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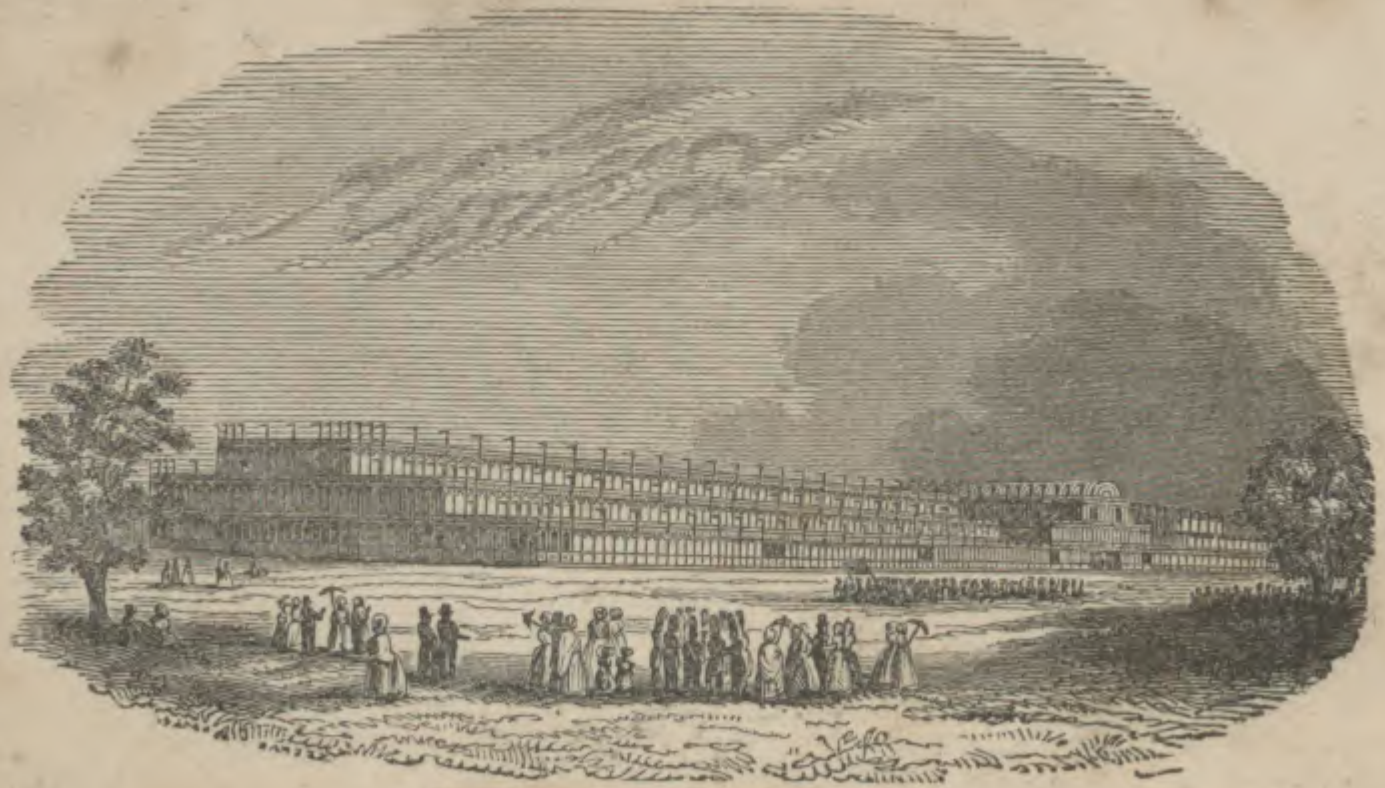

THE GREAT EXHIBITION OF 1851.

BOOK

OF

WONDERS.

PRODIGIOUS ! !

GLASGOW:
CAMERON, CLARK, & CO. PUBLISHERS,
12 ST. ENOCH SQUARE.

BOYS' AND GIRLS'

BOOK OF WONDERS

IN NATURE AND ART:

CONTAINING

Engravings and Descriptions

OF SOME OF

THE MOST REMARKABLE CURIOSITIES IN THE WORLD.

WITH NUMEROUS ILLUSTRATIONS.

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PREFACE.

Figures and Descriptions are given in this little volume of a few of the grandest and most noted Wonders of Nature and Art. One class of these is intended to place before the young reader examples of some of the greatest works accomplished by the men of bygone times, so far as the remains of these monuments are capable of doing; while another class exemplifies what has been effected in our own day by the vast and daily increasing resources of science in meeting and overcoming extraordinary obstacles to the accomplishment of great purposes in works of public utility. Both these classes of objects, in striking the mind of youth with admiration and wonder, cannot fail to excite emulation in analagous and kindred walks. A few of the more interesting curiosities of Nature have

been interspersed for the sake of variety, and of a character calculated to elevate the mind of the young to a proper conception of the greatness, wisdom, and goodness of the Creator.

The youthful imagination delights to contemplate such subjects; and in the selection and adaptation of the articles for this little work, care has been taken that the language used, while not so puerile as is usual in juvenile books, is yet simple enough for the comprehension of youthful readers.

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BOOK OF WONDERS

In Nature and Art.

THE CRYSTAL PALACE OF 1851.

The Great Exhibition of the Works of Industry of all Nations will make the year 1851 a prominent one in the annals of England. So far, indeed, as respects human progression and the advancement of civilization, it will mark an important era in the world's history. But though to England may belong the credit of having rendered a truly cosmopolitan conception a grand historical fact, it is to the "noble French nation" that we must ascribe the honour of having originated and greatly developed the idea of Industrial Exhibitions. Up till the year 1849, no less than eleven such "Expositions" had taken place at various times in France, every one of which was a step in advance of its predecessor. The last one was a most gorgeous affair. It was held in a building erected on the Champs Elysées, covering upwards of five acres of ground, and in which the productions of 4494 exhibitors were arranged for the inspection of the delighted multitudes by whom it was daily thronged. Prior to this last Exposition, the idea never was entertained of admitting other than native productions; but in February, 1849, the French Minister of Agriculture and Commerce, M. Buffet, proposed that specimens of agricultural and manu-

facturing skill from neighbouring nations should be admitted to their approaching exposition. Whether the fear of rivalry was too strong for the French Chambers of Commerce to agree to this proposal, it might be ungenerous to assert; but certain it is, the minister had to abandon his proposal, and the Exposition of 1849 was, as usual, confined to the results of native talent.

The idea, however, was caught, and immediately adopted by our Society of Arts, with Prince Albert at its head. But it was no longer confined to "neighbouring nations" merely. In the true spirit of liberality and enlightenment, it was thrown open to the whole commercial world. Our colonies in every clime, and all nations and people with whom we had commercial intercourse, were invited, upon equal terms with our own people, to join in a grand exhibition of the skill and industry of man. The magnitude of such an undertaking was altogether unprecedented, and the difficulties that beset its accomplishment were of a most formidable nature. It would be out of place to detail these difficulties: sufficient is it to say, they were all triumphantly overcome. The Exhibition was opened in state by Her Majesty Queen Victoria, on the 1st May, 1851, and the success has been far greater than ever was dreamt of.

There is little doubt, that of all the interesting objects connected with this truly gigantic undertaking, the most wonderful of all is the great building of glass and iron, or "CRYSTAL PALACE," as it has been named, constructed for the Exhibition. Its magnitude, the celerity of its construction, the materials of which it was composed, and the perfect adaptation of every part to the purpose intended, all combined indeed to render it the *Modern Wonder of Wonders*. A building covering 844,056 square feet, with an exhibiting surface of about 21 acres, roofed in, and handed over to the Commissioners in little more than three months from its commencement, constructed almost entirely of glass and iron, the most fragile and the strongest of working materials, combining the lightness of a

conservatory with the stability of our most permanent structures—such a building may indeed excite wonder and curiosity! Enchanted palaces that grow up in a night are confined to fairy-land, and in this material world of ours, the labours of the bricklayer and carpenter are notoriously never-ending. It took 300 years to build St. Peter's at Rome, and 35 to complete our own St. Paul's. The new Palace of Westminster has already been over 20 years in hand, and is still unfinished. We run up houses, it is true, quickly enough in this country; but if there be a touch of magic in the time occupied, there is none in the appearance of so much stucco and brickwork as London streets exhibit. Something very different from this was realized by the great edifice in Hyde Park. Not only did it rise with extraordinary rapidity, but in every other respect it is suggestive of "Arabian Nights" remembrances.

When the Exhibition was first proposed, and the Commissioners advertised for designs for a building, no less than 245 architects competed, about forty of whom were foreigners. But none of the plans satisfying the Committee, they perfected one for themselves out of the various suggestions afforded by the competing artists, the leading feature of which being a dome of gigantic proportions. This dome of iron, and town of brick, however, were so unpopular, and the contest as to a site was so warm, that the whole scheme of the Exhibition was at this juncture in some danger.

At the eleventh hour, Mr. Joseph Paxton, the celebrated horticulturalist, suggested a building entirely of iron and glass, on a similar plan to the immense conservatory he had constructed at Chatsworth, for the Duke of Devonshire; and on furnishing the design, it was immediately and unanimously adopted by both the Building Committee and the Royal Commission. The result abundantly testified the wisdom of their decision.

The site of the Crystal Palace is in Hyde Park, between Kensington Road and Rottenrow, the centre of the build-

ing being opposite the Prince of Wales Gate. The ground plan was a parallelogram 1851 feet long, by 456 feet wide in the broadest part, with a transept 408 feet long, and 72 feet wide, intersecting the building at right angles in the middle. The side walls rose in three steps; the outer wall rose from the ground 24 feet high; the second rose 20 feet higher, or 44 feet from the bottom of the pillars below; and the third rose 20 feet higher than the second, or 64 feet from the bottom of its supporting pillars, giving within the building a great central avenue or nave 72 feet wide; and on each side of it three avenues 24 feet wide, and two 48 feet wide, the transept being 108 feet high, to give ample room for the trees which remained under it. The roofs of the different sections of the main building consisted of a series of ridges and valleys of 8 feet span, running transversely, so that there is a valley at the top of each column. The transept had a semi-circular roof, with a radius of 36 feet. The space occupied on the ground floor was 772,784 square feet, and that of the galleries above 217,100 square feet, making together about 21 acres. The total cubic contents of the building were 33,000,000 feet.

There were four exits at the east end, four at the west, and six on the south side. The main entrances were three in number; one at the south end of the transept, nearly opposite the Prince of Wales Gate, richly ornamented, extending along its entire breadth with seven pairs of doors, each of 8 feet span; the other entrances were at the ends of the centre aisle, each with nine doors of a similar width.

The plan was so simple in all its parts and details, that a section of one part shows the whole; for it is merely by the multiplication of those parts that the stupendous structure was extended, resting in every part on hollow iron columns, 24 feet apart, which formed regular avenues throughout the entire structure. Each column was fixed in a socket formed in a base or broad flange, which rested on a foundation of concrete.

There were 3,300 iron columns, varying from 14½ feet to 20 feet in height, 2,224 cast iron girders, and 1,128 iron beams for the galleries, and about 900,000 superficial feet of glass, weighing 400 tons, wood only being used for sash-bars, joists, flooring, doors, and the boarding which covered the lower part of the building. The exterior surface of the first or ground tier was of wood, for the purpose of greater security, and also to afford a wall space for such articles as required to be hung up to be seen to advantage.

The arrangements for the ventilation and drainage of the whole fabric were perfect, and there was ample provision in the case of fire. A supply of water, to the extent of 300,000 gallons daily, if needed, could be had from the Chelsea water-works.

Messrs. Fox and Henderson of Birmingham were the builders. They contracted to complete the erection by the specified time, at a cost of £79,800, if the materials were given up to them after the exhibition, or £150,000 if the building remained. They fixed the first columns on the 26th September, 1850, and the building, though not completed in all its details, was handed over to the Royal Commissioners on the 1st of January following. The interval, till the opening on 1st May, was occupied in perfecting the details and arranging and painting the interior.

The Crystal Palace introduced a new style of architecture, which will be a most important element in the appliances of civilization, this mode of building being not only eminently calculated for the requirements of such exhibitions, but admirably suited, from its lightness and beauty, to a number of purposes, amongst others, winter gardens and promenades near towns.

During the erection of the structure, it was visited by the most distinguished individuals in the country, and sometimes the crowds who flocked to watch its progress were immense. On one Sunday, no less than 100,000 persons entered the gates of Hyde Park. When completed, every one was struck with its extreme grandeur and simplicity. Mr. Paxton's idea was now seen, and

accorded to be a most wonderful and successful effort of imagination and artistic skill; and the whole as it stood, in the realization of his grand conception, one of the most astonishing and successful examples of contrivance, industry, and engineering energy ever known in this or any other country.

Into this palace of glass were concentrated specimens of human skill and ingenuity in all departments of art and manufacture from almost every nation on the face of the earth. These occupied a space so large, that the passages necessary to be traversed, to view the whole, extended to between twenty and thirty miles. It will easily be seen, therefore, that it would fill volumes to describe the variety of articles exhibited; and that it is quite impossible even to give any thing like a correct general idea of the gorgeousness and grandeur of the Exhibition taken as a whole. Every phase of human effort had been brought together to produce an effect that must be seen to be conceived of and believed possible. The magnitude and airy elegance of the structure, pervaded by the full ethereal light of day, struck at once every beholder; while the stately trees enclosed, mingling in perspective their luxuriant foliage with the sparkling play of the gushing fountains, lent an Arabian enchantment to the spectacle, never, perhaps, realized in this plodding world before.

SERPENT CHARMERS.

In those warm countries where serpents are abundant, there is a class of men called snake charmers, who appear to be able not only to handle some of the most poisonous kinds of these reptiles, but also to play and perform tricks with them, and even irritate them to a state of fury, and suffer themselves to be bitten by these creatures with impunity.

A late writer in *Frazer's Magazine* describes the mode of procedure of a couple of Arab snake charmers, at the Zoological Gardens, in the Regent's Park, London :—

"Standing in the open space, the old Arab said something to the young one, who stooped down under the reptile-cases, and drew out a large deal-box, with a sliding cover, drew off the cover, and pulled out a large long nai-haje. After handling it, and playing with it a little while, he set it down on the floor, half squatted close to it, and fixed his eye on the snake. The serpent instantly raised itself, expanded its hood, and turned slowly on its own axis, following the eye of the young Arab, turning

as his head, or eye, or body turned. Sometimes it would dart at him as if to bite. He exercised the most perfect command over the animal. All this time the old Arab stood still, personally regarding the operation, but presently he also squatted down, muttering some words, opposite to the snake. He evidently affected the reptile more strongly than his more mercurial relative, though he remained motionless, doing nothing that I could see but fixing his eyes upon the snake, with his face upon a level with the raised head of the serpent, which now turned all its attention to him, and seemed to be in a paroxysm of rage. Suddenly it darted, open-mouthed at his face, furiously dashing its expanded whitish-edged jaws into the dark hollow cheek of the charmer, who still imperturbably kept his position, only smiling bitterly at his excited antagonist. I was very close, and watched very narrowly; but though the snake dashed at the old Arab's face, and into it more than twice or thrice, with its mouth wide open, I could not see the projection of any fang.

"Then the old Arab, who, it was said, had had the gift of charming serpents in his family for a long series of years, opened another box, and took out four or five great lizards, and provoked the naia with them, holding them by the tails in a sort of four-in-hand style. Then the youth brought out a cerastes, which, I observed, seemed overpowered, as if—as the country people say—something had come over it. He placed it on the floor, but this serpent did not raise itself like the naia, but, as the charmer stooped to it, moved in a very odd agitated manner on its belly, regarding him askant. I thought the serpent was going to fly at the lad; but it did not. He took it up, played with it, blew or spit at it, and then set it down apparently sick, subdued, and limp. He then took it up again, played with it a second time, gathered it up in his hand, put it in his bosom, went to another box, drew the lid, and brought out more snakes, one of which was another naia, and the others of a venomous kind.

"Now there were two naias, with heads and bodies erect, obeying apparently the volition of the charmer. One of the snakes bit the youth on the naked hand, and brought the blood; but he only spat on the wound and scratched it with his nail, which made the blood flow more freely. Then he brought out more lizards of a most revolting aspect. The Arab, holding the snakes by the tails, let their bodies touch the floor, when they came twisting and wriggling on towards the spectators, who now backed a little upon the toes of those who pressed them from behind. Sometimes the charmers would loose their hold, when the serpents, as if eager to escape from their tormentors, rapidly advanced upon the retreating ring; but they always caught them by the tails in time, and then made them repeat the same advances. I kept my position in front throughout, and had no fear, feeling certain that Mr. Mitchell—and those under whose superintendence this highly amusing and instructive establishment is so well conducted—would not have permitted the exhibition to take place if there had been the least danger. Besides this, I observed that the charmers only used their own serpents, which they had, I presumed, brought with them; and I confess that the impression upon my mind was that they had been rendered innoxious by mechanical means.

The gift or power of charming is said to be hereditary. The Arab lad, who is only fifteen, when asked how he obtained his power, stated that his father was a holy man, and not afraid of serpents; that neither is he; and that they cannot hurt him. The old man, Jabar Abou Haijah, states that they belong to a tribe known by the name of Rufaiah, who have handed down the mystery of serpent charming from father to son for many generations, and over whom serpents have no hurtful power.

The serpents which figure most prominently in the performance of these Arabs are the Egyptian cobra, the scientific name of which is *Nai haje;* and the cerastes (*Vipera caudalis*). The Egyptian cobra, which wants the

curious spectacle-like mark on the back of the neck that distinguishes the Asiatic species, is of a somewhat dark and greenish hue, marked with brownish spots, and attaining the length of from three to five feet. This is the serpent which the Egyptian conjurors know how to render stiff and immoveable by pressing the nape of the neck with the finger, and thus throwing it into a sort of catalepsy. The serpent is thus apparently converted into a rod or stick.

Traces of this conversion occur in the Sacred Scriptures; for instance, where Pharaoh's wise men cast down their rods, which were turned into serpents, but were devoured by the serpent of Aaron:—"And Moses and Aaron went in unto Pharaoh, and they did so as the Lord had commanded: and Aaron cast down his rod before Pharaoh, and before his servants, and it became a serpent. Then Pharaoh also called the wise men and the sorcerers: now the magicians of Egypt, they also did in like manner with their enchantments. For they cast down every man his rod, and they became serpents: but Aaron's rod swallowed up their rods."

There can be no doubt that these serpent charmers extract by mechanical force the poison-teeth of those serpents upon which they perform the higher class of their experiments. Yet their superior knowledge of the nature and habits of these creatures may enable them to use great liberties with snakes upon whom no such operation has been performed. Dr. Davy thus describes the mode of operation in Ceylon, where, as well as on the continent of India, frequent displays are made of the powers possessed by these snake charmers:—

"The exhibition is rather a curious one, and not a little amusing to those who can contemplate it. The charmer irritates the snake by shaking it, and by rapid threatening motions of his hand; and appeases it by his voice, by gentle circular movements of his hand, and by stroking it gently."

This looks something like magnetism. "He avoids

with great agility the attacks of the animal when enraged, and plays with it and handles it only when pacified, when he will bring the mouth of the animal in contact with his forehead, and draw it over his face. The ignorant vulgar believe that these men really possess a charm by which they thus play without dread, and with impunity, with danger. The more enlightened, laughing at this idea, consider the men impostors, and that in playing their tricks there is no danger to be avoided, it being removed by the extraction of their poisonous fangs. The enlightened, in this instance, are mistaken, and the vulgar are nearer the truth in their opinion. I have examined the snakes I have seen exhibited, and have found their poison-fangs in and uninjured. These men do possess a charm, though not a supernatural one, viz., that of confidence and courage. Acquainted with the habits and disposition of the snake, they know how averse it is to use the fatal weapon nature has given it for its defence in extreme danger, and that it never bites without much preparatory threatening. Any one possessing the confidence and agility of these men may irritate them, and I have made the trial more than once. They will play their tricks with any hooded snake, whether just taken, or long in confinement, but with no other kind of poisonous snake."

SPACE MEASURING.

IMAGINE a railway from here to the sun. How many hours is the sun from us? If we were to send a baby in an express train, going incessantly at a hundred miles an hour, without making any stoppages, the baby would grow to a boy—the boy would grow to be a man—the man would grow old and die—without seeing the sun, for it is distant more than a hundred years from us. But what is this comparison with the planet Neptune's distance? Had Adam and Eve started by our railway at the creation, to go from Neptune to the Sun, at the rate of fifty miles an hour, they would not have got there yet, for Neptune is more than six thousand years from the centre of our system. But we are getting into too large numbers again; we must have some swifter servant than railway to measure space for us. Light will answer our purpose—for light travels from the sun to our earth in eight minutes. Eight minutes, then, counting by light are equivalent to a hundred years of railway express speed! It would take about four hours to go from the sun to Neptune. Among the stars, we shall find that the nearest is three years off, counting by light!

THE COLOSSEUM AT ROME.

The Colosseum is one of those gigantic ruins which gives evidence of the greatness of ancient Rome. This building was an immense amphitheatre, constructed for the celebration of some of those games which bore the peculiar impress of the national character, especially the combats of gladiators, and the exhibition and combats with wild beasts. It occupies the site of Nero's Lake, in the valley between the Palatine, the Esquiline, and the Cælian Hills. Vespasian commenced its erection about A.D. 70 or 71; but it was not completed until some nine years subsequently, about A.D. 80, in the reign of his son, the Emperor Titus, who dedicated it with great pomp and magnificence. Its form was that of an ellipsis, 564 feet long, and 467 broad in its greatest extent. The interior area, or arena (so called from its being covered with sand,) on which the games were exhibited was so capacious that upwards of 10,700 beasts could stand within its circuit. This area was surrounded by a wall twelve feet high, over which was a projecting row of seats fourteen feet in depth, and covered at top, for the chief magistrates, senators, foreign ambassadors, &c., which was called the *podium*. Here, also, were accommodated the vestal virgins and the *editor*, or person who gave the games; and behind the senators sat the *equites*, or knights, on fourteen seats set apart for them, as the second order of nobility. In the times of the empire, the *podium* was furnished with an elevated tribune, surmounted by a canopy, in which the Emperor sat in state. The front of the first range of seats was protected from any irruption of the wild beasts by a breast-work or parapet of gilt bronze; and, as a further security, an iron palisade

COLOSSEUM.

encompassed the arena, at the foot of which, beneath the *podium*, there was a deep cut or canal full of water. This, the first story of the structure, rested ou a basement of eighty arches: behind it rose three walls in succession, each increasing in height until the outer one reached an elevation of 140 feet—a wide passagé, or corridor, called an *ambulatorium*, being left between each wall, which communicated with the outside by means of eighty portals called *vomitories*, and with the corridors of the upper stories, by means of numberless flights of stairs. The separate height of each of the three walls on the inside constituted a distinct story, and from each a tier of marble seats, covered with cushions, ran sloping down towards the arena, and afforded accommodation for the people. These seats were called *popularia*, and the number of persons who could view the games from them and the *podium* amounted to no less than 87,000; while in the wooden galleries erected over the outer wall, for the lowest classes, 20,000 individuals found room to assist at the spectacles of the arena.

A large awning, called the *velarium*, was extended around the summit, and protected the spectators from the sun or rain, while the atmosphere within was rendered cool and delicious by the play of numberless fountains, and the odour of aromatic perfumes; and such was the extraordinary skill and simplicity of contrivance with which the various passages and means of ascent and descent were constructed, that all parties, of whatever rank, found their way to and from the respective localities allotted to each, without the least difficulty or confusion, notwithstanding the vast masses with which the amphitheatre was thronged at every representation. The exterior wall presented a *façade* consisting of four compartments, of different architectural orders, rising one above the other, viz. the Doric, the Ionic, and two Corinthian orders, the highest having pilasters instead of columns, and every second interval being pierced for windows.

It was in this vast edifice, amidst the brutal shouts of a populace maddened with sanguinary excitement, that, for nearly 300 years, the blood of thousands of the primitive Christians was poured out like water, and their bodies torn to pieces by furious beasts. Its walls perpetually resounded with the cry, "*Christiani ad leones!*" during the earlier part of the exhibition, when the gladiators butchered each other for their entertainment; and the day's sport was generally brought to a close by the sight of a mangled victim writhing in the grasp of a lion, a tiger, or some other beast of prey. On the occasion of the dedication of the amphitheatre, Titus exhibited shows of gladiators, combats with wild beasts, &c., and Trajan, during an exhibition which lasted 123 successive days, brought upon the arena one thousand pairs of gladiators. Sometimes the arena was converted into a forest, by means of large trees and bushes, &c., being transplanted to it for the occasion, with the soil around them as they stood, and then various beasts of the chase were hunted through its mazes. In this manner the Emperor Probus on one occasion exhibited four thousand ostriches, boars, deer, wild sheep, &c. But it was the gladiatorial combats—the human massacres, which were most prized by the dissolute nobles, who were buried in luxury, and consumed by the desire of morbid excitement; and by the blood-thirsty populace, who, when every other quality of the Roman citizen had fled from their breasts—leaving them a debauched, degraded rabble—retained the sanguinary ferocity of a ruder age, without its redeeming courage. It was in vain that the then feeble voice of Christianity was raised in abhorrence and denunciation of these demoniacal sports, which cut off thousands yearly in the prime of life; even the Imperial authority itself failed to put down the furious fashon of the time, and the edicts of Constantine the Great were of little avail in the cause of humanity. At length, what neither the sovereign power of the Christian Emperors, nor the humanising influence of polished civilisation could effect, was

accomplished by the devoted zeal of an humble monk. On the 1st of January, A.D.404, Almachius, or Telemachus, an ascetic of the Eastern Desert, who had come to Rome, inspired with the holy purpose of putting an end to those feasts of the Prince of Darkness, even though it should cost him his life, entered the amphitheatre with the eager crowd of spectators, and when the gladiators commenced their mutual butcheries, rushed in between them and endeavoured to put a stop to the combat. Stones and missiles of every description were immediately hurled at the too-daring Reformer, and by the order of the Prætor Alypius—a person possessed of the most inordinate love of those exhibitions—he was slain on the spot. But in this, as in other instances of the effusion of the blood of the martyrs, the sacrifice was fruitful in happy results. The feeble, vacillating spirit of the Emperor Honorius, often, but in vain, urged by his Christian counsellors to grapple with the inveterate abuse, was at last roused to action by the horror inspired by the murder of Telemachus; and enforcing with the full weight of the Imperial power the existing laws, and issuing new edicts, he put an end to the gladiatorial shows for ever. The fighting with the wild beasts, however, was not abolished until towards the close of the Gothic King of Italy, Theodoric, about A.D. 526.

After the Colosseum had ceased to be used for its original purpose, history is, for a considerable time, silent as to its fate, but when mention of it again occurs, at a long subsequent period, its dilapidated aspect plainly indicates how fully it shared in the disastrous vicissitudes of the Eternal City. In the middle ages, during the turbulence and commotions of the intestine factions, it was converted into a fortress, and was variously held by one or other of the contending parties. In the year 1332 it was in the possession of the "Senate and People of Rome," as the dominant portion of the citizens at that period styled themselves, in contradistinction to the noble families, and was applied to a purpose of the same

character as that of its original design. A grand bull-feast was given in its arena, a description of which has been left us by a contemporary writer, Ludovico Monaldesco. It was also used as an hospital, as an artisans' factory, and in various other ways, until at length, shorn of more than half its proportions by the combined effects of the decay of time, aided by earthquakes and inundations, and the incessant spoilations, for centuries, of Popes and Princes, who only regarded it as an inexhaustible quarry, it was consecrated within a comparatively recent period to the offices of religion, and the destructive agency of man was thus stayed. More active measures were taken for its preservation in the present century, by Pius VII. and Leo XII., who secured it on the outside by strong buttresses at the south-east and north-west extremities. Gregory XVI., also, made some considerable restorations in the middle and outer walls on the south side, where they had disappeared.

As to the present appearance of the Colosseum, apart from its stupendous height and its enormous dimensions, which must strike every beholder with astonishment, its most characteristic feature is the marked contrast presented in the aspect of strength and durability which the huge blocks of stone composing its structure exhibit; and the perfect picture of ruin and desolation conveyed by the yawning rents and fissures in the walls, and the extraordinary luxuriance of the mural and parasitic plants and shrubs with which they are covered in various places, and which often attain the size of full-grown trees.

Within the arena, the sacred character, communicated to the building in recent times, is indicated by a large black cross, which is planted on a mound in the centre of the arena, and by a series of pictures representing the various stages of Christ's passion and death, which are hung round the *podium*, or brick basement wall of the interior, as appropriate decorations of the place where so many martyrs had, by their tortures and death, borne witness of their faith in the truth of the Redemption.

There is also at one end of the arena an altar surmounted by a Madonna, which forms a simple species of Lady-chapel. In order to ascend to the upper corridors, an application to the custodian is necessary; but to all the lower parts of the building there is the freest access, as the arena is in fact a public thoroughfare.

Taken altogether, the ruins of the Colosseum constitute, perhaps, the best representative which modern times could have of ancient Rome. It was a national amphitheatre; its form and construction are sufficiently preserved to show, with the greatest clearness and intelligibility, the style and manner of the cruel exhibitions of the arena, which were so peculiarly Roman; its majestic proportions impart to the mind an adequate conception of the grand character of the public edifices of the Imperial city, while its present desolate state eloquently proclaims the violence of the vicissitudes which laid them prostrate. To have the imagination, however, fully impressed with the associations pertaining to the locality, it is perhaps advisable to visit the Colosseum by moonlight.

ANCIENT ASSYRIAN SCULPTURES.

THE recent excavations by Layard, of the ruins of some of the cities of ancient Assyria, long lost to the world, have brought to light many most wonderful and beautiful sculptures. Some of these are so grand as to strike the beholders with astonishment and awe. They carry the mind back to that region where poetry first sung her "wood notes wild," and to an era long anterior to any authentic secular history—a time so antique, that Rome, and Greece herself, dwindle to the age of infants in comparison. Yet there stand the monuments of their skill and their greatness, in all the pomp of oriental wildness and metaphor, challenging the gaze and acumen of historians, hitherto baffled in their researches into the history of that primitive race who hunted with Nimrod through the forests of Babylon.

The cut represents one of these sculptures, now in the British Museum. It was dug out from a mound of ruins which had lain for ages engulphed in the sands of the desert. The spot is situated on the banks of the Tigris, near to a modern town called Mossul, and was at first supposed to be the site of the Nineveh of Scripture; but

more recent investigation has shown this to be doubtful, some considering it to be rather the remains of the city Nimroud.

The figure is of colossal proportions, and represents a composite creature with the head of a man, the wings of an eagle, and the body and legs of a bull. It is formed of gypsum, and the slab is ten feet square, by two feet in thickness. It was situated at the entrance of a chamber, being built into the side of the door, so that one side and a front view only could be seen by the spectator. Accordingly, the Ninevite sculptor, in order to make both views perfect, has given the animal five legs. The four seen in the side view show the animal in the act of walking; while, to render the representation complete in the front view, he has repeated the right fore-leg again, but in the act of standing motionless. The countenance is noble and benevolent in expression; the features are of the true Persian type; he wears an egg-shaped cap with three horns, and a cord round the base of it. The hair at the back of the head has seven ranges of curls; and the beard is divided into three ranges of curls, with intervals of wavy hair. In the ears, which are those of a bull, are pendant ear-rings. The whole of the dewlap is covered with tiers of curls, and four rows are continued beneath the ribs along the whole flank. On the back are six rows of curls, and upon the paunch a square bunch ranged successively, and down the back of the thighs four rows. The hair at the end of the tail is curled like the beard, with intervals of wavy hair. The hair at the knee-joints is likewise curled, terminating in the profile views of the limbs in a single large curl. The elaborately sculptured wings extend over the back of the animal to the very verge of the slab. All the flat surface of the slab is covered with cuneiform inscription, there being twenty-two lines between the fore-legs, twenty-one lines in the middle, nineteen lines between the hind legs, and forty-seven lines between the tail and the edge of the slab.

The figure bears some analogy to the Egyptian sphynx,

which is supposed to represent the head of the king upon the body of a lion, and is held by some to be typical of the union of intellectual power with physical strength. The sphynx of the Egyptians, however, is invariably sitting, whereas the Nimroud figure is always represented standing. The apparent resemblance being so great, it is conjectured that the head on the winged animal may be that of the king, and the intention identical with that of the sphynx. Others, again, think this not likely to be the case, but rather that the intention of the Ninevites was to typify their god under the common emblems of intelligence, strength, and swiftness, as signified by the additional attributes of the bird. Nothing, however, has as yet been ascertained that can be depended on in regard either to the origin or intention and meaning of such figures. There can be no doubt, that between them and the composite animals mentioned in the Apocalypse and in the book of Daniel there is a great resemblance, and if a correct knowledge of the signification of either class of these symbolical creatures could be satisfactorily arrived at, it would most probably aid in leading to the proper interpretation of the other.

QUICKSILVER MINES OF IDRIA.

Story of Count Alberti.—In order that the reader may have a proper understanding of the hard fate to which this unfortunate nobleman was condemned, we shall give the following brief description of the quicksilver mines at Idria. In these doleful subterranean abodes, thousands have been condemned to reside, shut out from all hope of ever seeing the cheerful light of the sun, and compelled to toil out a miserable existence, under the whips of imperious and irresponsible taskmasters. Let the reader imagine a small aperture in the side of a mountain, of about five yards in width. This is the mouth of the mine, down which you are let in a kind of bucket for more than a hundred fathoms, the prospect growing wider and more gloomy, as you descend. At length, after swinging in awful suspense for some time in this precarious situation, you reach the bottom, and tread on the ground. The gloomy and frightful solitude around you, is made dimly visible by the feeble glimmer of lamps disposed here and there, so that the wretched inhabitants of these "regions of sorrow," whose eyes are accustomed to this melancholy substitute for light, can manage to find their way from one part to another. "Such wretches," says Mr. Everard, a gentleman who visited these doleful shades, "my eyes never beheld. The blackness of their visages, only serves to cover a horrid paleness, caused by the noxious qualities of the mineral they are employed in procuring. As they in general consist of malefactors condemned for life to this task, they are fed at the public expense, but they seldom consume much provision, as they lose their appetite in a

short time, and commonly expire in about two years, from a total contraction of all the joints of the body.

"In this horrid mansion, I walked after my guide for some time, pondering on the strange tyranny and avarice of mankind, when I was accosted by a voice behind me, calling me by my name, and inquiring after my health, with the most cordial affection. I turned, and saw a creature, all black and hideous, who approached me with the most piteous accent, demanding, 'Ah! Mr. Everard, don't you know me?' Good God! what was my surprise, when, through the veil of his wretchedness, I discerned my old and dear friend, Alberti! Yes, Count Alberti, formerly one of the gayest and most agreeable persons at the court of Vienna, at once the example of the men, and the favourite of the fair sex; often have I heard his name repeated, as one of the few who did honour to the present age, as possessed of generosity and pity, in the highest degree; and one who valued fortune only so far as it enabled him to alleviate the distresses of mankind. I flew to him with affection, and, after a tear of condolence, asked him how he came there. To this he replied, that having fought a duel with an Austrian general of infantry, against the Emperor's command, and having left him for dead, he was obliged to fly into one of the forests of Istria, where he was first taken, and afterwards sheltered, by banditti, who had infested that quarter. With these he had lived for nine months, till, by a close investing of the place in which they were concealed, and after a very obstinate resistance, in which the greater part of them were killed, he was taken, and carried to Vienna, in order to be broken on the wheel. However, upon arriving at the capital, he was quickly known, and several of his associates in captivity, bearing testimony to his innocence of the crimes laid to the charge of the banditti, his punishment of the rack was changed into perpetual confinement and labour in the mines of Idria, a punishment, in my opinion, a thousand times worse than death."

"As Alberti," continued Mr. Everard, "was giving me

this account, a young woman came up to him, whose appearance was such as to prove her to belong to the upper ranks of society, and to have known better fortune. The dreadful situation of the place had not been able to destroy her beauty, and even in this scene of wretchedness she seemed to have charms to grace the most brilliant assembly. This lady was, in fact, daughter of the head of one of the first families in Germany. She had been devoted to Alberti, and having tried every means to procure her lover's pardon, without effect, had at last resolved to share his miseries. With him, she accordingly descended into these mansions of despair, whence few of the living return: with him she is contented to live and to toil, forgetting the gaieties of life, despising the splendours of opulence, and enjoying the consciousness of her own constancy."

Thus far we have related the romantic history of Alberti, as given by Mr. Everard, the sequel of which, however, is communicated by that gentleman, in a second letter to a friend. "My last letter to you," he says, "was expressive, perhaps too much so, of the gloomy state of my mind. I own that the deplorable situation of the worthy man described in it, was enough to add double horrors to the hideous mansion in which I found him. At present, I have the happiness of informing you, that I have since witnessed the most affecting scene I ever beheld. Nine days after I had written my last letter to you, a person came post from Vienna, to the little village, near the mouth of the great shaft—he was soon followed by a second, and a third. Their first inquiry was after the unfortunate Count, and I happening to overhear the demand, gave them the best information. Two of these were the brother and cousin of the lady—the third was an intimate friend and fellow-soldier of the Count's. They came with his *pardon*, which had been procured by the general with whom the duel had been fought, and who had perfectly recovered from his wounds. I led them, with the expedition of joy, down to his

dreary abode, and presented to him his friends, and informed him of the change in his circumstances. It would be impossible to describe the joy that brightened his grief-worn countenance, or to picture the emotion shown by the young lady, on seeing her friends, and hearing of her husband's freedom. I could not, without a tear, behold this worthy couple taking leave of the wretched companions of their toil. To one he left his mattock, to another his working clothes, to a third, his little household utensils. We soon emerged from the mine, when he once more beheld the light of the sun, that he had despaired of ever seeing again. A post chaise and four took them, the next morning, toward Vienna; where, I am since informed, by a letter from himself, the empress has taken him into favour—his fortune and rank have been restored, and he and his fair partner have now the pleasing satisfaction of feeling happiness with a double relish, as they once knew what it was to be miserable."

MODERN AND ANCIENT ROAD WORKS CONTRASTED.

THERE were 234,000 cubic feet of masonry and rubble contained in one of the great works of the Via Appia. The high level bridge at Newcastle alone contains of masonry, 681,609; of rubble, 116,396; of concrete, 46,224; total, 844,229; besides 5,050 tons of iron, of which the Romans knew nothing. The whole cost of this undertaking was £234,450. The cubic feet of masonry in the Britannia tubular bridge, which we must consider as a viaduct, and the wonder of the present age, is 1,500,000; and the cost approximately calculated by Mr. Edwin Clarke, was £601,865. The cost of the Conway bridge, with £38,500 worth of masonry, was, £145,190. And, finally, the Tweed viaduct is said to contain two million cubic feet of masonry. We have, then, in these four great works alone—the Britannia and Conway bridges, the Newcastle and Berwick viaducts or bridges—nearly four millions and a-half of cubic feet of masonry; the whole costing not less than £1,280,000. That is to say, if we could find in the Roman empire 100 such works as the celebrated substruction of the Via Appia, they would hardly equal in masonry or stonework these four productions of the "ultimi Britannia."

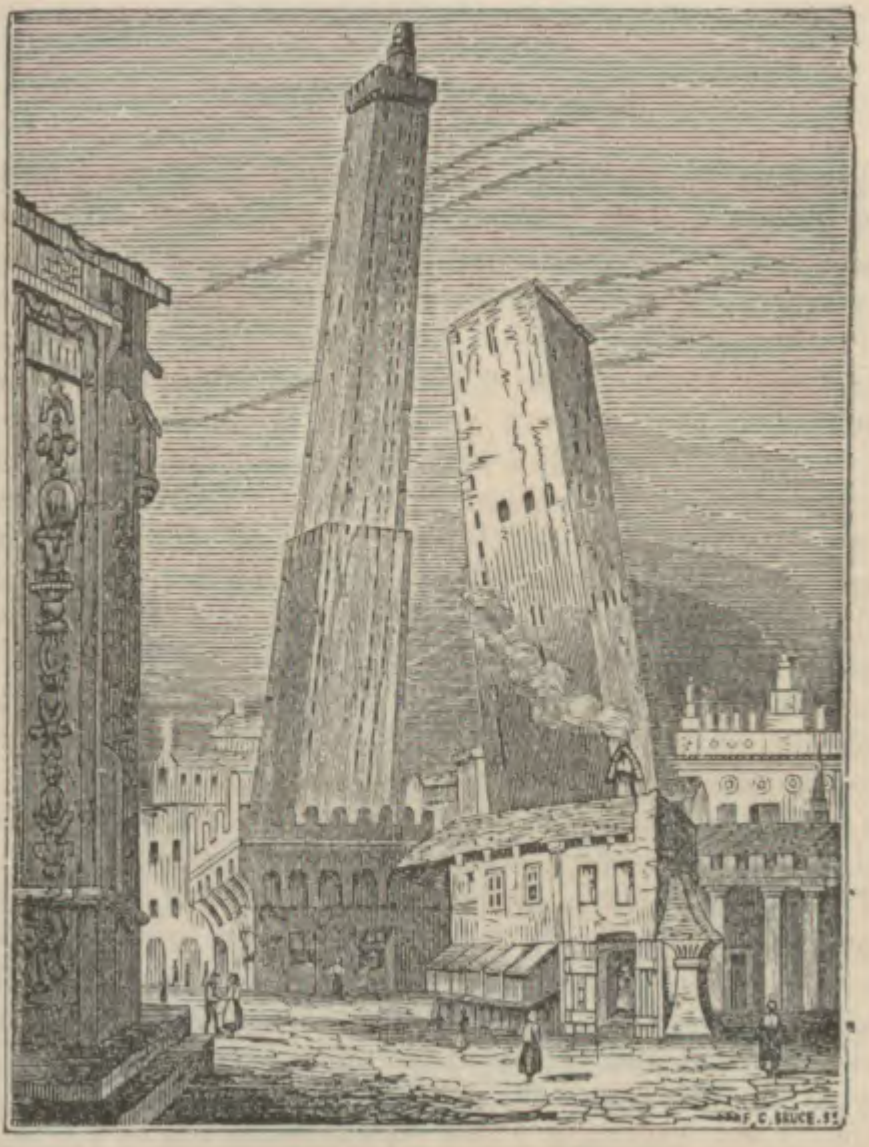
Although we have but little or no data to go upon for making a comparison of expenditure and labour, yet we may gather enough to maintain the proposition, that all the great works of the Roman empire connected with the lines of communication did not equal the works of a similar kind which now exist in the island of Britannia. Another thing which hinders us from making comparisons as to cost; we have in every line of railway, £6,000

per mile for land. Appius Claudius cut through the country of the Volsci without asking the price, and dispensed with all the juries for assessing damages. Law expenses were not known; and the surveyors and engineers were not paid £1,200 a mile in those days. When Augustus re-made the Flaminian way to Rimini, he was the sole shareholder, and gave no scrip. Julius Cæsar and Mark Antony raised great works, but they knew nothing about raising dividends. That which would have astounded them more than an irruption of barbarians, would have been a bill of £1,800 for every mile of road for parliamentary and law expenses.

LEANING TOWERS.

It has been found by experiment, that most lofty buildings of any antiquity are slightly inclined from the perpendicular. The Monument, near London Bridge, is one of many instances; but the towers at Bologna and Pisa, in Italy, and at Caerphilly, Bridgenorth, and Corfe Castle, in our own country, are the most remarkable. We are indebted to that elegant periodical work the *Landscape Annual*, for the beautiful view of those at Bologna, which we present to our readers. They were probably erected by private families, for the purposes of defence in the desperate feuds and civil wars which so long desolated Italy, and rendered buildings such as these of the utmost importance to their possessors. The small republics of Lombardy were continually at war with each other, or with the emperors of Germany; every city was divided into the two furious factions of Guelfs and Ghibellines (or the parties of the pope and the emperor); and every street, and frequently every family, was "divided against itself" by the quarrels of the nobles—the Montagues and Capulets of their day;—and every man's house was indeed his castle, but in a very different sense from that which, thanks to our reformed politics, free institutions, and advanced state of civilization, these words now convey to English ears. The taller of the two, that of the Asinelli, was built A.D. 1109; its height has been variously stated at 350, 377, and 307 feet, and its inclination at a few inches, and at three feet and a-half. It has no external beauty, but rewards the traveller for a tedious ascent of 500 steps by an extensive view, which includes the neighbouring cities of Imola, Ferrara, and Modena. The

tower of the Garisendi or Garissuidi, is immortalised by Dante's simile, who compares it to the stooping giant Antæus; its height is 140 or 150 feet, and it deviates seven or eight feet from the perpendicular. The wood

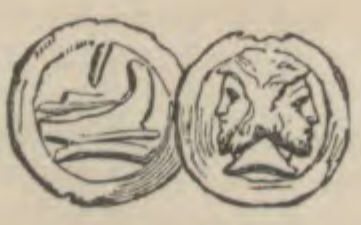


[Leaning Towers of Bologna.]

work and masonry incline from the horizon, which fact strongly corroborates the opinion of Montfaucon, the antiquarian, of the correctness of which there can hardly

be a doubt. He says its inclination was "caused by the slipping of the earth; some went to ruin when it slipped, as the ground on the inclined side was not so firm, which may be said of the other towers that lean; that for the bells of St. Mary Zibenica, at Venice, leans, and at Ravenna, and between Ferrara and Venice, and in other places, numerous instances may be found." Of the leaning towers of Italy, this tower is second only to that of Pisa, in the greatness of its deviation from the perpendicular, but is inferior in this point to that of Caerphilly Castle, whilst in height the tower of the Asinelli soars far above all its competitors in Italy and England.

LEANING TOWER OF PISA.—This celebrated piece of architecture stands at the end of the cathedral, and consists of eight stories formed of arches supported by pillars divided by cornices. The elevation of the whole is about 180 feet. The form and proportions of the tower are graceful, and its materials, being of the finest marble, add to its beauty; but its grand distinction, which alone gives it so much celebrity, is a defect which disparages the work, though it may enhance the skill of the architect, and by its novelty forcibly arrest the attention. We allude to its inclination, which exceeds fourteen feet from the perpendicular. Many ascribe this architectural phenomenon to design, and this is now the generally received opinion, in consequence of which the tower is regarded as one of the greatest curiosities of art in existence.



PYRAMIDS AND SPHYNX.

THE EGYPTIAN SPHYNX.

The ancient Egyptians appear to have had two gods to whom especially worship was addressed. These were Osiris and Isis, which are supposed to be the same as the sun and moon. But besides these gods, worship seems to have been offered to various animals, the ox, wolf, hawk, ibis, cat, crocodile, &c. It is possible, however, that these creatures themselves were not at first worshipped, but came gradually to be so only as the knowledge of what was signified by them declined; for it is more than probable that a symbolical signification was originally attached to these animals, such as some divine attribute or spiritual or moral virtue or acquirement. It is to be hoped that the attempts now making to investigate this obscure subject will lead to some definite and satisfactory result, as a correct knowledge of the hidden meaning of the Egyptian and Assyrian antiquities would tend to throw much light on many parts of Holy Scripture.

One of the most singular remains of ancient Egypt is the figure of the Sphynx. It was doubtless connected in some way or other with the worship of that remote people; but its real signification has long been a complete puzzle to antiquarians. One pretty version maintains the Sphynx to have been a fabulous monster, the off-spring of Tiphon and Echidna, and distinguished for wisdom and cruelty. It was sent by Juno to punish the Thebans in consequence of some provocation offered by them. It laid the whole country under terror, by proposing enigmas, and devouring the inhabitants, if unable to explain them. The Thebans were told that the Sphynx would destroy herself so soon as one of the enigmas was explained. One

of the enigmas was this:—What animal walks on four legs in the morning, two at noon, and three in the evening? Creon, king of Thebes, promised his crown and his sister Jocasta in marriage to him who should deliver his country from this monster, by explaining the riddle. It was ultimately solved by Œdipus, who observed that man walked on his hands and feet when young, or in the morning of life, at noon he walked erect, and in the evening of his days he supported his infirmities with a stick. The Sphynx no sooner heard this explanation than she threw herself from a rock, and immediately expired.

Some conjecture that this singular figure was intended to represent the Creative Power, which combined in itself the male and female energies in an incomprehensible manner. Others, again, maintain that it is to be regarded as an astronomical system, marking the passage of the sun from the sign Leo into that of Virgo, and thereby shadowing forth the happy period when the overflowing of the Nile diffuses the blessings of health, and peace, and plenty throughout the land. Another theory is, that the countenance of a beautiful woman is combined with the body of a lion or other animal, to intimate the alluring aspect with which vice at first assails the unwary, and the besotted monsters she makes them when caught in her toils. Not one of these solutions can be depended on, however. It is much more likely that the figure was typical of some combined attributes of the Divine Being, and had a connection with the public worship of the Egyptian people.

The Egyptian Sphynx is formed with a human head on the body of a lion, and is always in a recumbent posture, with the forepaws stretched forward. The colossal one near the group of figures at Gizeh was uncovered to its base by Mr. Caviglia, after immense difficulty, and the exertions of sixty men for seven months. The huge paws were constructed of masonry, and were found to stretch out fifty feet in advance of the body. Fragments of an enormous beard were found resting beneath the

chin, and there were seen all the appendages of a temple, granite table, and altar arranged on a platform in front. On this pavement, and at an equal distance between the paws of the figure, was a large slab of granite, not less than fourteen feet high, seven broad, and two thick. The face of this stone fronted the east, and was highly embellished with sculptures in bas-relief, the subject representing two sphynxes seated on pedestals, and priests holding out offerings, while there was a long inscription in hieroglyphics, most beautifully executed, the whole design being covered at the top with the sacred globe, the serpent, and the wings. Two other tablets of calcareous stone, similarly ornamented, were found on each side of it, and were supposed to be part of a miniature temple. One of these was thrown down and broken, but the fragments are now in the British Museum. A small lion, crouching in front of this edifice, had its eyes directed towards the Sphynx. This and some other fragments are all painted red, a colour which in Egypt and India is appropriated to sacred purposes.

"The breast, shoulders, and neck," says Dr. Richardson, "which are those of a human being, remain uncovered, as also the back, which is that of a lion. The neck is very much eroded, and to a person near, the head seems too heavy for its support. The head-dress has the appearance of an old fashioned wig, projecting out about the ears like the hair of the Barberi Arabs. The ears project considerably; the nose is broken; the whole face is painted red, which is the colour assigned to all the deities except Osiris. The features are Nubian or ancient Egyptian. The expression is particularly placid and benign, so much so that the worshipper of the Sphynx might hold up his god as superior to all other gods of wood and stone which the blinded nations worshipped." It is above 150 feet long, by 63 feet high.

THE THAMES TUNNEL.

So far back as the year 1799, a project was set on foot for constructing a tunnel under the Thames at Gravesend; but the plan was not patronised, and, consequently, fell to the ground. In 1823, Mr. Brunel, the celebrated civil engineer, exhibited his plan for constructing a double capacious road-way under that noble river. He selected a spot between Rotherhithe on the Surrey side, and Wapping on the Middlesex shore; and this selection evinced considerable judgment, as it did not interfere with the mercantile pursuits of the neighbourhood; and it also possessed a stratum of blue clay peculiarly adapted to the purpose. As soon as an Act of Parliament could be obtained, Mr. Brunel commenced his labours by sinking a shaft 50 feet in diameter on the Surrey side, and passed through a bed of gravel and sand 26 feet deep, constituting a kind of quicksand in which the drift makers of a former undertaking had been compelled to abandon their work. Mr. Brunel had been warned of this;—he therefore sunk the shaft deeper, and formed a lesser one of 25 feet diameter, as a kind of well for drainage; but, on approaching the depth of 80 feet, the ground gave way suddenly under the small shaft, which sunk several feet at once, the sand and water blowing up at the same time. The necessary repairs consequent upon this interruption having been completed, the horizontal excavation for the body of the tunnel was commenced at the depth of 63 feet, with a declivity of 2 feet 3 inches in every one hundred feet. The excavation is 38 feet in breadth, and 22 feet 6 inches in height, presenting a sectional area of 15 feet. The basis of this excavation, in the deepest part of the river, is 76 feet below high water mark.

It was by means of a powerful apparatus, designated a "*shield*," that this extensive excavation was effected, and the double roadway and paths constructed within it. This shield consisted of twelve great frames, standing close to each other, like as many volumes on the shelf of a book-case: these frames were 22 feet in height, and about 3 feet in breadth. They were divided into three stages or stories, thus presenting 36 chambers, or cells for the workmen—namely, the miners, by whom the ground was cut down and secured in front, and the bricklayers, by whom the structure was simultaneously erected.

On two several occasions the river broke in upon the workmen, and consequently suspended their labours for a considerable period. The last time of this irruption, the injury was repaired by filling bags with clay and throwing them into the Thames immediately over the chasm made in the bed of the river. This simple remedy had the desired effect, and the work progressed satisfactorily and rapidly to a conclusion. The width of the river from low water mark on each side is 920 feet; but the entire length of the tunnel is 1300 feet. This stupendous undertaking is open to public inspection, at a trifling charge. The effect produced by the gas lights, with which it is plentifully supplied, is of the most extraordinary and splendid nature. The cost of this new wonder of the world has been about £800,000.

This does not appear to be the only construction of the sort in the world, for we find that a submarine bridge, like the tunnel, was completed by order of Semiramis, who caused to be constructed a bridge under the Euphrates, in order to be able to repair, secretly, from one to the other of the two palaces which were built upon each bank of that river. This road was 300 stadia in length, 19 in breadth, 12 in height, and was finished in 260 days!

BOILING SPRINGS.

THE Geyzers, or springs of boiling water in Iceland, rank amongst the most remarkable natural curiosities in the world. They are situated about thirty-six miles from Mount Heela, and about twelve miles in a north-east direction from the village of Skolholt. The steam ascending from the principal springs during their eruptions may be seen from a considerable distance. When the air is still, it rises perpendicularly like a column, to a great height, then spreads itself into clouds, which roll in successive masses over each other, till they are lost in the atmosphere. We perceived one of these columns when distant sixteen miles.

The springs mostly rise in a plain, between a river that winds through it, and the base of a range of low hills. Many, however, break out from the sides of the hills, and some very near their summits. They are all contained, to the number of one hundred or more, within a circle of two miles. The most remarkable spring rises nearly in the midst of the other springs, close to the hills. It is

called Geyzer, the name probably in the old Scandinavian language for a fountain, from the verb, *geysa*, signifying to *gush*, or *to rush forth*. The next most remarkable spring rises at a distance of one hundred and forty yards from it, on the same line, at the foot of the hills. We called it the New Geyzer, on account of its having but lately played so violently as at present.

There are others of consequence in the place, but none that approach to these in magnificence, or that, when compared with them, deserve much description. The generality of the springs are in every respect similar to those near Rykum, boiling in caldrons of three or four feet diameter, and some of them throwing their waters from time to time, by sudden jets, into the air. Many springs in this place, as in the other, boil through strata of coloured clay, by which they are rendered turbid. Here, however, the red clays are brighter, and in greater proportion to the clays of other colours. Here also, as in the valley of Rykum, are many small springs, which throw out sulphureous vapour, and near which the ground, and the channel of the water, are covered and lined with a thin coat of sulphur.

The basins of the two principal springs are of irregular forms, four, five, or six feet in diameter, and from some of them the water rushes out in all directions, from others obliquely. The eruptions are never of long duration, and the intervals are from fifteen to thirty minutes. The periods of both are exceedingly variable. One of the most remarkable of these springs threw out a great quantity of water; and from its continual noise, we named it the Roaring Geyzer. The eruptions of this fountain were incessant. The water darted out with fury every four or five minutes, and covered a great space of ground with the water it deposited. The jets were from thirty to forty feet in height. They were shivered into the finest particles of spray, and surrounded by great clouds of steam. The situation of this spring was eighty yards distant from the Geyzer, on the rise of the hill.

The celebrated fountain which has been distinguished by the appellation of Geyzer alone, from the pre-eminence it holds over all the natural phenomena of this kind in Iceland, rises through a perpendicular and cylindrical pipe or shaft, seventy feet in depth, and eight feet and a-half in diameter, which opens into a basin or funnel measuring fifty-nine feet from one edge to the other. The basin is circular, and the sides of it, as well as those of the pipe, are polished quite smooth by the continual friction of the water, and they are both formed with such mathematical truth, as to appear constructed by art.

When our guides led us to the Geyzer, the basin was filled to within a few feet of its edge. The water was transparent as crystal; a slight steam only arose from it, and the surface was ruffled by but a few bubbles, which now and then came from the bottom of the pipe. We waited with anxiety for several minutes, expecting at every instant some interruption to its tranquility. On a sudden, another spring immediately in front of the place on which we were standing, darted its waters above a hundred feet into the air with the velocity of an arrow, and the jets succeeding this first eruption were still higher. This was the spring already mentioned under the name of the New Geyzer.

While gazing in silence and wonder at this unexpected and beautiful display, we were alarmed by a sudden shock of the ground under our feet, accompanied with a hollow noise, not unlike the distant firing of cannon. Another shock soon followed, and we observed the water in the basin to be much agitated. The Icelanders hastily laid hold of us, and forced us to retreat some yards.

When the basin was nearly full, these occasional eruptions were generally announced by shocks of the ground. Immediately after the shocks, the whole body of water heaved exceedingly; a violent ebullition then took place, and large waves spread themselves in circles from the centre, through which the column forced its way. When the water had been quiet in the basin for some

time, the thermometer placed in it stood at 180° only; but immediately after an eruption, it rose to 200°. We boiled a piece of salmon in it, which was exceedingly well tasted. Our cookery at Rykum had not been quite so successful.

Of the antiquity of these springs I can say nothing further than that they are mentioned as throwing up their waters to a great height, by Saxo Grammaticus, in the preface to his History of Denmark, which was written in the 12th century; but, from the general appearance of the country, it is likely they have existed a great length of time.

PETER BOTTE'S MOUNTAIN.

THE island which contains this most singular natural curiosity is situated off the east coast of Africa. It was discovered by the Portuguese in the sixteenth century, who named it Illa do Cerus; but the Dutch took possession of it soon after, and called it Mauritius, after Maurice, Prince of Orange. The Dutch abandoned it in the year 1712; and the French, who had been already for some time in possession of the neighbouring Isle of Bourbon, began to colonize it. From them it received the name of the Isle of France, and continued in their possession till the year 1810, when it became, and still continues, a British colony. It received no new name on being ceded to the British crown: it is now generally known by both its Dutch and French appellations,—Mauritius, or Isle of France.

The island is extremely mountainous, and exhibits in every part of it marks of volcanic action. Some of the mountains are from two to three thousand feet in height, and are covered with snow during a great part of the year. Among them are several that assume the most singular and fantastic shapes; but the most extraordinary of any in its appearance, is that which bears the name of *Peter Botte*, from a person, who is said, by tradition, to have climbed to its summit many years ago, and to have lost his life in coming down again. This, however, is mere rumour, and even if the attempt was actually made by the person in question, it is evident that the fate which overtook him must have rendered it impossible to say whether he succeeded or not.

In point of fact, the top of the mountain has been

usually regarded as quite inaccessible, notwithstanding the boast of a Frenchman about forty years ago that he succeeded in reaching it. The attempt has also been several times made by our own countrymen, since the island became a British possession, but always in vain, until the period which we are about to describe, and which was accomplished in 1832. The account of it was read before the Geographical Society, by Mr. Barrow, and says, "From most points of view it seems to rise out of the range which runs nearly parallel to that part of the sea coast which forms the bay of Port Louis, (the capital, situated on the west side of the island,) bnt on arriving at its base, you find that it is actually separated from the rest of the rangc by a ravine, or cleft of a tremendous depth. The mountain appears to be about eighteen hundred feet high.

"Captain Lloyd, chief civil engineer, accompanied by Mr. Dawkins, had made an attempt in 1831 to ascend the mountain, and had reached what is called the neck, when they planted a ladder, which did not, however, reach half-way up the perpendicular face of rock beyond. Still Captain Lloyd was convinced that with proper preparations the feat might be accomplished. Accordingly, on the morning of the 7th September, 1832, that gentleman, along with Leutenant Phillpot, 29th Regt., Lieut. Keppel, R.N., and Lieut. Taylor, set out on the bold and perilous adventure. All our preparations being made," says Lieut. Taylor, who furnished Mr. Barrow with the account, "we started, and a more picturesque line of march I have seldom seen. Our van was composed of about fifteen or twenty sepoys, in every variety of costume, together with a few negroes carrying our food, dry clothes, &c. Our path lay up a very steep ravine, formed by the rains in the wet season, which having loosened all the stones, made it anything but pleasant; those below were obliged to keep a bright look-out for tumbling rocks, and one of these missed Keppel and myself by a miracle." Along this path, which was not a foot broad, they picked

their way for about four hundred yards, the negroes keeping their footing firm under their loads, by catching hold of the shrubs above them, as they proceeded. "On rising to the shoulder of the mountain," continues the narrative, "a view burst upon us which quite defies my descriptive powers. We stood on a little narrow ledge, or neck of land, about twenty yards in length, on the side which we mounted; we looked back into the deep wooded gorge we had passed up, while on the opposite side of the neck, which was between six and seven feet broad, the precipice went sheer down fifteen hundred feet to the plain. One extremity of the neck was equally precipitous, and the other was bounded by what to me seemed the most magnificent sight I ever saw. A narrow knife-like edge of rock, broken here and there by precipitous faces, ran up in conical form to about three hundred and fifty feet above us, and on the very pinnacle old Peter Botte frowned in all his glory.

"After a short rest, we proceeded to work. A ladder had been left by Lloyd and Dawkins last year; it was about twelve feet high, and reached about half way up the face of the perpendicular rock. The foot, which was spiked, rested on a ledge, which was barely three inches on each side. A grapnel-line had been also left last year, but was not used. A negro of Lloyd's clambered from the top of the ladder, by the cleft in the face of the rock, not trusting his weight to the old and rotten line. He carried a small cord round his middle, and it was fearful to see the cool, steady way in which he climbed, where a single loose stone, or false hold, must have sent him down into the abyss; however, he partially scrambled away, till at length we heard him halloo from under the rock 'all right.' These negroes use their feet exactly like monkeys, grasping with them every projection, almost as firm as with their hands. The line which he carried up was made fast above, and up it we all four 'shinned' in succession. It was, joking apart, awful work. In several places the ridge ran to an edge not a

foot broad, and I could as I held on, half-sitting, half-kneeling, across the ridge, have kicked my right shoe down to the plain on one side, and my left into the bottom of the ravine on the other. The only thing which surprised me, was my own steadiness and freedom from all giddiness. I had been nervous in mounting the ravine in the morning, but gradually I got so excited and determined to succeed, that I could look down that dizzy height without the smallest sensation of swimming in the head; nevertheless, I held *uncommonly hard*, and felt very well satisfied when I was safe under the neck; and a more extraordinary situation I never was in. The head, which is an enormous mass of rock, about thirty-five feet in height, overhangs its base many feet on every side. A ledge of tolerably level rock runs round three sides of the base, about six feet in width, bounded everywhere by the abrupt edge of the precipice, except in the spot where it is joined by the ridge up which we climbed. In one spot, the head, though overhanging its base several feet, reaches only perpendicularly over the edge of the precipice, and most fortunately it was at the very spot where we mounted. Here it was that we reckoned on getting up; a communication being established with the shoulder by a double line of ropes, we proceeded to get up the necessary materials, Lloyd's portable additional coils of rope, crowbars, &c. But now the question, and a puzzler too, was, how to get the ladder up against the rock. Lloyd had prepared some iron arrows, with thongs, to fire over, and having got up a gun, he made a line fast round his body, which we all held on, and going over the edge of the precipice on the opposite side, he leaned back against the line, and fired over the least projecting part. Had the line broken, he would have fallen at least 1800 feet. Twice this failed, and then he had recourse to a large stone, with a lead-line, which swung diagonally, and seemed to be a feasible plan. Several times he made beautiful heaves, but the provoking line would not catch, and away went the stone far below; till

at length Æolus, pleased, I suppose, with his perseverance, gave us a shift of wind for about a minute, and over went the stone, and was eagerly seized on the opposite side. 'Hurrah, my lads! steady's the word.' Three lengths of the ladder were put together on the ledge, a large line attached to the one which was over the head and carefully drawn up, and finally, a two-inch rope, to the extremity of which we lashed the top of the ladder, then lowered it gently over the precipice, till it hung perpendicularly, and was steadied by two negroes on the ridge below. 'All right, now hoist away,' and up went the ladder, till it came to the edge of our ledge, when it was lashed in firmly to the rock. We then hauled away on the guy to steady it, and made it fast; a line was passed over by the lead line, to hold on, and up went Lloyd screeching and hallooing, and we all three scrambled after him. The union-jack and a boat-hook were passed up, and old England's flag waved freely and gallantly on the redoubted Peter Botte.

"No sooner was it seen flying than the 'Undaunted' frigate saluted in the harbour, and the guns of our saluting battery replied; for though our expedition had been kept secret till we started, it was made known the morning of our ascent, and all hands were on the look-out, as we afterwards learnt. We then got a bottle of wine to the top of the rock, christened it 'King William's Peak,' and drank his Majesty's health.

"I certainly never felt any thing like the excitement of that moment; even the negroes, down on the shoulder, took up our hurrahs, and we could hear, far below, the faint shouts of the astonished inhabitants of the plain, We were resolved to do nothing by halves, and accordingly we made preparations for sleeping under the rock. by hauling up blankets, pea jackets, brandy, cigars, &c. Meanwhile, our dinner was preparing on the shoulder below, and about four P.M., we descended our ticklish path, to partake of the portable soup, preserved salmon, &c. Our party was now increased by Dawkins and his cousin,

a Lieutenant of the 'Talbot,' to whom he had written, informing him of our hopes of success; but their heads would not allow them to mount to the head or neck. After dinner, as it was getting dark, I screwed up my nerves, and climbed up to our queer little nest at top, followed by Keppel and a negro, who carried some dry wood, and made a fire in the cleft under the rock. Lloyd and Phillpot soon came up, and we began to arrange ourselves for the night, each taking a glass of brandy to begin with. I had on two pair of trousers, a shooting jacket, waistcoat, and a huge flushing jacket over that, a thick woollen sailor's cap, and two blankets, and each of us lighted a cigar, as we seated ourselves to wait for the appointed hour for our signal of success.

It was a glorious sight to look from that giddy pinnacle, over the whole island, lying so calm and beautiful in the moonlight, except where the broad black shadows of the other mountains intercepted the light. Here and there we could see a light twinkling in the plains, or the fire of some sugar manufactory; but not a sound of any sort reached us, except an occasional shout from the party down on the shoulder (we four being the only ones above). At length, in the direction of Port Louis, a bright flash was seen, and after a long interval the sullen boom of the evening gun. We then prepared our pre-arranged signal, and whiz went a rocket from our nest, lighting up for an instant the peaks of the hills below us; and then leaving us in darkness. We next burnt a blue light, and nothing can be conceived more perfectly beautiful than the broad glare against the overhanging rock. The wild looking groups we made in our uncouth habiliments, and the narrow ledge on which we stood, were all distinctly shown, while many of the tropical birds, frightened at our vagaries, came glancing by the light, and then swooped away, screeching, into the gloom below; for the gorge, on our left, was as dark as Erebus. We burnt another blue light, and threw up two more rockets, when, our laboratory being exhausted, the patient-looking insulted

moon had it all her own way again. We now rolled ourselves up in our blankets, and having lashed Phillpot, who is a determined sleep-walker, to Keppel's leg, we tried to sleep, but it blew strong before the morning, and was very cold. We drank all our brandy, and kept tucking in our blankets the whole night, without success. At daybreak we arose, stiff, cold, and hungry; and shall conclude briefly, by saying, that after about four or five hours hard work, we got a hole mined in the rock, and sank the foot of our twelve foot ladder deep in this, lashed a water barrel as a land mark at the top, and, above all, a long staff, with a union-jack flying. We then, in turn, mounted to the top of the ladder, to take a last look at a view, such as we might never see again, and bidding adieu to the scene of our toil and our triumph, descended the ladder, to the neck, and casting off the guys and training lines, cut off all communication with the top."

The adventurous party descended in perfect safety from this perilous attempt, which was one of the most daring ever accomplished.

THE BRITANNIA TUBULAR BRIDGE.

This magnificent structure is a triumphant monument of the engineering skill of the present age. It is situated on the Chester and Holyhead Railway, which now forms part of the main line of communication between London and the Irish metropolis. At first it was considered quite impracticable to carry the railway across the Menai Strait, which divides the mainland from the Isle of Anglesea, in which Holyhead is situated; at least it was evident that no principle then known for the construction of bridges, was at all sufficient to effect the purpose and, at the same time, preserve the navigation of the strait. For ordinary conveyances, Telford had previously spanned the strait at its narrowest part, by a bridge on the suspension principle, which has long been an object of great interest, displaying as it does engineering skill of the very highest character; but the great vibration of bridges on this principle renders them quite unfit for railway purposes. It occurred to Mr. Robert Stephenson, the engineer, that a tube might possibly be constructed of iron plates that would answer the purpose. The idea was deemed at first ridiculous; but after a model tube had been constructed, and its strength and fitness tested by a series of the severest experiments, and at a cost of £18,000, it was found to be quite practicable; though the difficulties, labour, and expense of such an undertaking would be of the most formidable character. As it would effect a saving of time to the extent of one hour or more in the journey from Dublin to London, the railway directors determined to proceed.

The bridge consists of two distinct lines, for the up and down trains, each formed of four separate but continuous

THE BRITANNIA BRIDGE.

hollow square beams or tubes of iron plates, &c. The tubes are 15 feet wide, and 30 fect high ; the four central ones are 480 fcet in length, but the end tubes are not quite so long. They were constructed on the adjoining shore, and when lying on piles at the side of the strait, one of these tubes looked like a row of houses three stories high. They were floated at high water upon pontoons into their respective positions, and afterwards raised to the proper elevation by powerful hydraulic presses.

At that part crossed by the bridge, there is a rock in the centre of the strait called the Britannia Rock, from which the bridge takes its name. This afforded a point on which to erect a pier or central tower for the support of the tubes. This tower rises majestically to a height of 230 feet, giving a clear way beneath the tubes for the purposes of navigation, sufficient to allow the largest ships to pass underneath, without striking their topmasts.

After all the tubes had been raised to their places, the last rivet, said to be exactly the 2,000,000th, was driven home by Mr. Stephenson on the 5th March, 1850. A series of experiments were afterwards made, to test the strength of the structure, and its capability for the important services it was intended for. These consisted of passing heavy trains of several kinds through it at various speeds. The last experimental government train was a heavy laden one of coal waggons, weighing 240 tons, with three locomotive engines. This was run through at the ordinary rate at which such trains travel, from ten to twelve miles an hour ; and the deflection, as taken by a deflectometer fixed in the centre tower, was scarcely perceptible. This train was next placed over the middle of one of the tubes, and there left as a dead weight, while Captain Simmons, the government inspector, descended and made a minute inspection of the masonry, the rivetting, plate-work, cellular top and bottom of the tubes, and every part of the workmanship, which occupied a considerable time. On returning to the tube, the deflection caused by the load was found to be about three-

fourths of an inch, an amount so small as to be unworthy of consideration. Similar experiments made in the other tubes, exemplificd the perfect success that had attended the continuity of the beam, the most remarkable feature in the structure, caused by the junction of each of the before isolated plates; for as the engines entered upon the small land tube, the motion due to their progressive weight was ascertainable in every tube, even to the further extremity of 1560 feet in length. Locomotives in steam were then passed through as fast as practicable, but only at twenty miles an hour, owing to the curves at either end. The deflection was the fraction of an inch, and the vibration scarcely perceptible, the tonnage weight of the tube itself acting, in reality, as a counterpoise or preventative to vibration. Captain Simmons was extremely interested with the bold design and immense strength of this remarkable high road, which is now described by its engineers as strong enough to support a line-of-battle ship suspended, or a load of locomotives piled one on the top of the other over its whole surface. The experiments were all perfectly satisfactory, and tended to show that all parts of the stupendous work obeyed the calculated requirements, and to a certain extent determined the conjectural questions of duration and stability to arise under the test of every-day usage.

Sir Francis Head, when he saw one of the tubes raised, and in its place, observed,—"It seemed surprising to us, that by any arrangement of materials it could possibly be made strong enough to support even itself, much less heavily laden trains of passengers and goods, flying through it, and actually passing each other in the air at railway speed. And the more we called reason and reflection to our assistance, the more incomprehensible did the mystery practically appear; for the plate-iron of which this aerial gallery is composed, is not so thick as the lid, sides, and bottom which are required for an elm coffin, of strength sufficient merely to carry the corpse of an emaciated friendless pauper from the workhouse to

his grave! The covering of this iron passage, 1841 feet in length, is literally not thicker than the hide of the elephant! Lastly, it is scarcely thicker than the bark of the 'good old English oak;' and if this noble sovereign of the forest, notwithstanding the 'heart' and interior substance of which it boasts, is, even in the well-protected park in which it has been born and bred, often prostrated by the storm, how difficult is it to conceive that an attenuated aerial hollow beam, no thicker than its mere rind, should, by human science, be constituted strong enough to withstand, besides the weights rushing through it, the natural gales and artificial squalls of wind to which, throughout its immense length, and at its fearful height, it is permanently to be exposed!"

The cut gives a representation of this stupendous work of art, as seen from the Anglesea shore. Beneath are the deep Menai Straits, in length about twelve miles, through which, imprisoned between precipitous shores, the waters of the Irish Sea and of St. George's Channel are not only everlastingly vibrating backwards and forwards, but at the same time, and from the same causes, are progressively rising or falling from twenty to twenty-five feet with each successive tide, which, varying its period of high water every day, forms altogether an endless succession of aqueous changes.

The several towers and abutments are externally composed of grey roughly-hewn Anglesea marble. The land towers, the bases of which are the same as that of the Britannia, are each 198 feet above high water. They contain 210 tons of cast-iron girders and beams.

The first thing that strikes the spectator, on approaching the cyclopean piles of masonry, is the vast masses of stone of which they are constructed. The limestone is in such immense blocks, that, to the eye of the uninitiated, it seems almost impossible to move them, yet they were moved with perfect ease; for such was the ingenuity, simplicity, and strength of the tackle used in its construction, that it was a matter of small moment whether a block of stone weighed one ton, or twelve tons.

The two lines of tubes have been rivetted together since the time of the government inspection, which has greatly added to the strength of the whole structure, and lessened the tendency to vibration. The continuous length of the iron part of this double gallery is 1513 feet, —far surpassing in size any piece of wrought-iron work ever before put together. Its weight is 5000 tons, being nearly equal to that of two 120-gun ships, having on board, ready for sea, guns, powder, shot, provisions, crew, flags, captain, chaplain, admiral and all!

The bridge altogether is 2400 feet long. It was fully opened for traffic on the 18th March, 1850. The cost to the Chester and Holyhead Railway Company was about £700,000. It took about four years only to complete it, while Telford's suspension bridge, over a narrower part of the same strait, took eight years to construct.

EARTHQUAKES.

A VERY large number of these great convulsions of nature have occurred in various countries both in ancient and modern times. Their ravages are mostly confined to volcanic regions; although this has has not been universally the case.

The Scriptures speak of several earthquakes:—one of the most remarkable is that which happened in the twenty-seventh year of Uzziah, king of Judah, about

783 B.C. There is mention made of this earthquake by the prophets Amos and Zechariah; and Josephus says, that it was so violent as to divide into halves a mountain which lay to the west of Jerusalem, and to remove one half of it 500 paces from its original site, insomuch that it closed up the highway, and covered the king's gardens.

An earthquake at Messina, in Sicily, in 1783, was felt over an area of five hundred square miles. Many and sudden sinkings of the land were perceived, numerous fissures were formed, and partial elevations effected in some places; and a fissure a mile in length, one hundred and five feet in width, and thirty feet in depth, opened at Plaisduo. Another about the same length, and a hundred feet deep, was formed at Cerzulle. At La Fortuna, a chasm, a quarter of a mile in length, thirty feet in width, and two hundred and twenty-five feet in depth, opened in the ground. Along the Straits of Messina the cliff of Gidro Greco, a mile in length, was precipitated on the adjacent houses and gardens. A fragment, detached by the earthquake from Montc Jaci, crushed multitudes who had fled to the shore for safety; and at the same moment a wave broke on the shore, and swept away the aged Prince of Scylla and numbers of his people.

But the earthquake at Lisbon in 1755, was certainly the most horrible and extensive of modern times, nor have we any account of anything that can be compared to it in ancient history. Its origin appears to have been under the Atlantic Ocean, the waves of which were shaken almost as violently as the land: its range extended over a part of both the hemispheres, and more or less affected Europe, Africa, and America, though it was in the south-western parts of Europe in which its violence and destruction were chiefly conspicuous, and especially in the city of Lisbon, which fell a victim to its fury. We shall give the following details in the order in which they are communicated in the abridgment of the Philosophical Transactions. The communication is from a Mr. Wolfall, and is dated 1st November, 1755, from Lisbon.

"Since the beginning of the year 1750, we have had much less rain than has ever been known in the memory of man, excepting the last spring. The summer has been cooler than usual, and for the last forty days, fine clear weather, but not remarkably so. On the 1st inst., (November 1755,) about forty minutes past nine in the morning, was felt a most violent shock of an earthquake; it seemed to last about the tenth part of a minute, and then came down every church and convent in town, together with the king's palace, the magnificent opera-house adjoining to it; in short, there was not a large building in town that escaped. Of the dwelling houses, there might be about one-fourth of them that tumbled, which, at a very moderate computation, occasioned the loss of 30,000 lives. The shocking sight of the dead bodies, and the shrieks and cries of those who were half buried in the ruins, are only known to those who were eye-witnesses; it far exceeds all description, for the fear and consternation were so great, that the most resolute person dared not stay a moment to remove a few stones off the friend he loved most, though many might have been saved by so doing; nothing was thought of but self-preservation, and getting into open places, or into the middle of streets, was the most probable security. Such as were in the upper stories of houses were in general more fortunate than those that attempted to escape by the doors, for these were buried under the ruins with the greatest part of the foot passengers. Such as were in equipages escaped best, though their cattle and drivers suffered severely; but those lost in houses and the streets, are very unequal in number to those that were buried in the ruins of churches; for as it was a day of great devotion, (All Saints' day,) and the time of celebrating mass, all the churches in the city, the number of which exceeds that of both London and Westminster, were mostly crowded; and as the steeples are built high, they mostly fell with the roof of the church, and the stones are so large that few escaped.

Two days after the first shock, orders were given t dig for the bodies, and a great many were taken up an recovered. I lodged in a house where there were thirty eight inhabitants, and only four saved. In the city pri son eight hundred were lost; twelve hundred in th general hospital; a great number of convents, of fou hundred in each; also the Spanish ambassador, wit thirty-five servants. It fortunately happened that the king and the royal family were at Belim, a palace about a league out of town. The palace in town tumbled the first shock, but the natives insist that the inquisition was the first building that fell down. The shock was felt all over the kingdom, but along the sea-side more particularly. Faro, St. Ubals, and some of the large trading towns, are, if possible, in a worse situation than here, though the city of Oporto has quite escaped.

It is possible that the cause of all these misfortunes came from under the Western ocean; for a captain of a ship, a very sensible man, told me, that he was fifty leagues off at sea—that the shock there was so violent as greatly to injure the deck of the ship; and occasioned him to think that he had mistaken his reckoning, and struck upon a rock. Upon which they instantly hoisted out their long-boat to save themselves, but happily brought the ship, though much injured, into this harbour.

The shocks lasted between five and six minutes. The very first shock was extremely short, but the last was as quick as lightning, succeeded by two others, which, in the general way of speaking, are mentioned altogether as one shock. About twelve o'clock we had a second shock. I was then on the *Terra do Paco*, or king's palace-yard, and had an opportunity of seeing the walls of several houses that were standing, open from top to bottom more than a quarter of a yard, yet close again so exactly as to leave no signs of injury."

What the precise cause of earthquakes may be is not distinctly known; but there is little doubt that volcanic action, deep in the bowels of the earth, has some connection with such wonderful convulsions of the earth's surface.

CURIOUS CLOCK AT STRASBURG.

At Strasburg there is a clock, of all others the most famous, invented by Conradius Dasipodius, in the year 1571. Before the clock stands a globe on the ground, showing the motions of the heavens, stars, and planets. The heavens are carried about by the first mover, in twenty-four hours. Saturn, by his proper motion, is carried about in thirty years; Jupiter in twelve; Mars in two; the Sun, Mercury, and Venus, in one year; and the Moon in one month. In the clock itself there are two tables on the right and left hand, showing the eclipses of the sun and moon from the year 1573 to the year 1624. The third table in the middle, is divided into three parts, In the first part the statues of Apollo and Diana show the course of the year, and the day thereof, being carried about in one year; the second part shows the year of our Lord, and the equinoctial days, the hours of each day, the minutes of each hour, Easter day, and all other feasts, and the dominical letter. The third part hath the geographical description of all Germany, and particularly of Strasburg, and the names of the inventor and all the workmen. In the middle frame of the clock is an astrolabe, showing the sign in which each planet is every day; and there are the statues of the seven planets upon a round piece of iron, lying flat; so that every day the planet that rules the day comes forth, the rest being hid within the frames, till they come out by course at their day; as the sun upon Sunday, and so for all the week. And there is also a terrestrial globe, which shows the quarter, the half-hour, and the minutes. There is also the skull of a dead man, and statues of two boys, whereof one turns the hour-glass, when the clock hath struck,

and the other puts forth the rod in his hand at each stroke of the clock. Moreover, there are the statues of Spring, Summer, Autumn, and Winter, and many observations of the Moon. In the upper part of the clock are four old men's statues, which strike the quarters of the hour; the statue of Death comes out at each quarter to strike, but is driven back by the statue of Christ, with a spear in his hand, for three quarters, but in the fourth quarter, that of Christ goes back, and that of Death strikes the hour with a bone in his hand, and then the chimes sound. On the top of the clock is an image of a cock, which twice in the day crows aloud, and claps his wings. Besides, this clock is decked with many rare pictures; and, being on the inside of the church, carries another frame to the outside of the wall, wherein the hours of the sun, the courses of the moon, the length of the day, and such other things, are set out with great art.

[Rhodes.]

THE COLOSSUS OF RHODES.

This enormous building has justly been classed among the wonders of ancient architecture. It was a vast structure of brass or statuary metal, erected in honour of Apollo, or the Sun, the tutelar god of Rhodes. Its stride was fifty feet asunder, each foot being placed on a rock or pedestal of stone at this distance from each other, at the entrance into the haven. Its height, according to Pliny, was not less than 105 feet, or seventy cubits, and hence vessels of considerable burden were capable of passing between its legs. It is said to have been erected by the Rhodians, with the money produced by the sale of the engines of war which Demetrius Poliorcetes employed in fruitlessly besieging the city for a twelvemonth, and which

he gave to them upon his reconciliation. Pliny affirms it was commenced by Chares of Lindus, a disciple of Lysippus, and finished upon his death by Laches of the same town. It was thrown down by an earthquake sixty years after its erection.

The basis that supported it was a triangular figure its extremities were supported by sixty pillars of marble. There was a winding staircase to go up to the top of it, whence Syria and the ships bound to Egypt could be perceived in a great looking-glass, which was suspended to the neck of the statue. In one hand it held a light-house, and in the other a sceptre. It weighed 720,000 lbs. avoirdupois, and is said to have cost £44,000: it was sold after lying on the ground 894 years, by the Saracens in A.D. 667, as old brass to a Jew, who loaded 900 camels with it. On the spot where the feet stood, a castle now stands on one side, and a tower on the other. Pliny mentions 100 other colossal statues in Rhodes, but none of such dimensions as the above.

MOUNT ÆTNA.

It takes its name either from *athuna*, a furnace, or *œutuna*, darkness. This mountain, famous from the remotest antiquity, both for its bulk and terrible eruptions, stands in the eastern part of the Island of Sicily in a very extensive plain, called *Val di demoni*, from the notion that it is inhabited by devils, who are supposed to torment the spirits of the condemned in the bowels of this volcano. There is much difference of opinion as to the height of this mountain, as also its circumference. Pindar, who lived 435 years B.C., calls it the *Pillar of Heaven*, on account of its great height. The upper regions of Ætna are so cold, as scarcely to be available for the purposes of tillage and cultivation. Lower down commences the large woody regions, which consist of large forest trees. Below these lie the plains, which are mostly laid out in vineyards, the slope of them being very gradual; and here it is that, when the liquid fire arrives, there is most cause for alarm. At the very top it is perpetually covered with snow, from whence the island is supplied with that article, so necessary in a hot climate, and without which, the natives say, Sicily could not be inhabited.

In the middle of the snowy region stands the great crater, or mouth of Ætna; it is a little mountain, about a quarter of a mile perpendicular, and very steep, situate in the middle of a gently-inclining plain, of about nine miles in circumference. It is entirely formed of stones and ashes, in the middle of a hollow of about two and a half miles in circumference, but by some writers it is considered more: the inside is crusted over with salts and sulphur of different colours. It goes shelving down

from the top like an inverted cone, the depth of which nearly corresponds to the height of the little mountain. From many parts of this place issue volcanoes of sulphureous smoke, which, being much heavier than the circumambient air, instead of ascending, it rolls down the side of the mountain, till, coming to a more dense atmosphere, it shoots off horizontally, and forms a large track in the air, according to the direction of the wind. In the middle of this funnel is the tremendous and unfathomable gulf, so much celebrated in all ages, both as the terror of this life, and the place of punishment in the next. From this gulf continually issue terrible and confused noises, which, in eruptions, are increased to such a degree, as to be heard at a prodigious distance.

This mountain is divided into three zones, called *Regione culta*, or fertile region; the *Sylvosa*, or woody region, and the *Regione deserta*, or desert zone. The form of Ætna is that of a cone, very broad at the base; which is more than forty miles in circumference. From the bottom, you ascend ten leagues, before reaching its summit; on the south side, and on any of the other sides, the way not being so straight, is considerably longer. Ætna is entirely composed of substances that have been discharged by the volcano, in its various explosions.

The woody region, especially the east side, called *Carpinetto*, abounds with large chesnut trees; the most remarkable of which has been called, from its size, the "chesnut tree of a hundred horse"—the circumference of which is said to have been two hundred and four feet. In Piedmontese, or *Regione culta*, is the river *Acis*, so much celebrated by the poets, in the fable of Acis and Galatea. It bursts out of the earth, at once, in a large stream, runs with great rapidity, and about a mile from its source throws itself into the sea. Its water is remarkably clear, and so extremely cold, that it is reckoned dangerous to drink it: it is said, however, to have a poisonous quality, from being impregnated with vitriol, in consequence of which cattle have been killed by it.

MOUNT ÆTNA.

It never freezes, but is said often to contract a greater degree of cold than ice.

The majestic forests of Ætna afford a singular spectacle, and bear no resemblance to those of any other country; their verdure is more lively, and the trees of which they consist of a greater height. These advantages they owe to the soil on which they grow; for the soil produced by volcanoes is particularly favourable to vegetation, and every species of plant grows here with great luxuriance. In several places, when we can view their interior parts, the most enchanting prospects are displayed. The hawthorn trees are of immense size, and are cut fantastically, so as to represent orange trees; the beeches appear like so many ramified pillars, and the tufted branches of the oak like close bushes, impenetrable to the rays of the sun. The appearance of the woods in general is exceedingly picturesque, by reason of the great number and variety of the trees, and the inequality of the ground, which makes them rise like seats in an amphitheatre, disposing them also in groups and glades, so that their appearance changes to the eye at every step; and this variety is augmented by accidental circumstances, as the situation of young trees among others venerable for their antiquity; the effects of storms, which have often overturned large trees; while stems, shooting from their roots, like the Lernœan hydra, show a number of heads, newly sprung, to make up that which has been cut off.

There have been nearly forty eruptions of Ætna. Diodorus Siculus records the first, but does not fix the period at which it happened, the descriptions of all differing only in the extent of damage done.

All travellers agree, that even in the height of summer, the cold of Ætna is the most piercing that they ever experienced; and a very recent one says, "The cold was so great that the wine had become quite thick, and on entering the stable, the guide found the mules trembling from its effects, notwithstanding that they had plenty to eat during our absence."

COLOSSAL SCULPTURE.

In Colonel Welsh's Military Reminiscences of the East Indies, is an account of a singular work of art. He says —"Estimated as a military post only, Nungydeo must ever rank high, from its being almost inaccessible; though all wonder at the preceding sight was speedily lost in our surprise, when, after ascending several neat staircases, we suddenly came upon a large stone building, above which we then first discovered a finely-formed image, carved out of one solid stone, about seventy feet high, and representing a young man with wreaths of laurel winding from his ankles to his shoulders, every leaf of which was so exquisitely laboured, as to bear the closest examination. We were able to contrast the size of this extraordinary colossus with men, monkeys, and vultures, two of the latter being perched upon his head, and the upper part being seven times the height of a middle-sized man, who stood on the top of the building, with the legs and thighs of the statue below. That it was cut out of the solid rock cannot admit of a doubt; for no power on earth could have moved so massive a column to place it there on the top of a steep and slippery mountain—so steep, indeed, that we could not see the statue till we had ascended close to it. The legs and thighs are cut out in proportion to the rest, but are attached to a large fragment of the rock behind them, artfully covered by the building of which it forms the back wall. I never in my life beheld so *great* a curiosity, every feature being most admirably finished: from the nose, inclining to the aquiline, and the under lip being very prominent and pouting, the profile shows it to the greatest advantage; and every part, from top to toe, is smooth and highly

polished. I could hardly conceive how the hand of man, and that particularly of a race by no means either intelligent or educated, could have accomplished such a work of labour, and that too on the summit of a sterile rock. No person on the spot seemed either to know or care when, or how, or by whom it was made; and though I have given it the usual appellation, the Brahmins call it Gometrauz and Gomethez; at a distance it appeared to be simply a stone pillar."

THE CITY OF PETRA.

RUINS OF PETRA.

PETRA, the capital of Idumea, was one of the most remarkable cities of the ancient world, and its ruins, as they now stand, are of the most interesting and wonderful character. It was situated near the base of Mount Hor, about three days' journey from Jericho, and the same distance from Mount Sinai. The mountains, in the midst of which this far-famed city lay hidden, rise up from the eastern border of the Arabah, the deep valley extending from the Dead Sea to the Gulf of Akabah. The whole aspect of this region is less barren than the mountains in the west, and many tracts of country embraced in it are so abundant in fertility, as to afford striking illustration of the fulfilment of the promise made to Esau,—"Behold thy dwelling shall be the fatness of the earth, and of the dew of heaven from above."

It is in the Wady Musa—in this Mount Seir, where the ruins of ancient Petra are situated. The length of the valley in which the city lies, measures from north to south nearly a mile. Its average breadth is about half-a-mile. On the east and west, it is skirted by precipitous rocks, rising to the height of from 200 to 1000 feet. But on the north and south they are much lower, and afford, through ravines between them, two entrances to the city. The ancient and principal entrance, however, was from the east, by the Wady es Sik. This is a deep and narrow defile of more than a mile long, shut in on either side by lofty perpendicular rocks and coursed by a pretty rivulet which runs westward through the city. At the entrance of the valley, the cliffs are between forty and fifty feet high, with a space between them of about fifty yards. But further on, it contracts, and the cliffs

become much higher, presenting on each side multitudes of tombs hewn out of the rock. Onwards towards the mouth of the valley, a splendid arch is thrown across from one cliff to another, below which the width of the passage is not more than twelve feet, and the height of the adjacent rocks measures nearly 300 feet. The bottom of this passage was anciently paved with square stones, some of which still remain, and the whole valley forms a wonderful scene of wild yet magnificent sublimity. Passing westward in a winding direction, through this dark and rugged defile, the path opens into a broader valley running further north, where all at once on the western precipice the splendid façade of the *Khusneh* bursts on the view. This gorgeous work of art is hewn out of the face of the rock, and with its noble Corinthian pillars and magnificent entablature, supported by these, forms the most beautiful object in the whole of this scene of wonders. The interior of the structure, however, is plain, and without ornament. It consists of one lofty room, and several small chambers, rendering it probable that it was originally intended for a temple.

Beyond this, in a bend of the Wady, which turns to the north, is situated the theatre. It is cut out of the solid rock, of a semi-circular form, and capable of containing between three and four thousand persons. All around its lofty walls, the cliffs are full of tombs, while in front, on the opposite side of the valley, the eye rests on a multitude of large sepulchres, so that, while a taste for the frivolities of life was indulged by the wonderful people who were here of old—the inhabitants of the rock—they were constantly admonished of the solemn real-

ities of death. Advancing to the north-east, the city itself opens fully to the view. It occupies an area in the bosom of the mountains of more than a mile in circuit, but increased considerably in extent by the numerous branch valleys which form recesses on all sides. The principal public buildings seem to have occupied the banks of the rivulet. Not far from the centre of the valley are seen the remains of what appears to have been a triumphal arch, under which are three passages, and a number of pedestals and columns. A little to the west of this, stands a sumptuous edifice, called Pharaoh's House, an imposing ruin of nearly thirty-four paces square. Not far to the east is situated a solitary column, composed of several bases, and connected with the foundation of a temple, of which the fragments of other columns are scattered around. Near to this, and indeed over the whole area, other piles of ruins, columns, and parts of columns, intermingled with blocks of hewn stone, lie strewn on the ground. A large space on the north side of the brook is covered with relics of what were probably private habitations, and their whole appearance indicate the magnificence of the ancient city, as well as the power exerted in its entire overthrow. The most remark-

able ruin next to the Khusneh is the Deir. This splendid excavation is situated high up among the topmost crags of the mountain, nearly on a level with the summit of Mount Hor, and is approached by a narrow rugged ravine at the west side of the open valley. It is cut out of the perpendicular face of the cliff, which flanks it on both sides, and though inferior to the Khusneh in chasteness and symmetry, it is yet an astonishing work of ancient art. Its length across the front is 152 feet; its height being equal to this measure, and its lower columns as they spring from the wall, are about twelve feet in semi-circumference. There is within, one excavated chamber, and, like the Khusneh, the Deir appears to have been used as a temple when Edom had its gods.

The most remarkable spectacle, however, in this wonderful spot, are the numerous excavations hewn out of the rock, in front of the surrounding mountains. Whether these were formed for temples, or human dwellings, or, as is most probable, for tombs of the dead, they cannot but surprise every observer by their number, and the incredible labour with which they must have been constructed. Besides occupying the entire face of the mountains by which the city is encompassed, they cover the whole front of the precipitous rocks in the ravines which branch out on every side. They are often seen rising one above another on the side of the surrounding cliffs, and steps cut out of the rock, now much worn by time, lead in all directions to these mysterious receptacles, some of which are not less than four hundred feet above the valley. Many of these excavations consist of a single chamber of ten or twenty feet in height, and about twelve in width, containing a niche a little above the floor, as if intended for receiving a votive offering. Not a few of them are humble unadorned holes in the rock, but a vast number are enriched with various ornaments, designed according to the taste or wealth of those who formed them. The whole face of the mountain has thus the appearance of a splendid pile of architecture, consisting of

graceful columns, well designed pediments, and rich entablatures, almost rivalling in skill the works of Grecian art.

A most striking and almost magical effect is given to these wonderful excavations by the great variety of colours in the sandstone rock in which they are formed. Many of them are thus adorned with the most lovely and brilliant hues. Red, purple, black, white, deep azure, and bright yellow, are blended together, so as to form the most charming and brilliant colouring—as brilliant as is observed in the colouring of flowers, or when the sky is illumined with a glorious sunset. The splendour of these works of art, with their tall columns, and graceful corridors, glowing in the beams of an eastern sun, is a scene of beauty and grandeur to which no description can do adequate justice. It is a spectacle of wonder and brilliance, on which every traveller of observation and taste dwells with rapture and amazement, and receives from it "impressions which will be effaced only at death." For more than a thousand years this city remained unknown and unvisited, till Burckhardt discovered it in 1812.

Such now is the once renowned Sela, the city of the rock. Petra appears to have been co-eval with the first rise of commerce in the East, and there is reason to conclude that it was a flourishing emporium of merchandise long before the dawn of the Christian era. It was then the common centre to which the traffic of Northern Arabia tended, and the common storehouse of the commodities and luxuries of the eastern world. It came into the hands of the Romans during the reign of the emperor Trajan, and about the fifth century it was the metropolitan see of the third Palestine. But with the decline and fall of the Roman empire in these regions, Petra suddenly vanishes from the pages of history. After the Mahommedan conquest, and before the period of the Crusades, its very name disappears from the annals of nations. Yet no historian has left a word on record, to inform future generations how or when perished, the long powerful capital of the ancient Idumea.

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