elsewhere, death overtook them all, as was proved, by the bones and treasure strewn around, when it was excavated.

Besides these two cities, the whole neighbourhood on both sides of the mountain were much alarmed, and the cities of Puteoli and Cumæ, were greatly damaged, partly by the concussion which preceded

the eruption, and partly by the burning ashes. The natural historian, Pliny, was suffocated in the cloud of dust that fell; having, in his zeal to witness the eruption, approached too near the spot to retire in safety. In one instance, a skeleton was dug out with great care, when the features were found impressed on the lava with as much care as if taken in a plaster of Paris mould—the impression of the nose, mouth, and eyes, and even the eye-lashes, being perfectly distinct.

“The next great eruption of Vesuvius which is recorded, occurred in the year 1766; but although at one time it threatened the city of Naples, it exhausted itself without any serious mischief. Between this period and 1794 ten eruptions are spoken of; but in the latter year a most destructive one took place, which entirely destroyed the little town of Torre del Greco, which had been built over the buried site of Herculaneum, and at this period contained about eighteen thousand inhabitants.

“For several months the volcano had been remarkably quiet, scarcely a single cloud of smoke having issued from it, but, on the 12th of June, all Naples was sensibly affected by the shock of an earthquake; on the 15th another shock was felt, and at the same moment a bright fountain of fire, accompanied with clouds of smoke, from the middle of the cone of Vesuvius, appeared. This was succeeded by fifteen other eruptions from various parts lower down the mountain, but all in a direct line between the towns of Resina and Torre del Greco. At this time, the clouds which overshadowed the mountain were emitted from the new mouths above-mentioned; but on the morning of the 16th, black smoke was issuing out of the crater, and by daybreak a stream of lava began to roll down the side of the hill, from a new mouth on the opposite side of the mountain, facing the

little town of Ottaiano, carrying destruction into the vineyards, with which the mountain side was covered. The clouds increased in size and height, hovering over the mountain in the usual form of a pine-tree, with its waving branches, and by five o'clock the stream of lava issuing from the new mouths had reached the sea, having overwhelmed in its course the greatest part of the town of Torre del Greco.

“The breadth of the mass of lava which entered the sea, after destroying the city, is about twelve hundred feet, its height above the water about twelve feet, and it forms a promontory running about six hundred feet into the sea, the water around it being about twelve feet deep. The progress of the lava was very slow, so that the inhabitants, with the exception of about fifteen, had time to make their escape to Naples and Castel a Mare. The scene of hurry, flight, and confusion may be conceived, for at first the burning tide seemed rather to threaten Resina, but it suddenly changed its course, increasing in rapidity as it approached the devoted city, from which the inhabitants had already begun to fly, leaving everything behind them. In spite of this awful catastrophe, Torre del Greco is again a flourishing town, the inhabitants exhibiting as much security as if the event had never occurred; but before I leave this subject, I must read you an account of the mountain itself, which has caused such destruction. When about half-way up the mountain, the beds of lava are seen sometimes a mile in breadth, and extending from the top of the mountain to the margin of the bay; protuberances, four or six feet in height, and of the most fantastic shapes, are scattered over the hideous track, having nearly the same degree of roughness as a torrent of water would assume in rolling down a hill, and freezing as

it broke over the rocks in its way. The complexion and general appearance of the beds at a distance, is not unlike that of a newly-ploughed field, in a very rude state, with a black soil; half-way up the mountain is a hermitage, where travellers ascending to the top pause a little to rest; from this spot the mountain rises very abruptly, and the side of it is covered with ashes, cinders, and loose stones, into which your feet sink up to the knees at every step, rendering the ascent very difficult. After an hour's hard labour the summit is attained, but still at a considerable distance from the crater; and the various ridges of lava present a dreary and desolate waste of hills and valleys, in some of which the lava still continues to be discharged, while explosions, which occur every five or ten minutes, hint at the danger of approaching too near.

“ Next to Vesuvius, Etna presents the most remarkable volcanic wonder. Mount Etna is situated in the island of Sicily; it is a much larger mountain than Vesuvius, its base occupying a circuit of a hundred and eighty square miles, and its height being eleven thousand feet, while the liquid fire thrown from it has been known to traverse a space of thirty miles.

“ The first recorded eruptions of Mount Etna carry us back to the fabulous days, when the flames and clouds of smoke thrown up from its crater, were supposed to be the breathing of giants imprisoned within its bowels; nor need we be surprised at this strange notion in an ignorant and superstitious people:—imagine a torrent of fire, ten miles in extent, thrown to an immense height, and then rolling in burning waves into the ocean thirty miles distant, accompanied with clouds of vapour, darkening the heavens and covering the scene as with a veil, and laying waste the whole surrounding country. The crater itself is of an oval

form, extending from east to west, and is enclosed by vast fragments of lava, thrown up by successive eruptions ; the circle within this ridge is a plain, about two-thirds of a mile in circumference, having a large circular aperture, giving vent to a column of white smoke, below which is visible a liquid fiery matter, like red-hot metal in a furnace.

“ The town of Catania, situated about half-way between the mountain and Syracuse, has been repeatedly the victim of its destructive powers. It is stated that the people of Catania, digging for pumice-stone, found, at the depth of sixty feet, streets paved with marble, and other monuments of antiquity ; shewing, beyond a doubt, that cities, of which no trace exists in history, are buried here. The first great eruption, of which an authentic account exists, happened in 1669, when a vast tract of land round about was destroyed, and, among other buildings, the cathedral of Catania with its inhabitants. This eruption broke out on the 11th of March, and on this occasion a new mouth was opened on the south-east side of the mountain, about twenty miles below the old one, and ten miles from the town of Catania. The lava moved, at first, at the rate of about three miles in twenty-four hours, but afterwards moved much slower, for on the 5th of April it was still within a mile of Catania. It soon made for itself a passage under the walls into the sea, and having gradually filled up all the intermediate space by the beginning of May, it was on a level with the tops of the walls, over which it began to pour in several places. Its chief fury fell on the walls of the stately convent of the Benedictines, which were sufficiently strong to resist its force ; but had it fallen on some other parts of the town, nothing could have prevented the total destruction of the place.

“ The ravages inflicted on the surrounding country were very great, upwards of fourteen towns and villages having been destroyed,

only the spire of the church of one of them remaining visible; the wind seemed to the spectators to carry up into the air a vast pillar of ashes to twice the height of St. Paul's, and in the fifty-four days during which the eruption continued, neither sun or stars were visible to the inhabitants.

“ The ascent to Mount Etna is a task of great labour, and such as few would undertake, as the side of the mountain is completely covered with matter thrown up in the various eruptions, which is very light, and easily displaced. On attaining a position from which the crater can be seen, it presents the appearance of an irregular sort of funnel, large at top and narrow at bottom; within this is a circular mouth, in which an eye-witness affirms that he could see the boiling liquid rising and falling, and on throwing a stone into the mass, a sound was produced as if it had fallen into a thick paste.

“ Etna rises, as I have said, to eleven thousand feet above the level of the sea, and the summit, in spite of all this internal fire, is usually covered with ice and snow, with clouds hovering over it; the poet says,

‘ Amid the fires accumulates the snow,
And frost remains where burning ashes glow;
O'er ice eternal sweep the inactive flames,
And winter, spite of fire, the region claims.’

Within a short distance of the crater, the side of the mountain is covered with forests of oak, beech, fir and other pines: but, as that point is approached, all vegetation ceases; the difficulty of its ascent is much increased by the sulphureous vapours which prevail, and which are attended with great danger, should a change of wind bring the adventurer within their influence. Seen from the sea, the surrounding country presents a delightful prospect of fertile fields; a

little higher it is girdled with a belt of trees, and above these a bare and barren rock; still higher up its sides are covered with snow, glistening in the rays of the sun; its top is surmounted by columns of smoke, curling upwards.

“ You will not be surprised to find that this island, so fertile, and so full of beautiful and picturesque scenery, has been subjected to the visitations of earthquakes, as well as volcanoes. In 1783 the finest buildings of the beautiful city of Messina, the capital of the island, were levelled with the dust, almost in a moment, by one of these visitations. A slight shock had been felt during the day; but about eight o'clock, when all was darkness, the earth began to tremble, rocking like a ship on troubled waters; the sea itself swelled, dashing huge waves on the beach, to which the trembling inhabitants had fled for safety, ingulfing in its flood more than one thousand persons; while, in the city, the magnificent churches and other buildings rocked to their foundations, and became involved in one common ruin.

“ Besides Vesuvius and Mount Etna, this coast presents numerous other instances of the internal fires contained in its bosom. The Lepari Islands are all of volcanic origin, and Stromboli is the most remarkable of them. Sailing along the coast, between Sicily and Italy, its towering head presents itself in wreaths of white smoke during the day, but at night Vauxhall never presented a finer display of fireworks. The eruptions seem to succeed each other every ten minutes; sometimes in a sheet of flame, rising a few feet—sometimes mounting to an immense height, lighting up the whole side of the mountain with its brightness.

“ But I see you are getting tired of these, ‘ Nature’s own fireworks,’ and I will leave the subject for the present.”

PART III.

“HAVING described to you some of the worst volcanic eruptions, and their destructive effects, perhaps you would like to hear something about the great antagonists of heat—frost and snow. You have sometimes complained, after you have been rolling your snowball together, of your fingers being benumbed with the cold, and the more you held them to the fire the worse they became. Well, that’s nothing to what is experienced in the cold countries of the frozen north. You will learn, by reading the tale in ‘Young England’s Little Library,’ called ‘Glory,’ something about a Russian winter.

“In mountainous countries like Switzerland, the Alps, Savoy, and even in our own Highland glens, most distressing scenes sometimes result from great falls of snow; but in the former country it is no uncommon thing for immense masses, the accumulation of years, suddenly loosened by some thunder-storm, or other convulsion of nature, to descend into the valley, carrying ruin and destruction before them; some of these avalanches, as they are called, have been known to sweep whole villages before them, leaving a path a hundred yards broad behind them.

“There are some very extraordinary instances related of the preservation of life under these dreadful visitations; one of these events happened in Piedmont, in 1755.

“On the morning of the 19th of March of that year, Joseph Rochia, one of the inhabitants of a little village named Bergemoletto, situated half-way up a lofty mountain in the upper valley of Stura,

Mount Holy Trinity of Vancouver B.C.

FALL OF AN AVALANCHE.



had occasion, with his son, a lad of fifteen, to go out on the roof of his cottage, to clear away the snow, which had been falling heavily for several days. From this position he saw an immense mass of snow tumbling down the mountain side towards them, and this he at once knew to be an avalanche; they had barely time to get out of its path when they witnessed the whole village, with its inhabitants, twenty-two in number, buried in a mass of snow, measuring sixty feet in height.

‘O’er his dear cot a mass of snow,
By the storm severed from the cliff above,
Had fallen, and buried in its marble breast,
All that for him, lost wretch, the world possessed,
His home, his happiness, his love!’

“His neighbours assembled, and, after many days’ labour, assisted by the warmth of an April sun, which melted much of the ice, this unfortunate man at length succeeded in finding the ruins of his house. Breaking through the ice with iron bars, it was found that his wife, sister, and daughter were still alive; with much difficulty they were drawn out of the ruins, nearly exhausted by excessive cold and want of food, having been thirty-six days buried under the snow. It seems, the three persons saved had been in the stable, and observing the mass of snow descending, they took shelter under the manger; over them was the main prop of the stable, which, fortunately, was strong enough to resist the weight. They had some bread within reach, and also a milch ass and a goat, which yielded them sufficient nourishment to preserve their lives.

“The noise made by the avalanche, in its descent, is described

as resembling a long and loud clap of thunder, echoed by the rocks and mountains so as to be heard many leagues off.

“The Alps, in which such scenes as this occur, are the highest mountains in Europe. They are composed of stupendous rocky masses, rising from four to twelve thousand feet high; the lower parts covered with rich herbage; the middle part abounding in herbs and trees; while the top consists entirely of craggy and inaccessible rocks, many of them covered with perpetual snow and ice, vast fragments of which frequently fall into the more fertile valleys beneath.

On these mountains (from the thawing of the ice on the summits of which, under the heat of the sun, the principal rivers in Switzerland take their rise) the cold is very intense, and is accompanied with high gales of wind and damp fogs; while in the valleys, the summer heat is equally insupportable. Each mountain has also its foaming cataract, sometimes so concealed in the bosom of the clouds as to present the appearance of a torrent pouring down upon the rocks from the heavens. One of these cataracts, on the Arne in Savoy, is said to fall from the prodigious height of 1,100 feet, accompanied with great noise and violence.”

PART IV.

MR. STOCK was too much interested in his subject to let many days pass before he resumed his relation. “I have directed your attention,” he said, “to Nature’s fire-works, now I am going to tell you about her water-works, which are equally curious, and, when they

break bounds, equally destructive; for water, like fire, is a good servant but a bad master, as the proverb has it.

“In talking about water, the ocean first presents itself: unless, indeed, in our case, we think first of the ‘water’ and the ‘braes,’ where we spent so many happy days during summer. All such rivers as ours take their source in ranges of mountains; and, in running from the high land to the sea, they usually receive numbers of tributary streams. Our water follows its course until it is emptied into the sea; but there are rivers which have a much more mysterious course, and some of these I will describe to you. We have been talking a good deal about the island of Sicily, and by-and-bye when you get more advanced with your Latin, you will hear much about the fountains of Arethusa at Syracuse, and how the nymph Arethusa was transformed by one of the heathen deities into a stream. This is all nonsense; but the fountain is, nevertheless, a very curious one, rising out of the earth, and flowing through the city in a stream three or four feet deep. It is visited by thousands of persons, who believe that the waters have the power of curing melancholy. Linen washed in this fountain is also believed to possess the same quality; hence it is much frequented by the washerwomen of the country, who levy a tax on the curious who visit the spot for its poetical associations.

“The source of the Scamander is another spot much celebrated by the classic poets. This is a river of Asia Minor, flowing through the plains of Troy, and its source is described as highly curious. Ascending by the side of a clear and impetuous stream, the traveller passes various ruined temples; as he draws near the source, the ground becomes steep and stony; far above him towers the rocky steep, rising perpendicularly to a considerable height, while the

torrent foams away in its rugged bed below; the noise of the waters drowning every other sound. Enormous plane trees wave their branches over the torrent, while the most beautiful evergreen shrubs, wild sage, and ivy, and other herbage, crown the distant heights. As the gulf is approached, several cascades, from an equal number of chasms in the rock, present themselves, foaming over the perpendicular banks, and falling about forty feet. These magnificent cataracts continues the same during all seasons, apparently wholly unaffected either by rain or the melting snow, but bursting at once in all its glories, from by its native bed in the bosom of the mountain. After clambering over the intervening rocks, a beautiful natural basin presents itself, six feet deep, and so clear that the minutest object may be seen at the bottom; the overflowing waters from this basin form the cascades mentioned; and behind are several caverns, from which the water is seen rushing with great force from under the rock towards the basin.

“This was one of the retreats of the early Christians, who fled thither from their persecutors:—here, amid the roar of waters, waving forests, and broken precipices, did they worship their Maker.

“There are some rivers which are said to lose themselves in chasms under their beds, flowing for miles through secret and undiscovered channels. Such is said to be the case with the Arethusa, already mentioned; and such, also, is the case with several of the rivers of Normandy: thus the rivers Rille and Ithore lose all their waters during summer, in the short space of two leagues. The Sap André is lost in a still more extraordinary manner, for, at the end of its course, it is ingulfed without any fall; the waters passing between the pebbles of its bed, in consequence of a rise of six or seven feet in the ground, which made it easier for the waters to force a sub-

terranean passage than to pass over the rising ground. Again the Drome, after losing some of its waters, vanishes entirely in the pit of Souci, where it meets with a subterraneous cavity, twenty-five feet wide and fifteen deep, and never appears again. The cause of these phenomena seems simple enough; under the beds of the rivers which lose themselves in this way, the soil is naturally porous, and the river having only a very slight force, the water dwells upon and saturates it until a new channel is formed underground.

INTERMITTING FOUNTAINS.

“Among other natural curiosities, none are more interesting than the intermitting fountains which are found in various parts of the globe. The operations of these fountains are explained on the principle of Tantalus’s cup, which I will try to describe to you; it is in the form of a cup, and in this case is represented by a well or natural fountain, having attached to it a siphon or hollow tube, with a short leg and a long one, united by a circular bend at the top; the short leg being placed in the fountain would soon entirely empty the cup, were it not supplied afresh, which it is. In the instances I am going to describe to you, there is supposed to be a natural siphon, communicating with the fountain; now, as soon as the surface of the water in the fountain rises above the circular bend of the siphon, the water begins to run off through the long leg; for the siphon coming into operation, carries off more water than is thrown in, and soon brings the fountain to a level below the bend, when the siphon loses its

power entirely; the current which originally filled the well is now the most powerful, and soon fills it again; the siphon is once more brought into action, when the same result takes place. With this explanation of the principle, which is very curious, I will now tell you about some of the most remarkable of these fountains.

“The first ever mentioned is one on the Lake of Como, in Italy, described by the natural historian Pliny, and in so simple a manner, that I will read it from his book: he says, writing to a friend, ‘There is a spring which rises in a neighbouring mountain, and, running among the rocks, is received into a little banqueting-room; from whence, after the force of its current is a little restrained, it falls into the lake. This spring ebbs and flows regularly three times a day, the increase and decrease being visible, and very amusing to observers. You sit down by the side of the fountain, and whilst you are taking a repast and drinking its water, which is extremely cool, you see it alternately rise and fall. Should you place a ring at the bottom when it is dry, the stream reaches it by degrees, till it is entirely covered, and then gently retires.’ Pliny ventures on various speculations as to the cause of this; but some of the great principles of science were not known to him, having been discovered since his time; one of these, the siphon, in some respects explains this phenomenon.

“At Paderborn, in Westphalia, there is another similar spring, which disappears twice in twenty-four hours, returning after six hours’ absence with a great noise, and in such force as to drive three mills near its source: besides this spring, the same district contains three other streams, two of which are not above two feet from each other, and yet one of them is a clear blue colour, lukewarm, and bubbling; while the other is icy-cold, turbid, and whitish, and contains a

totally different deposit; the third stream, about twenty paces distant, is of a greenish colour, very clear, and has a sourish but not disagreeable taste.

“In our own country there are several of these reciprocating springs. At Torbay there is one called Lay-well, the fountain of which is about six feet long and five broad, and six inches deep when full. This fountain was observed to ebb and flow sixteen times in an hour; when the water began to rise it was attended by many bubbles, rising from the bottom, which ceased when falling. Another spring, displaying similar phenomena, is found at the foot of Giggleswick Scar, a well-known mountain in the West Riding of Yorkshire. The water discharged by this spring, falls at once into a stone trough, in front of which are two holes near the bottom; in this case, however, the ebb and flow are very irregular, and are supposed to throw some discredit on the explanation given of the principle. Another curious phenomenon is observed in Lake Zirchinzer, in Carniola, a province belonging to the Austrian empire, now better known as Trieste. This lake is situated in the midst of a lofty range of mountains, which run southward for a great distance into the Turkish territory; the mountains on the south side of the lake are wild and precipitous, affording roosting places for thousands of pigeons in numerous caverns.

“The lake is about eighteen miles from the city of Laybach, is about three miles long, a mile and a half broad, and is about sixteen cubits at its greatest depth. The peculiarity of this lake is, that every year, about July or August, it is completely emptied of its waters, and remains perfectly dry for three or four months, yielding in that time crops of various kinds to the inhabitants. When the waters begin to sink; at a given signal, all the inhabitants of the

neighbourhood fly to the lake—man, woman, and child, rushing to this fish harvest. The lake takes about twenty-five days to empty itself completely, one pool after another being gradually emptied of its contents, and shoals of fish left on dry land, a prey to the fishermen, —whole cartfulls being sometimes found in one pool.

“ It is supposed that this mountain contains in its bosom an internal lake, on a lower level than this one, which is supplied through subterranean passages from lake Zirchinzer; and as the streams which supply the latter dry up from the summer’s drought, its waters are drawn off to supply the other. This seems confirmed by what attends the returning waters; for, besides quantities of fish which return to it with the rushing waters, ducks are cast out, which have evidently been hatched under the mountain, being totally blind for the first fourteen days, and having few or no feathers on them.

“ When the rainy season commences, the waters rush up through their channels with great violence, forming fountains, which throw their waters several fathoms high; some of them rising perpendicularly, and others obliquely, in all directions, and forming a most agreeable sight. When the rains are heavy, this lake will, from being quite dry, be full of water in four-and-twenty hours, coming sometimes so suddenly on the inhabitants, that their crops of millet are swept away by the flood.

HOT SPRINGS.

“ Hot springs are found in most quarters of the globe, and present very interesting phenomena. In our own country, at Wigan in Lancashire, is a spring which appears to boil, but is quite cool to

the touch; when flame is applied to it, it blazes up like gas. At Bath the waters rise out of the earth at a very high temperature, forming natural baths of great heat. In many places these hot springs are evidently in connection with volcanoes. At Montpellier, in the south of France, is a noted fountain, whose waters heave and boil up furiously; nor is this appearance confined to the fountain, for, on digging in the ground, and pouring cold water into the hole, the same boiling is observed; and this extends even to the sea-shore. In the neighbourhood of Naples, at Aix-la-Chapelle, and other places, springs are found hot enough to boil eggs, and other things, in a very short space of time.

“At a very early period the hot springs and medicinal vapours, in the neighbourhood of Naples, must have attracted the attention of the Romans; and *Baiæ*, the *Lucrene Lake*, and other places on this coast, soon became the resort of the gay masters of the world, who quickly transferred thither the plunder gathered by their conquering legions. The softness of the climate, and the beauties of the landscape, gratified their taste; while the baths, in which they indulged to excess, were here naturally heated to every degree of warmth, and, flowing spontaneously out of the ground, were objects too important to be overlooked. With these advantages, *Baiæ* soon became a great city, so that it was found necessary to extend its foundations, even into the sea; but with the fall of the Romans came its ruin, and the sea has years ago recovered its ancient bed, swallowing up towers, palaces, and promontories, in the struggle.

“Among the hot springs in our own country, the most celebrated are found in the city of Bath, and these are the more remarkable, seeing that nothing of a volcanic nature can be near to produce them.

“ The island of St. Michael’s contains some very remarkable tepid and hot springs. On the east side of the island, about twelve miles from Villa Franca, is a beautiful valley called Furnos, in which are several hot fountains; the most remarkable of these is called Caldeira. It is situated in the eastern part of the valley, on a small eminence by the side of a river: the fountain forms a basin thirty feet in diameter, and here the water boils with great fury, throwing out a thick muddy water to the distance of several yards. In the middle of the river, also, the waters boil up so hot as to scald the finger: while, on the banks of the river, in many places, the steam issues too hot for the hand to approach: the steam is employed by the natives in boiling their yams. The boiling is accompanied by a great noise, in some places sounding as if a hundred smiths’ bellows were at work. The steam is of a sulphurous nature, and has been found beneficial for gout and other complaints. All these springs, however, sink into insignificance when we come to speak of the hot springs of Iceland, better known by the name of the Geysers. Iceland is an island about two hundred and sixty miles long, and two hundred miles broad: the island exhibits, in every quarter, strong evidences of a volcanic origin, and its whole surface abounds in volcanoes, sulphur, and hot springs, called, in the language of the country, ‘geysers.’ The tops of its highest mountains are clothed with perpetual snow, and the loftiest of these, situated in the southwest part of the island, is six thousand eight hundred and sixty feet above the level of the sea. The country generally is poor and barren; its surface covered with rugged masses of lava, occasionally relieved by thinly-scattered vegetation.

“ On approaching the seat of the hot springs, this desolate scene



THE GREAT GEYSER IN ICELAND.

Illustration by [unreadable]

is succeeded by a rich valley, opening into an extensive plain, bounded by the sea: through this valley a winding river pursues its course through fertile-looking meadows, covered with clouds of steam and jets of water, rising from various parts of the valley. Beyond, a range of high and rocky mountains present themselves. The valley is about half a mile broad, and, whenever the surface is turned up, a strong heat is felt: in other places the springs boil in great pools, or basins, of two, three, or four feet in diameter. The chief spring in this valley, situated about eight miles from Rykum, is called the Little Geyser: the water is here contained in a well of an irregular form, about six feet across; it boils up into the air with a loud and rumbling noise, the steam bursting into the air and subsiding again every minute, while the jets rise twenty or thirty feet, dashing into spray as they rise. There is another fountain in the valley of Rykum scarcely less beautiful than this one. The jets rise to the same height, and continue about a minute, at intervals of five or six minutes, but the quantity of water is much greater.

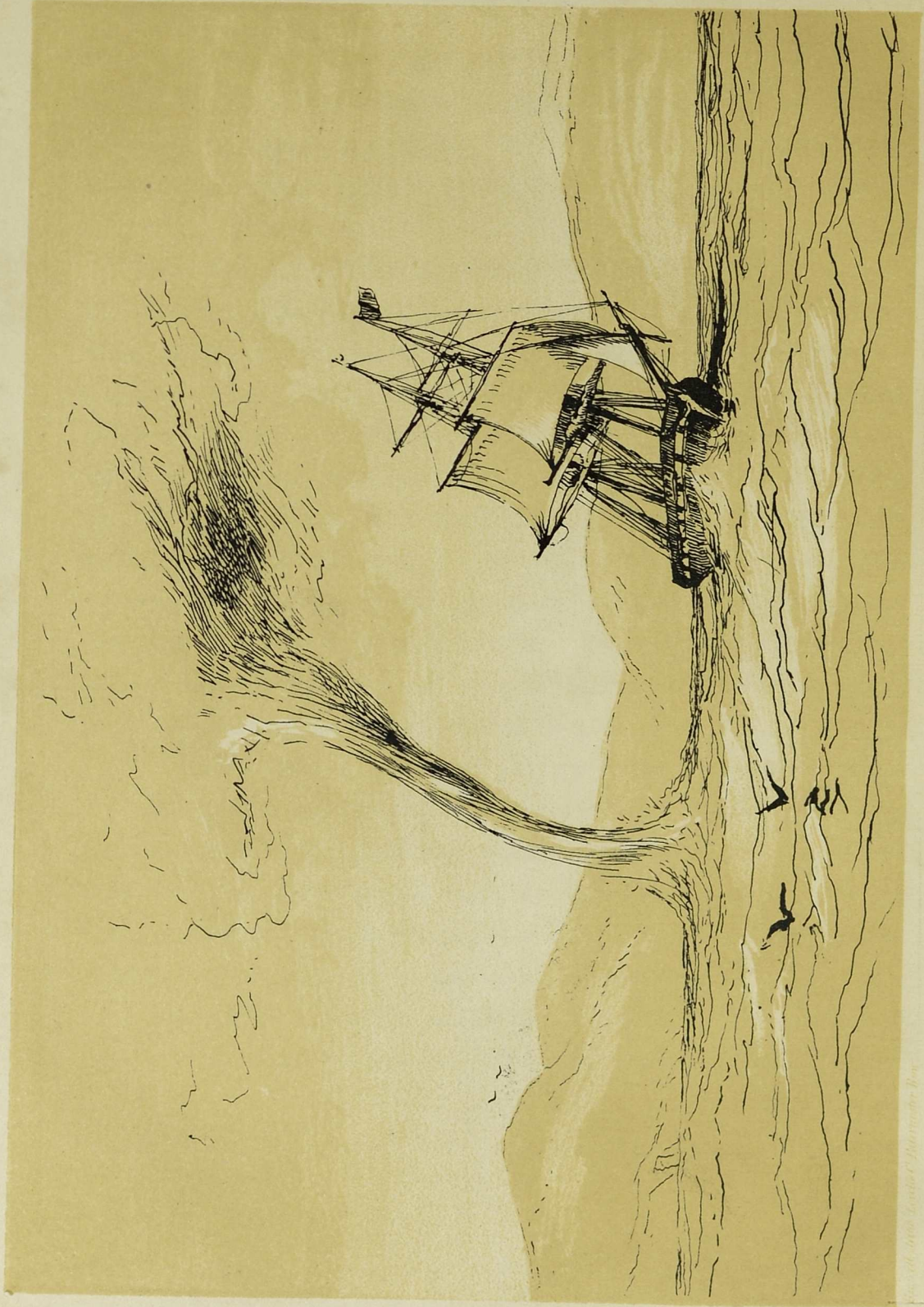
“The Great Geyser is even a more remarkable curiosity than this. It is situated about six and thirty miles from Mount Hecla. The road to it, from the village of Skalholt, is through a flat country abounding in pasturage; and when the air is still, the column of steam, rising from this powerful spring, may be seen at the distance of sixteen miles from Hankudal, the name of the valley in which it is situated: the valley itself, as well as the general features of the country here, are the most rich and fertile in the island. By a gradual deposit from its waters, a mound of considerable size has been formed, from the centre of which the water issues: it rises through a pipe about seventy feet in depth and eight feet and a

half across : this pipe opens into a basin, or funnel, measuring fifty-nine feet from one edge to the other, both the sides of the basin and the pipe being polished by the friction of the water, so as to be perfectly smooth.

“ The eruption of this magnificent fountain is usually preceded by sudden shocks felt all round, followed by a rumbling hollow noise, not unlike the distant firing of cannon, and accompanied by a violent agitation of the water in the basin : to this succeed clouds of steam, rolling over and over each other, through which jets of water are thrown up, in rapid succession, to the height of a hundred feet or more, shivering into foam from the force with which they ascend. Much of the water is met in its descent by succeeding columns, and again projected upwards ; and this beautiful display continues until the eruption ceases, and the basin is filled with the falling waters, when they roll over the side of the mound in great waves, forming numberless rills down its side.

“ These eruptions succeed each other with some regularity, lasting in some instances eight or ten minutes, while other eruptions continue, with unabated violence for fifteen minutes ; but after one of the more violent eruptions, the waters seem to sink into their subterranean beds, leaving the basin and pipe quite empty for a few minutes, thus giving an opportunity for measurement.

“ The Great Geyser is surrounded by several others of great interest, but whose beauties are lost in this overwhelming wonder.



A WATER SPOUT AT SEA.

W. H. WOODS, Engraver, Boston, Mass.

WATER-SPOUTS.

“ This is a very remarkable natural curiosity, and you will more easily understand it when I tell you, that it exactly resembles the canvass air-funnel you saw put down into the engine-room of the steam-boat to draw off the hot air; only the water-spout, while it lasts, connects the sea with the clouds. They are supposed, on some occasions, to discharge water from the clouds, at others, to draw it upwards, and at sea they are usually seen two or three together; on these occasions the sea presents the appearance of a great boiling up, as in a *jet d'eau*, the sea standing some yards above the surface like a pillar, and then spreading itself out, it becomes dissipated like smoke. It has been observed of the water-spout, that, at its conclusion, it begins to assume the appearance of a hollow tube, black at the outside and white in the middle, and at first perfectly opaque. The water can be traced very distinctly, running up the canal just as smoke does up a chimney: when it is exhausted, the spout bursts in the middle, and disappears by little and little, the pillar-like form of the water continuing to last, even for a considerable time after the spout has entirely disappeared.

“ It is said that the water-spout can be dissipated by any violent noise or sudden sound, sufficiently loud to disturb the air; but the ordinary method of dispersing it at sea is by firing guns of large size at it; the explosion sufficiently disturbs the air to disperse the waters, even if the shot fails to hit the object itself. The origin of the water-spout is usually ascribed to the presence of

a thunder cloud, in a clear and serene sky and in a dry atmosphere. Under such circumstances, thunder cannot occur for want of moist clouds and vapour; and the mutual attraction of the dry clouds and the waters of the sea draws the cloud downwards, and has, at the same time, the effect of raising the water immediately under the cloud until they unite, and then the water-spout, such as I have described to you, is the result.

“ Besides the water-spouts seen at sea, there are several curious accounts of water-spouts on land, which have devastated large tracts of country. Rather more than a hundred years ago, one of these happened in Lancashire, at a place called Emmot-Moor, near Colne, accompanied by such fearful noises in the air as to frighten the country people who were at work near the spot. These poor people took to their heels, and fairly ran for it; but before they reached their homes they were stopped in an unexpected manner. A small brook which lay in their path had risen to the height of six feet in a very short period, and completely flooded the bridge, and, although no rain had fallen, the only appearance of moisture having been a very dark mist, not uncommon on the hills, the meadows were so much flooded that the land was completely destroyed by the water, the ground having been torn up, on the spot where the water fell, and a gulf extending above half a mile having been formed, seven feet deep.

“ Other inland water-spouts are described with more minuteness. At Hatfield, in Yorkshire, one is described by an eye-witness as moving over hedge-rows and groves of young trees, driving the thatch off a house, scattering it to the winds, and even twisting off the branch of an oak tree and throwing it to some distance, being

supported all this while by opposing winds, which blew from all quarters; the water-spout was finally dissolved by the east-wind gaining an ascendancy over the others. Another of these strange phenomena is described as occurring in the Lincolnshire fens, passing over them with such violence and rapidity as to carry everything before it; spouting out water to a great height, and with a terrible noise; and finally ascending into the clouds in a long spear-like vapour, surrounded with mist, and at last ending in a fiery stream.

“There are many other things connected with “Nature’s Water Works,” about which I wanted to tell you, but we must defer it to another opportunity. Some springs are alternately hot and cold. One of these, the fountain of Ammon, in Asia Minor, gave rise to much superstitious horror among the ancient inhabitants of these countries. The poet Lucretius thus describes this phenomenon, and explains its cause:—

‘A fount, ’tis rumoured, near the temple plays
Of Jove Ammonian, tepid through the night,
And cold at noon-day; and the astonished sage
Stares at the fact, and deems the punctual sun
Strikes through the earth’s vast centre, as the shades
Of midnight shroud us, and with ray reverse
Maddens the well-spring.’

“The poet’s explanation of the curiosity dissolves this wild notion.
He says,—

‘Dost thou the cause demand, then?—Clearly hence:
That round the fountain earth more spongy spreads,
And seeds of fire throng ampler: whence when night
Pours o’er the world his dew-distilling shades,

The chilled, contracting soil here strains abrupt
As though, compressed by fingers, towards the fount
Suck seeds profusely ; then the bubbling wave
Proves to the touch ; the taste, more tepid proves.
But when, reversed, the sun with new-born beam
Earth rarifies and quickens, back profound
Fly the young fire seeds to their native haunts,
The fount forsaking ; whence the sparkling tide
Tastes in the day more frigid than at night.'

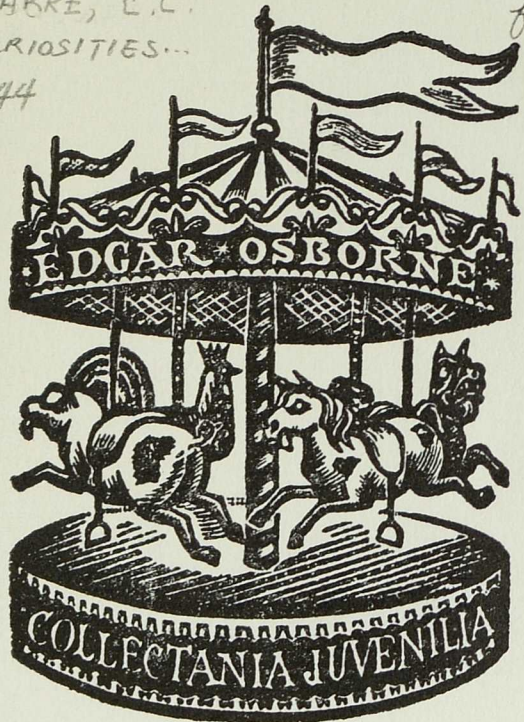
“From the romantic traditions of this fountain, the poet Moore has taken one of his beautiful poetical similes,—

‘Fly not yet, the fount that played
In times of old through Ammon’s shade,
Though icy cold by day it ran,—
Yet still, like souls of mirth, began
To burn when night was near.’”



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