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A Visit to Europe

1840



THE HISTORY OF THE UNITED STATES

VOL. II.

NEW YORK:

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1840.



# A Visit to Europe

IN 1851.



statue of Frederick the Great, Berlin

VOL. II.

NEW-YORK:  
G. P. PUTNAM & COMPANY.  
1853.





VISIT TO EUROPE

IN 1851.

BY  
PROF. BENJAMIN SILLIMAN  
OF YALE COLLEGE.

IN TWO VOLUMES, WITH ILLUSTRATIONS.

VOLUME II.

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## II.

### Voyage to Sicily.

May 23, 1851.

WITH no small regret, we relinquished our intention of returning to England, to attend the meeting of the British Association at Ipswich, July 2. We had seen Vesuvius, and Etna now attracted us so powerfully that we gave up the great men for the greater volcano. Many of the English savans we had already met, and others still we expected to see on our return to England. We, therefore, decided to visit Etna; but the ladies, with two of the young gentlemen, preferred an excursion to the ruins at Pæstum. Antonio was left to attend them, while François, our courier, went with us to Sicily.

PASSAGE IN A FRENCH STEAMER.—After an inconvenient delay at the custom-house, in obtaining permission to embark, we went on board the French government steamer, the *Licurgus*, which lay at anchor in the bay. We began our passage in a thunder-storm. The fine scenery of the shores was veiled by clouds and rain; but before we were clear of the bay, the storm was over, the clouds, in broken masses, reflected a thousand hues of beauty, while the setting sun threw back a flood of purple light upon Vesuvius, and the splendid shores of the bay, so much and so deservedly celebrated. As we were advancing into the wide sea, and looking back towards Naples, we had on our right Sorrentum and the Calabrian Mountains, while near was the Island of Capri, the ill-famed scene of the profligate revels, luxury and cruelty of Tiberius. On our left, at the other extreme of the bay, we saw the volcanic islands of Ischia and

Procida, and on the continent, Cape Misenum. Further north were Naples and Vesuvius, the latter with its column of white vapor constantly renewed, and wreathing gracefully to the clouds. Then the extended line of towns, which I have often named, and which, with Naples, forms a white border for many miles. A glance being given to Pompeii, the eye sweeps away east and south over Castel del Mare, standing over the entombed Stabizæ—along the towering Apennines, which there bound the bay, with their bold, abrupt, and channelled but verdant sides and innumerable peaks, and a beautiful white dotting of villages and villas at their feet, give a splendid finish to this noble prospect. Being now beyond the bay, we had Calabria on our left, stretching far away east and south, but its naked hills and mountains were so little attractive that we were not unwilling to have the curtain of night drawn over them.

The sea was perfectly smooth, and the motion of a very good boat, though slow, was quiet. We dined at sunset, and several agreeable Englishmen—one of whom had been much in the United States, and had eyes to observe things correctly—afforded a pleasant society.

STROMBOLI.—We were earnestly desirous to see the ever-eruptive Stromboli—that remarkable island, whose volcano has been in a state of restless activity for more than 2000 years. Accordingly, I was on deck at four o'clock on the morning of Saturday, May 24, knowing that we should pass it very early. It was more than I had dared to hope to see this memorable volcano; but there it was in full view on our right, and only a few miles distant. I ran below to summon my companions, when an English merchant bound to India, hearing my annunciation, also sprang from his berth, and we soon manned the quarter-deck with deeply interested observers of a cone whose origin was probably anterior to the early arrival of the Greek colonies, and perhaps of the Etruscans, and before Rome had crowned her seven hills with people and buildings. With only the brief interruption of a cup of coffee, we remained for many hours intently gazing on Stromboli. While

we were drawing near to it, within the distance of two miles, a bright and beautiful morning enabled us to see distinctly its lofty crater at the height, as we judged, of 1500 feet above the sea.

The crater had been ruptured on the northern side, and appeared as if a portion of the mountain had been torn off by explosion, and precipitated into the sea, the lip of the crater being depressed on that side, while on the opposite it rose into a much more elevated border. The circuit of the island appeared to be about twelve or fifteen miles, and its diameter five or six. Although it rises at a high angle from the water its sides are partially verdant. They are marked, as appeared by the telescope, with numerous dykes, which may have been protruded before its emergence from the sea. The island is inhabited; and a small village of scattered white houses appeared at the foot of the mountain.

From the crater, a column of steam was constantly rising in a white cloud, with much the same appearance as at Vesuvius, but much more copious. As it floated away horizontally in the course of the wind, it formed, for many miles, a brilliant stratum, which tapered to a point, and was strongly contrasted with the pitchy cloud of smoke which issued from the chimney of our steamship. We saw in Stromboli no fire, which, we are told, is generally visible at night. Stromboli is the light-house and the barometer of the Mediterranean; for not only does it enable the mariner to determine his position at night, but, as is asserted, it aids him in forming a judgment of the impending weather, the frequency and the energy of the eruptions being influenced by the varying atmospheric pressure, and thus indicating calms or storms. We have it on the high authority of the personal observations of Spallanzani, and recently on the still higher authority of Dr. Daubeny of the University of Oxford, that this mountain emits not only steam and gases, but red-hot stones; and that these paroxysmal eruptions recur at brief intervals, rarely exceeding ten or twelve minutes. While observing Stromboli intently for three or four hours, we saw no such movement.



Is the volcanic energy of this island declining, and may it not, by and by, leave Stromboli, as its neighbor Vulcano now is, a quiet, silent cone, exhibiting, indeed, a full physical record of former volcanic action, but with no present indications, except hot gases and steam? The island of Vulcano now came into view, with its beautiful cone of the most perfect symmetry.

We saw also the celebrated pumice-stone island *BIANCA*. It is not now in volcanic action, but its great staple of pumice-stone supplies both the American and European world with that article, so important in polishing marble. It exists in this island in vast abundance, and the pedestrian sinks into it as into banks of snow. Although the island was several miles distant, it appeared so white and brilliant that it could not be distinguished by the eye from the snow, which we have constantly seen on the highest Apennines as we did on the distant Alps. It is hardly necessary to observe, that the Lipari islands, to which group both Stromboli and Vulcano belong, are not sufficiently elevated to admit of the existence of snow upon them.

As we neared the coast of Sicily, ten of the Lipari islands were in view, of which the largest gives name to the group. These are the *Æolian Islands*, of classical antiquity. We were now in the midst of those regions, whose remarkable physical phenomena afforded to Virgil and other ancient poets the machinery of their mythology, and much of the materials of their high-wrought epics. Here *Æolus*, the god of the winds, held his throne among imprisoned tempests; and *Vulcan*, with his Cyclopean smiths, forged thunderbolts for Jupiter.

It is no small gratification thus to realize in the *Æolian Islands* the scenes of early classical study, and to observe, in their own domain, those proofs of volcanic power which have been the subjects of youthful study.

### First View of Etna.

Who has not wished to see this grand storehouse of volcanic fire, whose action preceded the records of history and the legends of tradition, and whose energy is still displayed in undiminished vigor! We had not lost sight of Stromboli before, over the comparatively low curve of the Sicilian coast, we descried the "Snowy Etna, the pillar of Heaven," towering far above all other objects. As we approached the shore, with eyes intent upon this magnificent pile, it grew, as we advanced, more and more conspicuous and distinct.

The snow extended far down its sides, and the huge black cone, strongly contrasted with the snow, rose far above the icy dome. The superficial snow does not leave Etna until after midsummer, and begins to appear again early in the autumn; it is not free more than six weeks in the year, even on its southern slopes, and in protected places the ice is never dissolved. As we advanced in our passage, the intervention of high land cut off the view of Etna, and our eyes were now directed towards the Sicilian and Calabrian coast, to discover, if possible, the opening of the Strait of Messina. As yet, no inlet appeared; the coast seemed to be quite continuous, and the ship, to our senses, was running directly for the shore, with the apparent certainty of being stranded upon the low lying beach, which stretched away before us to the right and left. Ere long, however, an acute point began to come into view on the Sicilian side; as we advanced towards it, the passage opened, and in a quarter of an hour we found ourselves in a broad and beautiful strait about two miles wide. We were now literally between Scylla and Charybdis, of which passage the hazards have been sung by the poets of old, and which have afforded to the moderns a physical illustration in the choice of dangers. For aught that we could see, the water was smooth—no whirlpools or eddies appeared, and we were almost in-

clined to think that there was not enough of truth in the case to justify even poetical embellishment. On inquiry, however, of matter-of-fact people in Messina, we were assured that a strong current sets through the strait—that in certain states of the wind a sailing vessel may be caught in a maelstrom, and it is even averred that vessels thus situated have been lost. The shoal is the worst on the side of Scylla on the east, directly opposite to the city of Messina, and near to the little long island which forms the harbor.

### Messina.

May 24.

At noon our steamer dropped anchor off the ancient city of Messina, when our passports were sent on shore; in half an hour we were permitted to land, and were civilly reviewed by the proper officers. Nothing appearing against us, we were allowed to go to a hotel; but the English and other foreign passengers, who had come on shore for a walk during the short time that the steamer (bound to Malta) would remain in port, were peremptorily remanded on board. Unfortunately we were too late to have our passports viséed in season for the *diligence* of the day for Catania, where we might have arrived that night. We therefore passed the Sabbath in Messina, and found a solitary English chapel in a small chamber in a private house; for Protestants are not allowed to have churches in the Neapolitan dominions. The audience did not exceed twenty-five persons, ourselves included. We had the usual Episcopal service, followed by a good sermon, on the human nature of our Saviour; the preacher appeared to be an amiable, devout man, who labors for the spiritual welfare of a few English people, and of strangers like ourselves.

The Sabbath appears to be very little regarded in Messina. The shops are open in the morning; it is a grand market day, and the streets are crowded with people crying their wares and goods in the vociferous tone so common among the Italians

The people here scream at the very top of their shrill voices, and beneath our windows the same piercing cries were incessantly reiterated for hours together.

Messina is said to contain 80,000 people; but this number is probably exaggerated; the extent of the city does not indicate such a population, and there has been no actual enumeration. The floating masses of people are, however, large; but nowhere have I seen such a collection of miserable, forlorn, filthy, and disfigured creatures—deficient in eyes or limbs—mutilated, distorted, and maimed in important members; it is beyond all belief to those who have not seen them.

Beggars, of course, meet you every where, and *misericordia* constantly resounds in your ears. Stopping at a place for iced drinks, a poor, wretched young woman, wan, pale, and ragged in the extreme, holding in her arms a miserable infant apparently pining away for want of its natural nutriment, met us at the door. She waited our return, and followed us to the carriage with moving supplications, which we felt as little disposition as power to resist. The regular inhabitants generally repel the mendicants very decidedly, and they well understand how to distinguish and to assail a stranger.

The city is constructed of stone; the houses are lofty, which surprises one the more, as it is very liable to earthquakes from the convulsive throes of its dangerous neighbors, Etna and Stromboli. Many of the streets are narrow, but some are wide and grand—among these are the Corso and the thoroughfare along the harbor. The pavements are excellent, being composed of very large regular blocks, two feet square or more, apparently of limestone.

Messina, in latitude  $38^{\circ} 11'$  north, is a very ancient city, and it has often been besieged. A large fort is now in utter ruins, having been destroyed by order of the King, as it was captured by the revolutionists in 1848. The devastation in Messina, in consequence of that struggle, was tremendous. Our Consul, Mr. Clements, of Philadelphia, who has been, in many ways, very kind and useful, took us through the streets the

were devoted to destruction. The revolutionists had obtained possession of the whole of Sicily except the citadel, which is on an island in the harbor. From this fort a powerful army of mercenaries, as well as of native troops, landed in the city and fired it in many places, in order to consume or to expel the revolutionists. Many streets, containing hundreds of houses, were entirely consumed, except the naked and tottering walls, which we gazed at with painful interest. Among these ruins were remains of grand houses, blown up by gunpowder, bombarded, or burned; many of them show the prints of numerous cannon balls and of showers of bullets. Much has been done towards rebuilding both public and private edifices, but the town still wears the appearance of having been sacked by a cruel enemy, and such was and is their nefarious King.

The Calabrian country, on the opposite side of the strait, has a very forbidding appearance; it is all fissured by earthquakes, and tossed about in irregular hillocks; the country on the Sicilian side has a similar appearance. We wished to ride upon the hills back of the town, but were assured that it was impossible, on account of the fractured state of the ground, forbidding the construction of roads. We visited that part of the town in which are the low houses of one story, which were erected as temporary abodes after the great earthquake of 1783, when a large part of the city was destroyed, and thousands of people perished. These houses are numerous, and are still inhabited by the lower orders of people. Strong fears are entertained of a renewal of the calamity; nor are they without admonitions by occasional shocks, one of which, of considerable severity, occurred in March, 1851, about two months before our visit.\* It might not have been right for us to wish for an earthquake; but had one occurred during our visit, it would have added greatly to its interest.

The people of Sicily and of the whole kingdom are held in abject subjection by an army of more than 100,000 men, all

\* And they have been often repeated since.

ready with the instruments of death in their hands, and with all the munitions of war stored in ample magazines. The people have no voice in the government, and foreigners are watched with extreme jealousy. They wish to exclude them entirely, fearing popular influences from persons coming from other countries, and an order arrived, some time since, to permit no foreigner to travel in the interior of this island.

On our arrival here, we found that a party of four German artists were detained in our hotel; they had come with the intention of visiting Etna for the purpose of making sketches, but they were not permitted to proceed. Our Consul, Mr. Clements, thought at first that we should be refused, but our passports were granted; and it is a curious fact that Americans, although known to be thoroughly republican, are more in favor than any other foreigners, because they never interfere in the affairs of the country. Messina has an excellent harbor; the water is even too deep for convenient anchorage.

The number of priests, and monks, and nuns in Messina is very great. There are said to be 10,000 in all that are supported on ecclesiastical funds. We frequently met large processions, whose costume showed that they were connected with the Catholic religion. The most agreeable part of Messina is along the strand, where there is a fine front of good edifices, public and private, and an ample promenade; but the interior of the city is extremely dirty and disagreeable. Our hotel, which was more infested with fleas than any one we had the misfortune to occupy on our whole journey, did not form an exception. After mounting up several flights of stairs, we were, indeed, tolerably comfortable; but the access was through a dirty court, a hollow square, around which were stables and carriages, and the evil odor ascended to our rooms. Even in a private house—that of an amiable and worthy old gentleman, a man of science, who treated us with great kindness, our entrance was through the stable of the donkey, whose station was in the hall next within the front door. The parlor in which our interviews took place was only one story above; and the

effluvia, which were very active in this apartment, did not appear to annoy him, or to create any anxiety lest they should annoy us.

The Strait of Messina is eight miles broad opposite to the town. Upon this strait is situated the town of Rheggio, the Rhegium of St. Paul's voyage to Italy. Leaving Syracuse, "they fetched a compass and came to Rhegium." From the city of Messina, Rheggio is distinctly visible; we afterwards passed it on our journey to Catania. I have already mentioned our visit to Puteoli, where Paul arrived after "the south wind blew." It has been believed by the Messenians that Paul landed and wrought miracles in their city; but the sacred record makes no mention of this fact.

It is averred that in the cathedral which is dedicated to the Virgin, there is a letter to the Messenians in her own handwriting, with a lock of her hair.

We saw at Messina the tower in which they say that Richard Cœur de Lion lodged on his journey to the Crusades. In English history, however, no mention is made of such a fact. Richard is said to have been shipwrecked on the coast of Italy in 1192, near Aquilla, in the Adriatic, and then to have pursued his journey through Germany as a pilgrim; but he was discovered, and arrested near Vienna, owing to a personal affront to Leopold, duke of Austria.

### Messina to Catania,—seventy miles.

May 26.

After a long detention at the station of the diligence, in a very disagreeable house, we left Messina at three and a half o'clock P. M. The carriage, drawn by three horses, had six seats, of which the conductor took one, and we had the remainder. The country through which we passed was not interesting, but the road was excellent. Many miles of it were constructed in the sides and slope of hills and mountains, in the man-

ner of the Riviera road, from Nice to Genoa; and the entire route was along the Mediterranean, with the sea constantly in view. This was the mail carriage, and the driving was very rapid, the horses being changed once in ten miles. At every stopping place we were besieged by beggars, and I have never seen any where such squalid misery. In one village several individuals were almost naked;—only a few dirty rags hung around their emaciated forms, and they were almost as dark colored as our Indians.

We have so often seen such people in Sicily, that we could almost believe that there are two distinct races; for the Italians who have not been much exposed to the sun are only of a brunette color, and the infants are of a delicate complexion. In one miserable village we met an evening procession, chanting as they marched, and bearing a canopy over the head of a splendidly dressed ecclesiastic, who, we were told, was going to administer the sacrament to a dying person. In a town of some size (the last stage before Giara), there was a splendid illumination in the streets. Many persons were abroad, dressed for the occasion, which, as appeared from the preparations, was to be concluded by fireworks, in honor of Easter.

CATANIA. *May 27.*—We arrived at Catania at one and a half o'clock, A. M., and our conductor led us half a mile to the Crown Tavern, where all were asleep. With some difficulty, we aroused the people, and in half an hour were in bed. In the morning we had an interesting interview with Professor Gemmelaro, of the University of Catania—a very intelligent and pleasing gentleman, with whom I had corresponded. He speaks English well, having served several years in the British navy. He advised us very decidedly to visit first the Val del Bove before attempting the ascent of the Cone of Etna, as the Val del Bove is the only place where a section of the mountain can be seen. We decided, without hesitation, to follow his advice, and to leave all our ulterior arrangements to be settled at Nicolosi, which is twelve miles up the mountain.

ANCIENT LAVA CURRENT.—Nicolosi is situated near Monte



Rossi, or Bicorn (the red mountain with a double cone), whence issued the great lava current that invaded Catania in the year 1669.

Our first object was to see this ancient lava current where it assaulted the city, and we descended by stairs to a place where it could be seen beneath the houses. Near this place, the current had cascaded over the city wall, which was 60 feet high. Houses have been erected upon this great river of frozen lava, and thus the surface of the city is here raised, and the wall, which is still in place, is comparatively depressed. Many years ago, a deep excavation was made in the lava by the order of the Prince of Biscani, and there is now, at the bottom of the deep hole, a fountain of water at which women were washing.

The appearances here were most interesting and instructive. The lava was once so fluid as to run, or be pushed along by its own weight, and disregarding the wall, it flooded this part of the city with a river of fire. The masses of congealed lava rock, which lie there now, unaltered, are of astonishing thickness, and plainly show that they rolled in billows of fire, which were congealed ere they had time to acquire a common declivity; indeed from the viscous tenacity of lava, they never could assume a uniform curve, like that of a flowing river of water, and this fact is still more apparent in other places. We visited the splendid church and still more splendid convent of the Benedictines, around both sides of which the lava flowed, dividing into two currents, which afterwards coalesced into one. Being fully aware that the lava of 1669, after traversing a part of the city, had invaded the sea, we eagerly drove to the place; and there it lies, unchanged during 182 years, having thrust itself out half a mile or more into the Mediterranean. The high ridges of lava gave us a vivid impression of the horror of the scene. It evidently rolled along in fiery waves, which threw up the masses that congealed upon the surface, producing lofty piles and deep hollows.

At this time they form a black and terrific surface, over

which it is difficult to move even on foot, and quite impossible upon the back of any animal, nor could wheels even begin to roll.

Some of the masses of lava are as large as a common cottage, and the cavities and rough valleys among them are so full of sharp points, bristling in every direction, that in moving among them, it required great caution to avoid dangerous falls.

At the time of the catastrophe, an appalling spectacle must have been presented. At night, a river of glowing lava, fifteen miles long and three miles broad, illuminated the sky with intense splendor. The roar and crashing of the current, as it moved sluggishly forward, breaking up its own frozen surface, and bearing along the rocks that had formed a part of the lava, were truly terrific, and when it reached the sea, the furious conflict of fire and water produced fearful explosions. The record of the catastrophe lay wide open before us, and it was, even without human history, perfectly legible. Decomposition had made no progress; the lava rocks had not begun to crumble in the first effort to form a soil, and there was no vegetation, except here and there portions of yellow lichens strongly contrasted with the black and frightful waste of rugged lava on which they grew. Along the sea shore at this place the fragments of lava rocks are rounded by the waves.

MUSEUM OF NATURAL HISTORY.—Returning into the city, we took a cursory view of the Museum of Natural History, which was created and arranged by Professor Gemmelaro. It is in the university, which is a large quadrangle, containing an included square. It is quite extensive, and includes a good representation of the mineralogy and geology of Sicily, as well as a general museum of anatomy, all the specimens being well arranged and ticketed. There is annexed, also, a department of chemistry and physics, with a suitable apparatus and convenient apartments; in the dome (for rarely is an Italian room without some ornament, especially in the ceiling), there are pictures of eminent philosophers, both native and foreign, among whom we observed portraits of Dr. Franklin and Count Rumford.

### Etna in the Distance.

From the streets of Catania, Mount Etna makes a very splendid appearance at the distance of twenty-five to thirty miles, as it is usually estimated; in a right line it does not exceed twenty-five miles, as I was afterwards assured by Dr. Gemmelaro of Nicolosi. Etna appears from Catania in all its grandeur, an immense dome, covered now with snow, through which the crater rises like a black tower. The snow does not leave Etna more than six weeks during the hottest part of the summer; but glaciers, concealed by lava and ashes on its flanks, are persistent through centuries of duration.

ASCENT TO NICOLOSI.—Matteo, the veteran guide on Etna, well known to all who visit that mountain, and for seven years the attendant of the Baron Walterhausen in his explorations, fortunately for us came to our hotel. His home is at Nicolosi, and we engaged him to attend us in our excursions. At three o'clock p. m., a veturine, with three horses, was at the door, and we proceeded for Nicolosi, attended by Matteo upon his mule. In the street through which we passed out of the town the lava appears. It protrudes from beneath the houses that have been constructed upon it, and has been cut through to afford a passage. There is no recorded intrusion of lava within the walls of Catania, except in the eruption of 1669; but as lava is frequently penetrated in making excavations for buildings, there can be no doubt that in early ages, even before Catania was founded, currents of lava flowed from the mountain and reached the ground where the city now stands.

Immediately after passing out of Catania we began to ascend. The entire distance of twelve miles is an inclined plane, produced by the repeated overflow of lava in successive ages; and plains of black lava and volcanic sand every where form the fields; the houses and fences are constructed of this material. The road is excellent, and has been built at great expense by

the people, although the credit of it is given to the monarch. For permanent roads there is no better material than lava. At Nicolosi we saw a monument with an inscription, which gives the king the honor of the road. This, said a distinguished Sicilian to us, is mere incense. He did aid in the construction of the road, but in consequence of the severe and cruel measures adopted by him in putting down the revolution in 1848, he is most cordially and deservedly detested by his subjects.

CULTIVATION.—The sloping sides of Etna are in a high state of cultivation, chiefly in vines. As we advanced up the mountain, the lava in the fields and roads increased in quantity. Whenever, as is often the fact, the lava is mainly in loose masses, immense pains have been taken to remove it; for this purpose it is piled up in walls of great height and thickness. Several villages which occur on the road, have employed much of the lava, both in the construction of houses and churches; and the road itself, being built upon lava, which fills up the hollows, has also helped to consume it. In many instances, to dispose of it in the best manner, it is collected in vast piles, laid in regular but various forms.

There is one large village about half way up the mountain, and there are several of smaller size. Fifteen villages were destroyed by the eruption of 1669. There is a population of 160,000 persons living upon Etna, in perhaps 50 villages; but the mountain embraces a wide district of country, and although eruptions are frequent the people appear to live on without apprehension.

The last eruption was in 1843,\* at Bronte, on the western side of the mountain. The lava, in a very deep torrent, flowed a mile and a half wide, and as there was a small lake in its course, the inhabitants, in great numbers, gathered around to witness the war of the elements, when the lava flood should reach the water. As might have been expected, the plunge produced a tremendous explosion, which proved fatal to 62

\* A very powerful eruption occurred the next year after our visit.

persons. In a conversation with Dr. Gemmelaro, at Nicolosi, on the cause that could have produced death in the case of these persons, who were not scalded, nor were they lacerated, although their hair was crisped by the excessive heat of the air and the steam, it was suggested as most probable that they were suffocated by the production of a partial vacuum, as the explosion threw the respirable air away and substituted irrespirable steam in its place. Dr. Gemmelaro thought that there might have been an electrical stroke. That is possible, as we know that steam, flowing from a high pressure boiler, is highly electrified, and can be made to afford sparks, and, therefore, it is not impossible that it may, in this case, have been auxiliary to the fatal result. Within 41 years, between 1802 and 1843, eleven eruptions have taken place, averaging more than one eruption in 4 years, and thus it appears that this ancient mountain of fire is still formidable, and exhibits no marks of decline of power.\*

\* Its energy has been since manifested by an eruption which happened August 20th, 1852. The volcano, during three days and nights, displayed its power in the most terrific and magnificent phenomena. Immense volumes of smoke rose into the air, at one time black, at another white, and it eventually took the form of the Italian pine-tree, as described by Pliny in the eruption of Vesuvius, A. D. 79. The trunk of the tree, as represented by the smoke, rose a mile in height before it sent off branches, and these branches were subdivided until they broke and floated away with the wind. The smoke rose to the height of four or five miles. The most appalling sounds were sent forth from the mountain, seeming to pervade the air, the earth and the sea, and they were attended by severe vibrations of earthquakes, which rocked the whole island. The eruption of lava at length relieved, to a degree, the severity of the volcanic throes.

A party of English gentlemen and ladies were on the mountain near the foot of the great cone when the eruption happened, and were in great danger of being overwhelmed by the lava. A hurricane also prostrated them and their mules, tore the light dresses from the persons of the ladies, and almost suffocated them by a storm of sand and small stones blown in their faces. The air was extremely

ARRIVAL AT NICOLOSI.—We were at our resting-place in Nicolosi before sunset, and were received in a very humble lava house. It was of one story, with a stable annexed, and as there was only a division wall between, we constantly heard the stamping of the mules. We had, however, comfortable rooms and beds, and our own provisions, brought from Catania, served for our first repast. In the evening we received a call from Dr. Joseph Gemmelaro, brother of the Professor of Catania, from whom we brought an introductory note. Dr. Gemmelaro is, like his brother, an exceedingly intelligent and agreeable gentleman, with frank and cordial manners, and speaks English well. He is a practising physician, as well as a naturalist, having about 3000 people in the range of his practice. He entered at once into our views, and gave us highly important advice respecting our excursions on Etna. No man is better qualified for such a duty. He is a native of Nicolosi, has always resided here, and has made Etna his special study. Many years ago he and his brother, the professor, published a very valuable and instructive chart\* of Etna, which has been of signal use in geological illustrations of this mountain. The map is both topographical and picturesque, with delineations of the track of the most signal eruptions of lava, and an appended column of dates and historical events. For this very important document, regarding the natural history of Etna, I was happy now to make my acknowledgments to Dr. Gemmelaro† in person. As the advice of Dr. Gem-

cold, and as it was a night scene, they gladly hailed the return of day. The principal eruption was from the cone below the great dome, called the Colossi. The town of Bronte was destroyed, and the Casa Inglesi burned.—*Bayard Taylor's letter from Messina, August 23d, 1852, in the New-York Tribune.*

\* A copy of which was brought out by Sidney Johnson, Esq., in 1833.

† There were three brothers,—Mario, a distinguished naturalist, who died a year or two ago; Joseph and Charles survive. The latter is the professor in Catania. They appear to be from fifty-five to sixty years of age. Their father died recently at the age of eighty-four.

melaro corresponded with that of his brother, the professor, we decided to visit the Val del Bove first of all.

VISIT TO THE VAL DEL BOVE.—Rising at two o'clock, A. M., I rallied our courier and my companions, and after taking a cup of coffee, we were in our carriage at four, and travelled fourteen miles upon a good road, over the eastern slope of the mountain, while Matteo, with his assistants, came on their mules by a shorter route, to meet us at Zaffarina, the appointed place of rendezvous.

In our morning ride we returned four or five miles upon the road towards Catania, and then diverged to the left towards Zaffarina, passing through a very beautiful country, in the highest state of cultivation, which fully justified the glowing accounts we had heard of the fertile regions of Etna. Vines, olives, figs, pomegranates, pears, cherries, apricots, oranges, lemons, wheat, rye, Indian corn, numerous plants, grown for their fragrant essences, are among the productions of this fertile volcanic soil. Several substantial villages occurred in our route; in them churches were always conspicuous. The Madonna and Infant Saviour occupied prominent situations along the road; sometimes also, the shrines were tenanted by images of saints and martyrs of the Roman calendar. The people appeared quite civil, many of them touched their caps with their hands, and saluted us with a smile; the priests rarely volunteered a salutation, but when we first saluted them, they always raised their broad-brimmed beavers. Most of the people, from constant exposure, are of a deep brown color; the women are quite as dark and coarse as the men, and they are generally without stockings, shoes, or hats. They labor in the field, and carry heavy burdens upon their heads; nor do they appear to be favored by the men, for the husband is often shod while the poor wife goes barefoot. We see very few women who look even tolerably. Among the young, indeed, and especially among the children, there are pleasing faces, but none appeared quite clean, and as we say at home, tidy. Not a few are ragged and forlorn, to a degree of which we, in

America, can form no conception. Here, upon Mount Etna, as well as upon the maritime road, we saw those whose clothes, if such they could be called, hung all about them in filthy tatters, leaving their poor bodies exposed.

Rye bread and eggs, and the low, weak wines of the country, form the principal aliment of the people. Milk is not common, and when found, it is not the milk of the cow but of the goat. Butter seems almost unknown in Sicily, at least in this part of it; olive oil is the substitute, and in general it is sweet and good, but it is not used with bread, which is extremely coarse, and is eaten dry. Yet Sicily is justly called the granary of Europe.

Matteo was already at Zaffarina with his mules when we arrived, and we were soon equipped, and mounted upon animals, which, with a single exception, were large and in good condition. Behold us then, four of our party, with our attendants, seated again on mules for a mountain excursion, but in a country as different as possible from that at Tivoli, where we were similarly provided. I have never travelled in any country so arduous and difficult as this. Our guide led the way, all our equipments being piled upon his sturdy mule, while his son, a youth of fifteen, with an assistant, walked by his side; we, the foreign travellers, followed in single file, and thus we penetrated nine miles into the very bowels of Etna. For a short distance there was a tolerable path, but after half a mile, we began to ascend over loose lava stones and among lava rocks, where there was no track but that made by mules and donkeys, moving with their burdens down the mountain; of course they must return again by the same route to obtain their loads. To-day we met many donkeys heavily laden with tiles, and others with timber and planks.

As we were constantly ascending over a very rough and rugged surface, which grew steeper and steeper, we had nothing to do but to sit quietly on our saddles, allowing our mules to pick their way in the best manner they could, and as we did not attempt to guide them, they always stepped in the



right place. They followed the mule of Matteo, our file leader, with perfect exactness and order; and thus we were left at liberty to observe the wonderful country into whose mysterious recesses we were now penetrating. We were soon involved among lava currents, rough and billowy, rising into high ridges and sinking into deep valleys, whose once molten masses appeared now moss-covered, with every mark of the antiquity of many centuries. High hills and mountains on our left were marked by more ancient lava currents, and still many of them, although they were without exception volcanic accumulations, were covered with vines, extending high up on the mountain side wherever any soil could be found.

There are no permanent running streams of water on Etna, but mountain torrents evidently sweep down these valleys occasionally; for we saw deep channels worn in the solid lava, which was grooved, furrowed, polished, and scooped out as in steep river channels. In our passage from Messina to Catania we passed the dry beds of numerous torrents, which, in winter, are said to be powerful, but in the dry season are wholly obsolete. Onward we toiled heavily, up the increasing steep; the hills on our left became mountains—certainly they would so appear any where else—here, however, they are greatly surpassed by the sublime dome now in full view, and which we were every moment approaching. We passed a shelter under a broad shield of lava-rock, which had been projected so happily as to leave a cavity highly convenient to protect adventurers. Here, in fact, Baron Walterhausen frequently made his abode during the years when he was engaged in exploring, sketching, and describing Etna.\*

We had now opened the Val del Bove, and for four miles, we passed over an ocean of comparatively modern lava, desolate and dreary, rugged and sharp, black and barren, except here and there a small tuft of verdure, a mountain weed, which

\* His great work on Etna is in the course of publication at Göttingen, and ought to be in all our larger public libraries.

attracted our wearied animals. This lava tract, level as it appears from above, is really more billowy than the most tempestuous ocean; still, by the aid of our experienced guide, and our patient and sagacious mules, we made our way where we might have been precipitated at any moment by our falling animals, among the sharp points of lava bristling on every side, or thrown headlong into deep ravines. There were also large tracts of black volcanic sand into which the feet of our mules sank fetlock deep, and when we ascended hills of this sand, it was with no small effort that they could keep on their course. The sun, before partially veiled, now poured down a flood of light and heat, which the lava and sand reflected into our faces, and here we experienced the first really oppressive heat which we had felt in Italy. We mounted the highest pile of loose materials in the centre of the area, and as we had been three hours and a half in our saddles, while rising up the mountain, we here took our much needed refreshment, but without the slightest shelter, not even of an umbrella, which our courier had neglected to bring, while the thermometer, on the ground, was at  $95^{\circ}$ , and in the air at  $92^{\circ}$ . When the air was calm the heat seemed almost insupportable, condensed and accumulated as it was in the black sand. There was no chance of escape from its fervor; but we were occasionally relieved by a breeze, and there was, now and then, a blast that came roaring along from the mountain cliffs, and was for a few moments so violent as almost to lay us prostrate; then it would instantly cease, and a dead calm with oppressive heat would succeed.

OUR POSITION.—We stood now 3500 feet above the Mediterranean. But how shall I describe the magnificent and terrific scene around us! We were in the midst of the grandest volcanic amphitheatre in the world. Its entire circuit, including the great chasm through which we had ascended, must be twenty miles; the circuit of the area immediately around us was five or six miles; the longest diameter, including a portion of the way of access, is nine miles; the diameter at the place

where we stood three miles. Three-fourths of the area was inclosed by walls of black lava rock, in almost perpendicular cliffs and precipices, which mounted from 1000 to 3500 feet in elevation above the floor of the place where we stood. The precipices were buttressed and seemingly supported by innumerable enormous dikes, or projecting walls, standing out almost at right-angles. The main walls receded into deep vertical grooves, and in these the snow, wide above and narrowing as it descended, came down 3500 feet to the very floor of this vast arena of one of the noblest amphitheatres that nature ever formed. These snows were joined above to the thick and wide mantle of winter, from which they were projected, while their superior portions, still invested with ice the awful dome that impended almost over our heads. The terminating cone, the very vertex of the mountain, was visible over the cliffs, rising 3500 feet above their upper edge, and as the walls of rock were also 3500 feet high, the dome and cone of Etna rose nearly one mile and a half vertically above the bottom of the Val del Bove in which we stood.

MINOR VENTS.—In this valley there are subordinate volcanoes, and from them, as well as from the side walls, have issued many currents of lava, doubtless in different geological ages. Two of these volcanoes, situated in the bottom of the Val del Bove, are comparatively recent; one of them broke out in 1811, and the other in 1819.

How much the eruptions from them and from other similar sources may have raised the floor of the Val del Bove, we know not; we cannot doubt, however, that they have piled up immense masses, and thus it appears probable that when the valley was first formed, it must have been much deeper than now.

THE GRANDEUR of this scene far surpasses all powers of description. As before remarked, it is a vast volcanic amphitheatre, with almost vertical walls of ragged rock, black and forbidding. The arena has been a scene of the most tremendous action of fire. Compared with this natural amphitheatre

of Etna, the Coliseum of Rome is a toy. The area of the Val del Bove would contain 10,000 such Coliseums, and London itself could be included in its vast capacity. It has been well remarked that, compared with Etna, Vesuvius is a cabinet volcano. There lies the Val del Bove, amidst the awful solitudes of Etna; itself desolated by internal fire, its enormous piles of lava, and its now quiet volcanic cones, attesting that below is the focus of latent energy. Still this area is depressed far below the giant power, the great cone of Etna, that, in close proximity, impends over it, and holds it, as a vassal, in subjection. In some future eruption, Etna's cone may pour into this profound gulf such floods of molten rock as may fill it again up to the general slope of the great dome, or convert it into an overflowing fountain of fire, which shall pour its floods of lava down the declivities and into the valleys below, as has more than once happened already.

A cataract of melted lava was, in 1811 and 1819, precipitated into the Val del Bove, with the most fearful concussion, and with a tempest of sand and fragments raised into the air.

The Val del Bove, itself a panorama, would admit of the most impressive pictorial illustrations, although no picture could do it justice, but still plans and sketches are necessary to convey to the mind of one who has not seen it, a full conception of the scene. And here I have to remark again that those of Van Waltershausen are by far the best ever made, but in the absence of those, the woodcuts given by Sir Charles Lyell, will be found very useful and his account of the Val del Bove is equally graphic and accurate.

**GEOLOGICAL SECTION.**—In a geological view, it possesses the highest interest, since it exposes the structure of Etna in a manner nowhere else to be seen; and to geological theory, it offers decisive evidence of a vast and probably a sudden collapse of this part of the mountain; eviscerated, as it has been, by the prodigal expenditure of those immense masses of lava, which, in gone-by ages, have built up the wide extended regions now embraced within the circuit and area of Etna.

*THEORY.*—In estimating the magnitude of the collapse which evidently gave origin to the Val del Bove, it must be remembered that, ere it happened, the enormous cavity, now the Val del Bove, was doubtless covered by the general dome which still rises so high above it. Volcanic domes do occasionally collapse, and the dome which covers the upper cone of Etna has fallen in more than once during the historical period. It is probable, therefore, that in a geological era far more remote, the portion of the great dome, which covered what is now called the Val del Bove, or perchance the roof of that cavity, whether a part of the great dome or not, being rendered cavernous by oft repeated eruptions, of which the records are found in the wilderness of lava on the flanks of the mountain, being no longer supported, collapsed, and parted off from the great dome, or that part of its slope which formed the coping of this great valley. The depth of this internal cavern might have been much greater than that of the present valley, and when the collapse took place, if it was all at once, the catastrophe must have been tremendous—terribly magnificent—leaving this ancient mountain deeply lacerated with a wound that may never be healed.

The lava currents over which we had passed in penetrating to the upper extremity of the Val del Bove, were of comparatively recent formation. The subordinate vents, Fenochio, Capra, and Musara, were now cold, and standing in the valley from whose side one of these currents issued, which was still smoking at the time of Sir C. Lyell's visit in 1828, nine years after the eruption, and we were surrounded by deserts of lava, of that recent date. Still we could, in a few minutes, walk to depending glaciers, a torrid atmosphere being around us, volcanic fire beneath, and winter above, wrapping the great dome in a mantle of snow. In the winter, snow often falls in the Val del Bove to a great depth, sometimes 40 feet. The dome of Etna would always be covered entirely with snow during the whole year, were it not that the slumbering heat in its crater, aided by the solar rays, is ever sufficient to melt the

snow in midsummer. Probably the snow and ice are permanent on the northern side of the mountain; and the interesting discovery a few years ago by Dr. Gemmelaro, of a glacier covered by cinders and lava, proves that ice is permanent on Etna, and in fact enters into its structure. Dr. Gemmelaro, in conversation with us, confirmed the genuineness of the observation. The traveller, and especially the geologist, who visits Etna without seeing the Val del Bove, has not seen its most interesting features; even the summit cone does not present any such sectional view as is seen in the valley, but only a frightful desert of lava. Compensation for the labor of climbing up 11,000 feet of treacherous scorice and cinders is made to the adventurer by the prospect which, especially at sunrise, is one of unrivalled splendor and magnificence.

DESCENT.—Our descent from the Val del Bove was much more fatiguing than the ascent. We came down under a burning sun, in the hottest part of the afternoon. The mountain side is so steep that the pressure of the limbs and feet upon the stirrups and saddle is very severe, and we can hardly feel that we are safe, as we are almost hanging over the lowly head of the mule, while he is so warily moving with almost intelligent steps among the loose lava.

Leaving my son and Mr. B. to look in a secluded spot for some volcanic minerals, I returned with François and one of the guides to Zaffarina.

It may be a slander to call the house where we staid in Zaffarina a hotel, but such as it was, we found no alternative. Coarse brown bread, bad chicoree coffee, and eggs, were its resources. Not a metallic cooking utensil of any kind existed in the house, and one poor chicken parboiled for us in an earthen pipkin, was the only animal food to be obtained. This was served with its head on, the feathers imperfectly removed, and otherwise *au naturelle*. Our disgust prevented our essaying this example of Sicilian skill in cookery.

RETURN TO NICOLSI, *May 29*.—We were at 5 o'clock A. M. astride of our mules, on our return, having on our first arrival

here dismissed our carriage, to meet us again on the 30th at Nicolosi. We had hoped that our ride this morning would have taken us through the wilds of Etna; but on the contrary, although we saved four or five miles by taking a shorter route, we travelled in a highly cultivated and populous country. We were never out of sight of human habitations, and we passed through two considerable towns with large churches. The people were thronging the streets, as it was a gala day. We frequently met droves of heavily laden mules; in one drove there were 18 large and fine animals fastened together in trains.

**EXTINCT VOLCANOES.**—But what interested us much more was the great number of dormant or extinct volcanoes, which were always in view in every stage of our journey. Often 20 to 25 were visible at one time. Sir C. Lyell states, that there are 160 of these minor cones on the sides of Etna, and of considerable ones 80; but from what we saw we believe that the number is underrated, and that the statement of our guide, Matteo, making the number 300, is nearer to the truth. Some of these cones are elegantly finished and rounded, as if by art; afterwards, when on Monte Rossi, we had an opportunity to see their internal conical cavity, and we were assured by Dr. Gemmelaro that all, without exception, are furnished with craters. There were several volcanoes, from which visible streams of lava had flowed, and most of these were ruptured on one side. Some of the cones are small, but others would anywhere else be regarded as considerable mountains.

**BASALT.**—We were much gratified to see groups of real columnar basalt, included as part of a true lava current, which had been opened in making a road. The separation of the parts of the lava took place through the joints of the basalt, leaving half of a well defined hexagonal prism exposed to view. Numbers of the columns stood side by side, with salient and re-entering angles. As we travelled onward, the entire lava current, to which these prisms belonged, was soon under our feet. It lay in waves of moderate height, not exceeding and

often falling short of a foot; but the waves were numerous, successive and parallel, like those of the sea. There are also regular columns of basalt in another part of Etna. We saw a drawing of them in the Museum in Catania, and Dr. Gemmelaro informs us that they are 30 to 40 feet long.

Such facts prove decidedly the igneous origin of basalt and of other trap rocks, once a question, but now no longer mooted. We have seen here innumerable instances in which the compact lava cannot be distinguished from trap, and it passes from the condition of slag and scorïæ, and vesicular lava, by insensible gradations, into that of compact lava, trap, and basalt.

MONTE ROSSI.—I have already stated that the eruption of 1669 proceeded from the vicinity of Nicolosi. We ascended the volcanic cones which arose on that occasion, called Bicorn, from their double form, and also Monte Rossi, from the red color of the decomposed lava. There was no mountain in the place before the eruption, that poured out a current of lava three miles wide, which did not stop until it reached the sea, at the distance of 15 miles, having in its course leaped the wall of Catania, and covered a corner of that city. As we had already seen it at its terminus in the Mediterranean, we now enjoyed the view of it at its origin, from Monte Rossi, from which eminence it is visible through its whole course to the sea.

Although the mountain is but a mile from Nicolosi, we took Matteo and the mules, accompanied by several volunteer attendants. We travelled first over a desert of black volcanic sand, similar to that of the Val del Bove, covering in this region a very wide area, of fertile fields, and including the site of Nicolosi.

The village which formerly bore that name was buried under that eruption, and was rebuilt on its present site. Augite (pyroxene) is the principal mineral in this sand, and it is that which gives it the black color. It was 5 o'clock p. m. of a very hot day, when we commenced our little journey to Monte Rossi. The sun blazed upon us as our mules worried along



through the sand, their feet sinking deep into it. This was, however, but the beginning of their labor, as they were doomed to carry us up the yielding side of the cone, which is composed mainly of the same loose materials, the ascent being very little short of forty-five degrees. When we approached the cones, we should have despaired of riding up, had we not observed the spiral path made by the mules on former occasions; and Matteo, by way of preparation, went coolly and silently to work, to tighten our saddle-girths. So on we went, clambering like cats up the steep roof of a house, and as we held firmly by the manes of the mules, the patient persevering animals tugged onward and upward. My mule was taken in tow by a rope from Matteo's animal. They did not falter, however, but placed us safely on the crest of the mountain. From below no indication of a crater was visible. We had expected to find simply a round dome, but to our surprise we found ourselves upon the narrow rim of two regular craters, 300 to 400 feet deep. This rim was, however, not quite as narrow as that at Vesuvius, but the declivity into the craters was much steeper than the external slope, by which we had ascended. These craters, now cold, probably never emitted proper lava, but only loose materials, of which they are formed; among these the black sand is conspicuous; mingled, however, with a loosely aggregated material, the decomposition of which, by the atmosphere, has produced a large quantity of red oxide of iron, giving thus the characteristic color to the cones. In this are found very distinct and beautiful crystals of black augite. The current of lava of 1669, did not flow from these cones, but from a rent in the earth, at what is now their base. During three or four months the same orifice continued to discharge these loose materials that now compose the Bicorn. They were blown off far and wide, even to the distance of 15 miles on each side of the volcano, destroying a wide extent of fertile fields.

Monte Rossi is 1500 feet above the Mediterranean, and 400 above the plain, out of which it rises. From its summit we

counted more than 50 dormant volcanoes, large and small. Their form is very beautiful—a regular and rather obtuse cone, usually truncated at the top. From our elevated position, we could see into the craters of several.

The view from the position which we occupied was extremely splendid. The giant dome of Etna, white with snow and ice, with the black tower of its cone was before us, and on the other the Mediterranean, with its boundless blue waters; Catania is on the shore, while many villages are scattered between upon the slope of Etna. At our feet was the wide black current of lava of 1669—so often mentioned—with its 15 miles of length and 3 of breadth. From the cones on which we stood this long tract of lava is visible, through its entire length, quite to the sea. In its course it destroyed 15 villages before it assailed Catania, at whose walls of 60 feet in height (erected to that elevation on purpose to guard against such an assault), it halted for a brief space, like an invading army, then it scaled the wall, and (to complete the simile) carried the town by assault.

This lava current, in its whole length, is still black, bristling, and wavelike, as it was when first congealed, and decomposition has not even commenced. Not only the majestic dome, but all the groups of volcanoes, which on every side present themselves, especially in the direction towards the principal cone, have been, in their turn, eruptive, while innumerable currents of lava are in view, which have flowed from Etna's wounded sides.

There was beauty also blended with grandeur. The graceful curves of the quiet cones were often covered with vines to their very vertex. O, how did we wish for the painter's skill to transfer the glorious panorama to the canvas.

With some precipitancy we descended the mountain on foot, having enjoyed enough of mule transportation down mountain steeps, when descending from the Val del Bove.

CAVERNS IN THE LAVA.—Near the base of Monte Rossi we looked into another crater, of more limited dimensions, with

rocky sides; at whose base opens a volcanic cavern, which has been explored a mile into the earth, but it is so irregular that it cannot be penetrated without both difficulty and danger. Again we looked at the beginning of the current of 1669, where it broke from the ground, and with the closing day returned to Nicolosi, much gratified and instructed by our brief excursion.

ERUPTIONS OF ETNA IN THE PRESENT CENTURY.—Dr. Gemmellaro, in an evening passed at our lava-house, gave us much interesting information respecting Mount Etna. He confirmed the statement published by his brother, that, in the present century there have been eruptions in the following years: in 1802, 1804, 1809, 1811, 1819, 1831, 1832, 1838, 1839, 1842, and 1843,\* averaging nearly one eruption in four years and a half. During these eruptions electrical phenomena were very vivid. In that of 1838 there were, for three days and nights, cannon-like reports and ejections of ignited stones, once in three minutes, and that they amused themselves by holding the watch in the hand, and once in three minutes giving the word "Fire!" when the explosion regularly followed.

THE BEAUTY OF ETNA is not less remarkable than its grandeur. From such a position as we occupied last evening, the eye ranges over an immense area, which is in high cultivation, with numerous villages, beautified by vineyards and by various plants and trees that belong to the climate. The subordinate volcanoes, which are every where in view, are reared with graceful irregularity; sometimes they are in clusters of larger and smaller cones and craters, from a few yards in height and diameter to several hundred feet; the highest are 600 to 700 feet in elevation, and the groups cover an area from a few acres to several hundred. Most of them are breached on one side.

Whether preserved in the model form of perfect beauty, a cone rising usually at an angle of 45° to 50°, which is their usual figure, or depressed to a more gentle elevation, or broken

\* To which we must add now that of 1852.

down on one side, they were, almost without exception, covered with verdure, and most frequently with vineyards rising to the very pinnacle. Monte Rossi is almost a solitary exception to this rule, being quite barren of vegetation. The floods of ruthless black lava, which still remain in desolate currents all over Etna, serve, by contrast, to exalt the beauty of the scene, while the magnificent colossus, on his sublime throne of ever-during fire, looks down in majesty upon the whole, and gloriously proclaims the power of the infinite Creator.

THE CONE OF ETNA.—The ascent of the cone of Etna is a very different undertaking from that of Vesuvius. One long day, as we have seen in this narrative, suffices to proceed from Naples to the summit of Vesuvius, and back again to the city. Neither is the fatigue very great, and it is often accomplished by ladies. But the ascent of Etna is a severe labor; out and back to Nicolosi, the only resting-place, is a journey of thirty miles, over rugged lava fields, and snow, and sliding scorix, and it must generally be preceded by a night of severe travelling on mules. For myself, I thought it best to leave this enterprise to my younger friends—Mr. Silliman, junior, and Mr. Brush. Our courier, a veteran like myself, chose also to decline the attempt, and we two remained quietly at Nicolosi, content to receive the narrative of our fellow-travellers after their return. The following statement was drawn up at my request, and I am happy to adopt it instead of what I might myself have seen and written. It is now taken from the pages of the *American Journal of Science and Arts*,\* in which a revised copy was printed after our return.

AN EXCURSION ON ETNA.—It was nine o'clock at night, on the 29th of May, when we were summoned by our guide "Matteo" to mount our mules and follow his lead toward the great cone of Mount Etna. We had prepared ourselves with suitable clothing for protection against the cold which we must encounter on the snow. My own dress was that of our Ameri-

\* Vol. XIII, Second Series, pp. 178 to 184.

can winter, besides which we were provided with warm woollen leggins of coarse yarn, drawn above our knees over our boots and pantaloons. We had common gloves, and over these thick woollen ones. Two shirts and a comforter for the neck, with an Italian capote for the head, completed our equipment. The ascent of the cone is seldom attempted so early in the season.

The sun had set in cloudless splendor, and as it rose on the morning of the same day the summit of Etna was gilded with his earliest rays. Not a breath of wind was abroad. All the favoring circumstances gave us every reason to hope that our labor would not be in vain, and very naturally put us in good spirits for the wearying ride which was before us.

Besides "Matteo" we had also "Antonio," another experienced guide. Our party was therefore four men altogether; Mr. Brush and myself riding between the two guides. The night, as I have said, was serene; the stars shone in great brilliancy, and although there was no moon, we were soon able to see our way with sufficient clearness to inspire confidence. Our former experience with the mules had taught us that it was worse than useless to attempt to guide them, and that all we had to do was to sit still and let them follow the leader, which they did with unerring step, seeming as if by instinct, or by eyes in their feet, to avoid every loose stone, and to choose the securest foothold.

Our path lay for nearly or quite two hours over an unbroken waste of ancient lava, unwooded, and with not a plant or vine to mark our course. This field we had not before traversed, as our former excursions had taken us by other paths and away from this route leading towards the summit. This tract bounds the fertile zone of vines and figs, although from the barren nature of the ancient lava at this part of the fertile district there is rather the appearance of a vast desert. Emerging from our stony path at the upper edge of the old lava, we suddenly entered the wooded zone, the commencement of which is as definite as the entrance to a cultivated park from a

dusty road. This zone is one of the peculiar and most beautiful features of Etna, and demands especial notice by day. As we wound along our zigzag path in the dark, slowly and cautiously, all we could discern was the shadowy form of huge trees widely planted, while the voice of a night songster told us of life and enjoyment in the vast solitude. We could feel also that the feet of our mules were treading soft sand, and the deeply worn path sometimes brought our feet in contact with the green sward. We had kept up a brisk conversation all the way, and the time passed cheerfully and rapidly away. About twelve o'clock we came upon a little hut, where our guides dismounted, and motioning to us to do the same, we found it was their purpose to feed the animals, which example we also followed by a resort to our provision basket. Near our halting station was an immense tree, under which we found an agreeable resting-place—it measured about twelve feet in circumference. It was obvious, from the glimpses we had obtained of the country below, that we had risen to a great altitude, while the decreasing number of trees indicated our approach to the termination of the wooded zone. Before us the hills rose more rapidly, and we could also dimly discern an occasional cinder cone. The air was sensibly cooler, and to our disappointment the wind had already risen to an uncomfortable breeze, which made it necessary to button up our coats and tie on our comforters. The mules being fed, we were again on our way, and in about twenty minutes saw the last of the trees. An owl in a neighboring wood below us on the side of an ancient cone bade us farewell in a melancholy hoot, and we entered immediately on the desert zone. Our path at once became very rough and precipitous, now requiring us to grasp the mane of the mule, and the next to throw all our weight back to avoid sliding over his neck. But the patient, cautious creatures toiled on, pausing occasionally for an instant, as if to reassure themselves, and then carefully advancing. Our guide too excited our constant wonder. It was impossible to see a path—immense gulfs of rugged lava surrounded us;

we found ourselves standing on the brink of precipices, over which the course seemed to lead us, but a sudden turn carried us away just as the sense of danger was becoming uncomfortable. There were to us no visible landmarks. On every side in the dim distance of night we saw only an unending sameness of lava currents, ridges, gulfs, billows, and windings. Left to ourselves, we should certainly have given up in despair and waited the dawn; yet the guide was never for an instant at a loss; not a word was spoken; our brisk conversation had died away in silence, and each seemed sufficiently occupied with the solemn scene. It was awfully sublime; and a thought of personal safety would perhaps occasionally present itself. Above us the snowy head of Etna floated like a cloud against the dark blue sky, and the constellations moved with our ascent, rising or falling as if with a more rapid revolution of the earth. The Great Bear was immediately before us, and every instant as we rose, it sank, until we soon hid from view the lower stars behind the cone of the volcano. It now grew very cold, and we could distinctly trace, at no great distance from us, the snow in the deep gulleys of the mountain, like white streamers from the great mass above. A few minutes brought us upon the lower patches, and from that instant the naked black rocks began rapidly to disappear, being replaced by the glistening snow. Our guide had several times shouted in a peculiar tone towards the west, as if to arouse the echoes of the mountain. To our surprise his call was answered, and we were in some amazement to guess who should be in that lonely spot at such an hour to return his salutation. The enigma was soon explained by the appearance of another guide to take charge of the mules. We had now reached the limits of our riding—we had been five hours in the saddle, and had reached the lower margin of the snow. We dismounted, refreshed ourselves with some hard eggs and wine, took our mountain staffs, and followed the guides, who struck out immediately upon the snow. The wind now blew fiercely from the N.W., an ominous cloud was in the east, a heavy haze hung over the island, and

aroused our fears that we had no bright sunrise awaiting us. Still large portions of the sky were clear, and we had good courage to go on. I pointed Matteo to the cloud, when I found he had my fears; for he shook his head, and said despondingly, looking to the cone, "molto vento." The ascent on the snow for the first mile or two was at an easy angle. The snow was crystallized like ice freshly broken (*Nevé* of the Swiss glaciers), and soft enough to give us a firm foothold.

It was about a quarter past two when we made our first halt at the pillar of stone erected at the base of the minor peak of Etna, which is called "Montagnuola." While stopping here over our basket of provisions, we had a singular proof of the deceptive nature of distance, when objects are viewed from a great height, and especially at night. We saw two lights, one of which we supposed to be the man with the mules (who, by the way, had no light), and the other we did not so clearly make out. On inquiry of Matteo, he told us that the first was a lighthouse on the coast at Catania—twenty-five miles off—the other, the signal at Bronte, an equal distance on the opposite side of the mountain. Never was I so deceived by a physical phenomenon; I could have answered with the greatest confidence that both lights were within hailing distance. We now turned our course more northerly; the angle of ascent increased, and our exertions were arduous. We saw, as we thought, the ridge of the mountain just before us, however, and over it the naked cone of Etna rising like an immense dome from the snowy waste. We pushed on to gain the ridge, and as it faded away, another still more distant presented itself. We looked back on the path we had come, and forward, in hopes that the comparison would encourage us by showing that we had passed over the longer distance. No such comfortable assurance however was ours. We often threw ourselves flat on our backs on the snow to regain freedom of respiration, and then pushed on anew. The wind was now fiercely keen, and so powerful, that had it been in our faces, I am persuaded we could not have made the ascent. Fortunately it was on



one side, but it brought up frightful banks of clouds, while the wind-cloud in the east had grown into massive banks of a dull gray, which hung directly over, where the first light of the morning indicated the position of the rising sun.

Our prospects were bad, and to our dismay the apex of the cone was now invisible, while heavy masses of white vapor were constantly precipitated on it from the fresh gusts of warm air which the wind brought in contact with the cold mountain side. We gained the "Casa Inglese," English house, just before four o'clock, and were glad to find a shelter from the fierce wind under its gable—the only portion which was not then buried in the snow. There was the cone immediately before us, and at our feet. Should we go up? Pride said "yes;" Discretion and the Guide said "no." If the wind at the base would hardly allow us to stand, what would it be on the unprotected summit, 1300 feet higher? We concluded to wait, for if we left our present position and gained the clouds we should not see the sun rise at all, and would lose every thing. The whole horizon over Catania and Calabria was so hung with mist that we could not see them distinctly. We had no alternative but to wait where we were, in the hope that the rising sun would dispel the clouds and abate the wind, so that we could ascend. At 4<sup>h</sup> 25<sup>m</sup> the sun appeared. It was a glorious sight. The dull clouds over the horizon were of a lovely purple and gold, while a faint, rosy light tinged the wastes of snow about us with an illusive warmth. But the splendor was transient: the envious clouds shrouded his too brilliant glories, while the mists over Etna seemed every instant to thicken. We tried the temperature of the air and snow, and found it to be  $-7^{\circ}$  C. =  $20^{\circ}$  F. At Catania, on Thursday, it had been  $94^{\circ}$ . We had, in fact, by an ascent of 9400 feet, made a difference of near  $70^{\circ}$  of temperature in a few hours.

There was therefore no alternative—we must abandon the idea of ascending the cone—the attempt would be useless, and a mere waste of time and strength. Our guide, whose experience was great, decidedly opposed it, and so we turned to view the *Val del Bove* from above. We had explored this vast gulf

from below, and were desirous of seeing what proportion it bore to the general surface of Etna. This we had hoped to do from the upper cone—the next best thing was to see it from the verge of the bounding precipice. Our path lay before the wind, which was so violent that it carried us forward on a full run, while the loose snow kicked up by our feet was driven before us quite like a snow storm. It was near a mile to the edge of the precipice. We had been advised by Dr. Gemmelaro to keep our eyes shut until the guide placed us in a position to see the gulf, and then to look in suddenly, as the best way to obtain a vivid impression. This we did. On raising our eyes, a scene of awful grandeur was before us. The story it told was as plain in the history of past changes in the mountain as in a written record of human action. From this point the Val del Bove was somewhat quadrangular in form, and even more grand in its ruins than when seen on its billowy plain below. Here was a yawning chasm so deep and so wide that all Vesuvius might be set down in it, and have room to spare on either side, while its summit cone would hardly reach up to our feet! Vast, indeed, was the engulfment which had swallowed up so wide an area, and yet how small was that area compared with the whole surface on the flanks of this grand dome. In this view, the remark of Spallanzani seems just, that, compared to Etna, Vesuvius was a cabinet volcano.

The position of the sun, as it shone in our eyes, was not favorable for a good view of the valley; yet, even under these disadvantages, its bold crags, sharp, wall-like dikes projecting from the sides, with a frigid, yet tumultuous ocean of lava currents below us, were remarkably grand and impressive. "Capra" and "Musara" stand like sole remaining sentinels of the conflict in the midst of the scene. In the distance lay the Mediterranean, with black rivers of lava leading the eye to it. All these and many other minor elements of grandeur, combine to render this one of the most impressive and powerfully instructive scenes which it is possible to behold.

From the Val del Bove we turned our steps down the moun-

tain in the general direction in which we had ascended. And now, in the bright light of day, the weary wastes of unbroken snow seemed more extensive than on our ascent. We had been nearly or quite six miles over the snow, but it was in the night when we could not appreciate its extent. Now, on every side, we saw only an Arctic winter, while immediately below us were fields fertile with vines, figs, olives, lemons, and grain all yellow to the harvest. It was about half past six when we at last reached our mules and took our breakfast. The descent we found more arduous than the ascent, not only because we were fatigued, but also on account of the great strain on the knees in holding back against the stirrup. As we descended, the contrast of temperature was very remarkable. Our warm clothing became oppressive, and one by one we cast off all our superfluous garments.

On entering the wooded region we were enchanted with its beauty, although, as Dr. Gemmelaro assured us, it has been greatly injured of late years by the cutting away of most of the finest trees, and the topping of the others. The wood is mostly oak and chestnut, with a few pines and firs. The trees are very large, not high, and at such distances from each other that they seem to have been planted by art as in a park. But the most beautiful features of this region are the ancient cones, whose slopes are grassed and also wooded. They retain their form perfectly inside and out; the trees upon them are not thick enough to hide their outline, while they give life and beauty in a surprising manner. These trees were completely vocal with birds as we rode through, but we recognized no familiar faces among the songsters. We were too soon through this beautiful zone of the trees, especially as succeeding them was a very long and tedious ride along the descent of the old lavas before named, before we could reach the village of Nicolosi.

It was excessively hot, mules and men were all thoroughly fagged, and I noticed as we rode along that our guide slept quite continuously on his mule. It was 9½ A. M. before we

reached the hotel, quite to the surprise of all, who were not looking for us until noon. They were all amazed to hear of the tempest-wind we had experienced on the mountain, as it had been perfectly calm below, and they had thought we were entirely successful in our ascent. Yet unsuccessful as we certainly were in not reaching the summit, we had enough to repay us for the toil and exposure. The spirit of adventure alone is sufficient to satisfy most people who have confined their mountain rambles to the day. The snow also, in its extent and massiveness, entirely exceeded any expectations we had formed of it; and, above all, the Val del Bove, had we seen nothing else, would have rewarded us for the labor we had undergone. It is not merely for a sight of the rising sun that it is worth while to ascend in the night. The distance is such that the time consumed is necessarily from twelve to fifteen hours, and to do this under a bright sun is a great exposure. The effect of a full sun also on the snow, as reflected in the eyes, is, with the brilliant splendor of an Italian atmosphere, too much for the unprotected vision. In summer—that is, in July or August, the English house is free from snow, and then adventurers may carry up their mattresses and sleep there. This reduces the labor very much, since, when the snow is off, mules may go quite to the Casa Inglese, or nearly six miles farther than we were able to ride. Dr. Gemmelaro has a plan for reconstructing the English house in the form of a pyramid, and in such a manner that access may be had to it in even the winter by an opening near the summit.\* The distance from Nicolosi to the summit of the cone is estimated by the guides at twenty-four miles, but Dr. Gemmelaro states it at probably fifteen.

The return of our adventurers made me feel more than ever satisfied that I had not made the attempt. On their arrival they were so completely fatigued that they were glad to throw themselves at once upon the bed, and seek refreshment in some hours of repose.

\* Since this, the English house has been destroyed by the eruption of August, 1852.

Three days and nights had been passed with great satisfaction upon Etna, and we were now ready for our departure. Its geology is simple and intelligible, and it would not have added materially to our instruction to have visited more of its lava fields, or to have examined more cones. We had seen examples of every thing except the interior of the great cone, which is not now active, and presents, as we are assured, when quiet, no remarkable phenomena.

It is a striking peculiarity of Etna, that although nearly 11,000 feet high, the movement almost invariably begins at the upper cone, and the eruption of lava occasionally takes place there. I cite the testimony of Dr. Joseph Gemmelaro, who, from having passed all his life on the mountain, having been for half a century a close observer of its phenomena, and being highly intelligent and well informed in science, is a witness worthy of all confidence, as is also his brother in Catania. From these sources I derive the following facts and views:

The eruption is always attended, and especially preceded by *earthquakes*, which decline as the eruption goes on, and cease when it is finished. The earthquakes have been very destructive to Catania\* and Messina, and other towns and villages; many occur without warning. That which was felt severely at Messina, in March, 1851, two months before our visit, was but little perceived on the mountain. The cone, judging from the map, appears to be in a right line, 50 miles from Messina, but the distance in the circuit by Catania cannot be less than 70.

During the eruptions the *electrical phenomena* are very conspicuous, and flashes of lightning play about the crater. On one occasion, an electrical column appeared to envelope some strangers, who were on the mountain, and from their naked fingers musical tones were heard; one of them wore a silk glove on his hand, and from the fingers that were thus insulated, no sounds were heard; it is obvious, therefore, that

\* In 1693 Catania was destroyed by an earthquake, and 18,000 persons perished.

from the naked fingers electrical currents were flowing, which produced the musical sounds, and in the dark those fingers would doubtless have appeared luminous.

The two brothers Gemmelaro, are of the opinion that the lateral eruptions of Etna proceed from fissures in the mountain, radiating from the central axis which they believe to be the great focus of heat, and that the lava, injected by pressure into and through these lateral fissures, eventually finds vent by breaking through the crust of the volcano. This view will account for the large supply of flowing lava which frequently issues from these lateral vents; any one of them may draw without limit upon the great central fountain of fire. Dr. Gemmelaro furnished us with a number of publications by himself and his brother, on subjects of science, and especially on the phenomena of Etna.

FAREWELL TO ETNA. *May 30, 1851.*—At noon we took leave of our kind friend, a man of strong head, warm heart and cordial manners. A carriage, by appointment, had come for us from Catania, and with mixed feelings of gratification and regret we took our seats. It was very easy to roll down the smooth and hard declivity of the mountain road, and two hours were more than sufficient to place us again in Catania, where we were refreshed at the Crown Hotel, and ablutions and a comfortable dinner were peculiarly acceptable, after our rough mountain travelling and hard fare.\* After a few hours of grateful repose, we enjoyed at evening a very pleasant ride with an accomplished young gentleman, M. Bassani a Catanian, to whom we carried a letter of introduction from M. Scavo, our vice-consul for Catania, whom we had met in Messina. Both are native Sicilians. M. Bassani having passed several years among the English in Malta speaks the language perfectly, and with a London accent. In an open barouche he took us

\* One of the greatest privations on the mountain is the want of good water; rain water alone is used, it is kept in cisterns of lava and abounds with lively animaleules, which do not need a microscope to make them very conspicuous and revolting.

through this beautiful city, which has fine buildings, public and private, with wide streets, well paved and ventilated. A large part of the population seen in the streets is composed of soldiers, priests, and monks. There is no political liberty here, and personal liberty is very insecure. The city was sacked at the conclusion of the revolution of 1848, when many houses were burned by the king's troops. Marks of war, as in Messina, are still numerous.

Catania has the appearance of a population of from fifty to sixty thousand. The environs are beautiful, the fields are in high cultivation, and a lofty species of cactus is one of their chief ornaments. It grows every where on Etna, as well as around Catania and on the road to Messina. Soil being placed upon the stone fences, the cactus grows on the walls, and forms an impassable barrier. M. Bassani took us to a field of lava, where the roots of the cactus had penetrated into and broken up the lava, and he remarked that this was one object in permitting the plant to grow. On Etna it occupies large fields, and we could not before understand why it was tolerated; the fruit is much eaten by the common people.

ILLUMINATION.—In the evening there was an illumination in the main street of Catania in honor of the king's birth-day. We were assured that it was due to the zeal of officials and got up by special orders from Naples. There was music in the streets, and noise of disorderly processions through the night; but there was no enthusiasm amongst the people, who appeared to take little interest in the pageant. Only three years ago they were delivered over to the rapine and lust of a brutal soldiery, by the false monarch who had broken his oaths and deceived his subjects. By them he is detested, nor have they forgotten the conflagrations and massacre of 1848, to which they, as well as Messina, were devoted.

MINERALS.—The lavas of Etna, neatly cut and polished, are found for sale in the shops at Catania. The *pietra dura*, mosaic pictures, of the "nurse of everlasting fire," formed out

of its own lavas, and set in a framework of antique Sicilian marbles, are familiar and agreeable souvenirs to every traveller. We secured also good selections of the Sicilian minerals, crystallized sulphur, gypsum, celestine, and the analcimes of the Cyclopean islands. *Amber* is washed up by the sea upon the shores near Catania and Messina, and the manufacture of elegant ornaments from it is quite an important branch of industry in this part of Sicily. It occurs of various colors; although in the rough state it resembles rounded pebbles. It is very costly; one rough mass, of the size of a pigeon's egg, was offered to us at fifteen dollars. It had a lovely blue green color by reflection, and was red by transmitted light with the play of colors seen in the opal. In general we have purchased at very reasonable prices, and cannot confirm, by our own experience, the charge of sharp practices almost universally brought against the Italian dealers. The commerce of Catania is mainly in crude sulphur from the large mines in the neighborhood of Girgenti. Sr. Scavo, our vice-consul, is largely interested in this trade.

FRUITS.—Sr. Bassani sent us a basket of fine fruit to our hotel, among which was the large Sicilian sweet orange, much esteemed by the natives and never exported. We found its intense sweetness, untempered by the slightest acidity, quite insipid, and much preferred the common acid orange and the fragrant refreshing lemons. The figs and pomegranates were not yet in season.

ICES.—We noticed at numerous points in the desert region, near the mule track, large beds of snow covered by volcanic sand. These stores are provided in the winter by the guides of the mountain, and especially by Matteo, who, in summer, drives a very profitable trade by transporting the snow on the backs of his mules to Catania, for the use of the confectioners. The lowest skirts of the descending mantle of snow are selected in convenient situations, in hollows where a heavy mass has accumulated. The black volcanic sand from the neighborhood of Nicolosi is carried upon mules and nicely spread over the



upper surface of the snow, and down upon the slope of the sides, in a trench, cut for the purpose of protecting the lower surface from the effects of the sun's rays. This simple contrivance secures an abundant supply of granular ice, which, as the Sicilians think, makes far better fruit-ices than our more solid blocks; we were, however, disposed to attribute the superiority of the Sicilian water-ices rather to the excellence and abundance of the fruits furnishing the juices, than to the quality of the ice itself. They are certainly better and cheaper in Sicily than in any other country.

DEPARTURE FROM CATANIA.—We left Catania at half-past seven A. M., May 31, in a vetturine with three horses; we could not command the diligence, and were therefore obliged to divide the journey between two days. We were the more reconciled to this slower mode of travelling, as we wished to see some interesting objects on the road. For nearly 20 miles we rode over lava of several distinct and remote epochs; the vast effluxes from Etna have mantled the country all around with igneous deposits, which afford the strongest evidence both of the long continuance and great energy of the internal heat. Soon after leaving Catania, we passed, for several miles, over a current which we at first supposed to be a branch of that of 1669; but were informed that it was probably older, though still modern compared with other floods.

CYCLOPEAN ISLANDS.—Near Trezza, eight or ten miles from Catania, we stopped for an hour to view the celebrated basaltic islands called the Rocks of the Cyclops. Their appearance corresponded with our previous impressions. The islands are less than half a mile from the shore, and we hired some fishermen to take us out in their boats. We had a clear sky and delightful air in which to make our observations. These islands are obviously in the line of a great volcanic fissure in the cone of Etna, and the ejection forming them was probably submarine. There are six islands, and even ten, if we include some very small rocks; but only three of the ten are of principal interest. We rowed first to the largest, which may be 1500 feet in cir-

cumference, and landed upon it. The chief interest attached to this island arises from the invasion made by the basalt upon the limestone, which has evidently been elevated by the igneous rock. The lava is injected into it and among its divisions, but we did not observe any marked alteration in the character of the limestone at the line of junction with its fiery neighbor. Very large and clear crystals of analcime are found here along a chasm where the basalt appears to have been removed. My companions secured here and in Catania a fine collection of these minerals. Some degree of romantic interest is attached to a grotto or cavern in the limestone of this island, large enough to conceal and shelter several persons. An arched passage communicates with the sea wall at whose base the waves dash upon a vertical precipice. It looks much like the haunt of free-booting buccaneers, although tradition assigns the cave as the retreat of a devout recluse, and the passage as his confessional, wrought by penitential hands.

This island presented picturesque views, and its basalt cleaves into rude, columnar forms; but they were not to be compared for regularity with those of another island, around which we rowed without landing. This latter island—perhaps 200 feet high, and 1000 in circumference—rising abruptly out of the waves, has no landing-place. The columns of basalt are generally very regular, symmetrical prisms of six sides. Their appearance is very rich, and well rewarded us for the trouble we took to see them. They form a magnificent colonnade, whose columns are in contact, and nearly vertical. In another, and smaller island adjacent, the columns were curved, and inclined nearly, or quite, into the horizontal position.

The water of the Mediterranean at this point is perfectly clear and colorless, so that the bottom, from the boat, seemed always within our reach, and with its rich display of variously colored sea-weeds, corallines, and shells, called to mind those exquisite lines of Percival—"The Coral Grove."

THE RIDE TO MESSINA, along the shore of the Mediterranean, took us to-day (May 31) over that part of the road which

night had concealed from our view when we came on in the diligence. Seeing it now by daylight, we found that it was by far the most interesting part of the journey. The country was in a high state of cultivation, and the villages had a better appearance than those we had seen before. We observed with pleasure the beautiful town of Aci Reale, containing 15,000 people, and many fine houses. There were groups of gentlemen walking the streets, and an avenue of trees, in fine condition, formed a promenade leading down to the sea; a most agreeable contrast to the beggars, clamoring in most filthy streets, whom for some days our eyes had rested on.

RUINS OF TAORMINA.—At a poor village called Gaordina, immediately on the shore, we stopped for the night, although there were three or four hours to spare before sunset. The house was small and of a most unpromising appearance, but its register showed that many eminent people, and several Americans, had been comfortably lodged there. As it was but for one night, and near some ruins which we were very anxious to see, we decided to remain, and had no occasion to regret our decision. We climbed up to our small apartments by steps outside of the house, where a balcony gave us pleasant views of the Mediterranean, on whose shore the village stands. We were supplied with excellent fish from its waters. Gaordina is at the foot of a range of hills, which may well be called mountains; they rise in numerous almost vertical peaks and ridges, with deep valleys and gorges between them, and they are apparently barren. As the country now appears, no one would ever think of building a city upon these hills. But the ancient and populous city of TAORMINA was once there, and to view its ruined theatre and water-tanks, we now climbed the steep ascent. If the camel is the ship of the desert, the donkey and the mule are the land craft of Italy. Several donkeys—poor, emaciated, and miserably caparisoned—were soon at the door, with each a ragged pedestrian attendant; upon their backs we proceeded on our zigzag way up the mountain, and with no small toil came to the ancient city

gate, that had evidently belonged to an important town, while many surrounding remains of ancient grandeur told the same story. Huge masses of brick masonry walls, broken in fragments, lay in the bed of a brook, and were at first mistaken for boulders. They had evidently been hurled by the violence of war or earthquakes from the lofty impending hill.

We now found ourselves in a compact town, 1500 feet above the village below. In this town, as we learned from a priest, there are 6000 inhabitants; they are crowded together upon narrow streets, and their appearance is half barbarous, and quite miserable. We were pressed for alms, and the people from the houses stared boldly upon us, as we rode through their place, while some of them laughed and jeered at us. With very few exceptions, I have never seen a more forlorn and miserable population, and nowhere else have we met with insolent manners. This poor town is all that remains of the great Grecian, or possibly, Pelasgian town of Tauromenium, which once contained 150,000 inhabitants. But where they could have found room for such a population, it is not now easy to conjecture; for the present town, seemingly, fills the space between the immediately contiguous hills. In this strange town, there is a solitary English gentleman, Mr. Nash, to whom we were introduced by Signior Bassani. This gentleman, attracted by the love of scenery and retirement, and with some taste for natural history, has lived here for several years, entirely without society, other than his own household. He courteously conducted us to the water-tanks of Roman, or Grecian (or possibly Etruscan) construction, which were reservoirs built for the supply of the city. The tanks were replenished by an aqueduct, parts of which are still standing, which brought the water fifteen miles.

I paced the tank, which we entered, and estimated it to be 110 feet by 35, and 18 high. It is constructed of hewn stone, and stuccoed within and without with cement, which is now as perfect as the day it was put on—a very solid and substantial work, which, with some slight repairs, would be now

fit for use. The roof is supported by strong pillars of brick, and a portion of it is arched. These tanks were sufficient to supply the city during three years.

THE RUINS OF THE THEATRE are, however, the principal object of interest here. They are on one of the highest hills, a little way from the present village of Taormina. Although the theatre is very completely a ruin, all its parts may be made out. The exterior wall remains, but the frieze and entablature are gone, as are also the seats, but their position is obvious, as they rested upon the natural rocks. Some columns are standing, which must have adorned the stage; a part of the capital remains upon the top of one of them; there are also exterior columns—some of granite and others of marble. The room for the actors (the green-room) is nearly entire, and two arches of the proscenium are standing. They are the same that were included by the late eminent artist, Mr. Thos. Cole, in the foreground of the splendid picture of Etna, now in the Wadsworth Athenæum at Hartford, Connecticut. We were happy to identify the spot where the distinguished artist took the sketch from which his picture was painted, and to verify by our own observation the general accuracy of Mr. Cole's design. We fancied that we could identify the very stone, among the rows of seats hewn in the solid rock, from which he obtained his outline. By a sort of pictorial license, too often taken by artists, he has made the cone of Etna rise somewhat too acutely at the apex. It seems almost impossible for artists to resist the temptation to represent the cones of volcanoes as far more acute than nature has formed them. With a base of not less than thirty miles, and more nearly forty, Etna raises its dome but little over two miles into the air. Of course, the angle of its slope is small; and the term *dome* which I have employed, is much more significant and truthful than *cone*, which should be used only in reference to the very apex. A sketch of Mr. Cole's picture, corrected in outline, forms the frontispiece of this volume. Waltherhausen's outline of Etna, as seen from Catania, is an admirable example of the possibility

of uniting minute topographical accuracy with the finest pictorial effect.

When we first ascended the back wall of the theatre, rainy clouds veiled Etna from our view; but the glorious old mountain broke forth before sunset in all the warmth of color, beauty, and majestic dignity, so conspicuous in the picture of Cole.

Various interesting memorials of the past are preserved in a small museum near the theatre. Among them we noticed fragments of statues and numerous architectural fragments, and a beautiful sarcophagus of white marble, adorned with many figures in high relief. An intelligent lad showed and described this museum, whose refined manners were in amiable contrast with the rudeness we had experienced from the demi-savages in the dirty town. From him we purchased an excellent pencil sketch of the ruins, with Etna in the distance, beautifully done by himself.

It still appears surprising that a theatre which would require 10,000 people to fill it, should be erected on this secluded and almost inaccessible mountain. There are peaks in the vicinity much more lofty, and crowned with forts, said to be of the age of the Saracens, who sacked and destroyed Taormina and its theatre. From the ruined walls of the theatre, a large tomb, and several less perfect ones, are visible in the valley below. They appear like those seen on the Appian Way. Such are some of the traces of ancient grandeur still remaining after all the ravages of war and time in the long cycle of ages, in which Pelasgian, Carthaginian, Roman, Saracen, Spanish, French, English, and Sicilian dominion have succeeded each other, each marked by the destruction of some previously existing monument of antiquity, until nothing is left to tempt cupidity or excite the ambition of further conquest.

TO MESSINA.—Leaving these interesting ruins, we proceeded the next day on our way to Messina, and as we drove along, the ruins of Taormina formed conspicuous objects on the hills. After leaving the volcanic region of Etna, we found in the sections, into which the road is cut, a very different geo-

logical formation. It consisted of limestone and slates, the strata of which were often highly inclined or vertical; but more frequently they were distorted, curved, convoluted, and mingled together, thus indicating great disturbance, and perhaps from the same power which raised Etna. We passed numerous dry water courses, whose beds are strewn with large rounded pebbles of lava and limestone. Through these channels the mountain torrents, in the rainy season, send down powerful floods, which cross the main road, and become occasionally impassable. We saw only a few streams of water, and these were of very inconsiderable size.

MESSINA.—Our courier found for us a much more comfortable hotel (the Victoria) than that which we had occupied before. It was near that part of the town where so many good houses had been destroyed by the troops of the king, and appeared as if it had once belonged to people of superior condition. The court was clean, and contained no stables for donkeys and horses—all was neat, the apartments large and genteel, with attentive servants.

We were welcomed by our consular gentlemen, Messrs. Clements and Behn, with much cordiality. Their residence was at the opposite end of the town, near the fort which had been destroyed, and their apartments along the strand were in an upper story, removed from noise. From their windows we enjoyed a beautiful view of the strait, of the ships, and the fort, and the opposite coast of Calabria, dreary, and tossed into unsightly piles by the desolation of earthquakes.

We were more than ever impressed by the large number of filthy beggars, priests, and monks in the streets of Messina. Among the agreeable people whom we saw in Messina, I must not omit to mention SR. PIETRO CAMPANELLO, professor of mineralogy, in the University of Messina. We first visited this aged gentleman at the Mineralogical Museum of the University, where we found him instructing his class in natural history. We afterward saw him at his house, and purchased from him a considerable collection of interesting Sicilian minerals, includ-

ing a rich selection of the volcanic products of Vulcano and the other Lipari Islands, to which, unfortunately, we were unable to go, owing to police restrictions, and the shortness of our visit. Among the things which we purchased of him were some Sicilian shells and minerals put up and labelled by his wife, who had died a year previous. He gave them up with evident emotion, and by a peculiar tenderness of manner, expressed with a touching pathos, he showed the depth of his broken affection. We left him with strong impressions of esteem and sympathy, deepened by the extreme humility of his modest deportment.

RETURN TO NAPLES, *June 3.*—The steamer *Lycurgus* in which we came from Naples, returned this morning at her appointed time from Malta. In her we embarked at 6 o'clock, A. M., but did not depart until nine. The boat was full of passengers, Europeans and Orientals; Greeks, Armenians, and Turks. They wore the Oriental costume of party-colored turbans and flowing robes. We observed among them persons of mild and graceful manners, whose deportment was marked by a winning courtesy.

During our brief passage over a smooth sea, and beneath a bright and tranquil sky, no remarkable incident occurred. Stromboli was still smoking as we saw it on our outward passage, but we could hardly obtain a parting view of Etna, veiled as it was by a thick haze. We passed a quiet night and I was on deck at 3 o'clock, A. M., to watch the progress of the morning, that I might see the glorious rising of the sun over the Bay of Naples, and the summit of Vesuvius. As we entered the bay we passed the Isle of Capri on our left, and saw again all the objects named in our outward-bound passage. Vesuvius is always the most commanding feature along the shores of this splendid bay. As the volcano rose into view in the gray of the morning twilight, its aspect was grand and venerable; and while the sun, lifting his golden orb above the eastern Apennines, poured forth a flood of light upon the waves and gilded the crest of Vesuvius—a large portion of its western slope still remained in deep purple shadow.



*Landing.*—We experienced the usual detention of the custom-house and police-office but without incivility, and were safely landed at 8 o'clock, A. M. Having had no news from our friends while in Sicily, we were glad to see Antonio with our attentive maitre d'hôtel in a boat alongside, and to hear from them of the welfare of those whom we had left behind. They, during our absence, had made a prosperous excursion, filled with pleasing incidents, riding on mules over the Apennines, to the ancient temple of Paestum.

Grateful letters from America awaited our arrival, and we occupied the remainder of this day in bringing up our correspondence and journals, and in a mutual recital of our adventures and excursions.

### Miscellaneous.

NAPLES, June 5.

*Climate.*—Sicily has a lovely climate, with no winter, except on Mount Etna. On this island orange-trees and numerous other semi-tropical plants are flourishing, while in the same latitudes in the United States, winter reigns. The summer sky in Italy is very serene; there has been hardly a rainy day since we have been in the country. The whole of Sicilian agriculture depends upon artificial means of irrigation; there are vast reservoirs with mules constantly at work to move the wheel, by means of which buckets are raised and emptied to fill the small trenches, that convey the water in every direction through all the cultivated fields. We were warned against Italian heat, and were assured we should find the climate very relaxing; but except in the Val del Bove, we have hardly felt oppressed. We have not changed our winter clothing, and never go on an excursion without our overcoats. The temperature of the season has been much as at New Haven, and in Naples we had fires several times, morning and evening, as late as the beginning of June. Our impressions of Italian climate and of the malaria, have been generally derived from English writers, whose standards have

been the fogs and smoke of their own London. From the same source has probably come also the impression, of the unhealthiness of a summer visit to Italy. We were constantly warned on this subject by English people, but American residents in Italy confirmed our own impressions of the entire safety of a summer visit to Italy, which in every particular of beauty and comfort, is the season of all others to enjoy the pleasures of the peninsula. No doubt, exposure on the Campagna in the nights of summer, would be productive of intermittent fevers, but there is no necessity for such exposure.

Much is said of the beauty of Italian skies; they are, indeed, brilliant, but not more so than they often are in America; and in our own country we have been often gratified as here with bright fleecy clouds floating under a pure azure canopy. That mild suffusion of mellow, golden light, especially in a morning and evening sky, which Claude Lorraine succeeded so well in imitating in his pictures, is certainly characteristic of Italian skies. In New England, also, although less frequently, we see the very same soft, golden tints, especially in the "Indian Summer" in October and November. Claude Lorraine, however, "portrayed with truth, the effect of the sun in every part of the day—soft breezes playing through the tops of the trees, and the dewy humidity of dark, shadowy places."

PLACES CONNECTED WITH ST. PAUL'S HISTORY.—I have already mentioned that at Messina we looked with great interest at Rhegio, anciently Rhegium, on the opposite shore of Calabria, where St. Paul landed on his voyage from Syracuse.

"And landing at Syracuse, we tarried there three days; and from thence we fetched a compass, and came to Rhegium, and after one day the south wind blew, and we came the next day to Puteoli," which place was mentioned in connection with our observations on the ruins of Puzzuoli.\* About forty miles beyond Messina, on the way towards Naples, there is a place called Paulo, where they say that the apostle landed, and

\* The modern name of Puteoli.

at Messina they claim that he was there also, which is not improbable, as trading vessels in those days touched at the ports all along the coast, as they do now.

PRISONS AND PRISONERS.—At Messina we were assured that the dungeons were full of state prisoners. Five hundred persons were then in confinement in the strong stone fortification in the harbor of Messina, immured beneath the surface of the ground, and lower than the surface of the water. Prisoners are arrested without open accusation, and no opportunity is allowed for defence. As there is no writ of habeas corpus, there is no other chance for enlargement than what depends upon the will of the despot. The revolution of 1848 ended disastrously for the people. I have mentioned the burning of many houses in the principal towns. They were also given up for six days to pillage and rapine, attended by those insults to the defenceless which are usual with a licentious soldiery. Some families were reduced to penury by the destruction and plundering of their property.

The general pillage, especially of Messina and Catania, and less extensively of Palermo (and I suppose measurably of the entire island), was conceded to the army, to pay them for putting down an insurrection for liberty.

A constitutional government had been granted to the people; but when their representatives assembled, the parliament house was, by the order of the king, shut against them, and they justifiably rebelled against treachery and despotism. Pillage by a foreign enemy is one of the bad customs of war; but the pillage of Sicily in 1848 was perpetrated upon the subjects of the king, and by his own soldiers, who were permitted to break into private houses and do as they liked. The command from the highest authority was, "help yourselves;" and it was fully obeyed.

The monarch is detested; and not feeling himself safe in Naples, he lives at his palace at Caserta, sixteen miles from the city.

VILLAGES.—The Sicilian villages which we saw are in

general very disagreeable. The houses are crowded together generally upon a narrow street. As you ride through and look in at the open doors, you see their miserable homes, dirty and comfortless. In some of the poorest, the fowls and the pigs share the family room, and the donkey is often the next neighbor. In many houses in Sicily and in Southern Italy, the donkey occupies a stable in the area of the house, while the family are in an adjoining apartment, or in the story above; and it may well be imagined that the atmosphere is not very agreeable.

AGRICULTURE.—Their agriculture is managed, even over large fields, chiefly by the mattock, hoe and spade. We hardly saw a plough, and if any, it was of the simplest old Roman construction; nor did we ever see one in actual use. The donkey and the mule are the reliance of the country for transportation, and they impose upon them enormous burdens. Almost every kind of thing, hay, grain, timber, stones, tiles, and bricks, are piled upon these patient, humble animals. Dirt is often loaded into their panniers, and manure is transported in the same manner. They have carts indeed, generally for one donkey or mule, or for a small horse; and it is not uncommon to see a mule or a donkey harnessed side by side with a horse, and sometimes an ox is associated with one or the other of these animals.

In the villages, the people are much in the streets, narrow and dirty as they are. The doors of the houses stand wide open, and there is little or no privacy. The women most frequently sit in the doorway, or even in the street, with their children; and mechanics—cobblers especially—often work in the same place. There is a great difference in the villages;—some have wider streets, and the people appear more comfortable.

INHABITANTS.—In our tour to Sicily we have had no occasion to complain of any thing except official delays, by which we lost several days of valuable time, consumed in the review of our papers and the granting of our passports.

The mass of the people in Sicily are very much de-

In the cities, indeed, many live comfortably, and a few splendidly. We have had little opportunity to see the gentry and the elegant women of the country.

A Sicilian gentleman told us that ladies rarely appear abroad, and that he himself associated very little with any one, because all persons of consideration are watched, and numerous spies stand ready to criminate them politically.

The common people seemed to us to be without much intelligence, and with no elevation of mind to aim at bettering their condition, which appeared very hopeless; and there seems on the part of those in power very little or no disposition to raise them from their state of extreme depression. In their manners, the Sicilian peasantry are mild. We saw no rudeness, except in the village of Taormina, and there it was not accompanied by any aggression. The Sicilian gentlemen with whom we have been conversant are graceful and polite, and manifested a kind and obliging disposition.

### Naples to Leghorn.

June 8, 1851.

Near evening, we embarked on board the steamer Vesuve, a Neapolitan vessel built in England and managed by English engineers. Multitudes clustered on the deck, attracted either by curiosity or to bid farewell to their friends. A large man-of-war boat came alongside, manned by a clean, bright-looking crew of young men, dressed in white, with blue-colored collars turned down. It really did us good to see them, as we read on their hat-bands, "*Mississippi*," and saw the stars and stripes waving at the stern of the boat. They belonged to the American war steamer *Mississippi*. Four of her officers came on board, and with one of them, Lieutenant Chapman, I was acquainted. They were all very cordial, and expressed much regret (which we also felt) that we could not visit their ship, to which they returned before our departure. She was then awaiting orders to proceed to Syria, to receive Kossuth and

convey him to the United States. On leaving our moorings, we passed under the stern of the *Mississippi*, and were saluted by the music of her band, and the signals of her officers; nor were we ashamed of our steam frigate in comparison with a French steamer of the same class near to which we passed.

On board the *Vesuve*, Lieutenant C. introduced me to a Neapolitan military gentleman of high rank in the service of the king—a man of commanding person and presence, and of polite and dignified manners.

As the lady of this gentleman, who had the title of the Count d'A., was to be our fellow passenger, we were introduced to her also. She is a French lady, of Spanish extraction. As our American naval officers had been often hospitably received in her family, she had become sufficiently acquainted with English to speak intelligibly, and, with the aid of French, we found her a very agreeable companion. Her appearance and address were in keeping with those of her husband, and we viewed them as specimens of the higher orders of society in Naples.

As our steamer passed down the bay, we watched the beauty of the receding shore, until evening, with a bright moon, spread its softened shadows over us. The twilight deepened into night, which passed quietly away, and at eight o'clock on the morning of the 9th we dropped anchor in the harbor of Civita Vecchia.

The ship being extremely comfortable, with a pleasant airy cabin, we preferred to remain quietly on board, rather than to pass the ordeal of official formalities in landing in a place having no peculiar attractions. On our outward journey, we left this place early in April, and have been favored with a most interesting and instructive view of Southern Italy and Sicily. All of our party have enjoyed excellent health, and no accident has befallen any of our number.

We left Civita Vecchia at five o'clock P. M., and dinner was served after our steamer had gained the open sea. A wind which had blown the evening before still continued to blow inland

so considerable a swell that most of the passengers were unable to sit at the dinner table; but I had the good fortune to occupy my place there, although I had very few companions.

The night was pleasant, with a bright moon; and as we passed near to Elba, we gazed long at Napoleon's temporary prison. Two very agreeable American gentlemen from New Jersey were my companions; one of them had been distinguished as an author ("Kirwan"), and had visited Rome and Naples to obtain fresh materials for his discussions.

We arrived at Leghorn at five A. M., twelve hours from Civita Vecchia. Three hours were wasted in official formalities, and nearly an hour more at the custom-house, so that we were not quiet in our hotel until nine o'clock. We found under our roof an artist working in alabaster, and his productions being beautiful and not dear, we purchased various things for our friends at home.

### Leghorn to Pisa.

June 10.

Having made some observations on Leghorn when we were here before, I did not, on this occasion, leave the hotel until the hour of departure. At half past four o'clock P. M. we drove to the gate of the city, where the entire baggage of the party—twenty-six pieces—was opened, but they did not disturb any thing. Here for the first time our luggage was *plombée*, i. e., a cord was passed around each article, and a lead token was attached to the ends in the manner of a seal, bearing on one side a view of the station house, while on the other side was "arnessi usati passport." This we were told would preclude farther examination until our arrival in Florence.

Our ride of twelve miles on the railroad to Pisa was accomplished in half an hour. Both the road and the cars were very good, and the police of the way excellent. Soldiers are seen at all the stations. The country between Leghorn and Pisa is very level. A plain, apparently ten miles in breadth, extends

from the sea to the mountains, and is every where in a high state of cultivation, with grass, wheat, Indian corn, and other crops, which our rapid transit did not permit us to distinguish accurately. Some parts of the tract appeared low and wet, and water lilies and sedge grass were growing in the humid grounds. The country appeared to be cultivated by thrifty industry, and no miserable people were visible along the road.

PISA.—As we drove from the railroad station into the beautiful city of Pisa, we were most agreeably impressed by the appearance of its broad and clean streets, bounded by handsome houses of stone, or stuccoed in imitation of it. Through the city flows the Arno, with a gentle current, sufficient to prevent stagnation. Like the Tiber, the Arno is turbid. It is crossed by three bridges, the middle one of which is of marble. As there is a broad street on both sides of the river, and there being no buildings on the margin, the wide open space gives a cheerful appearance to the city, whose population moves briskly along over the bridges.

Pisa now contains not over 28,000 inhabitants. In its days of prosperity it numbered 150,000; but it seems incredible that they should be contained within the present walls, which inclose an area apparently quite inadequate for such a population. In the eleventh, twelfth, and thirteenth centuries, Pisa, as a maritime state, was rich and powerful, and obtained several naval victories over the Genoese, the Saracens, and the Turks.

The city was anciently near the sea, although now four miles from the shore. It was situated at the junction of the Serchio and Arno; but owing to alluvial deposits, these rivers now pass into the sea by separate channels. Pisa had never any regular port, but its ships rode safely at anchor, being entangled in the sea-weed, which broke the force of the waves. The anchorage was called the *Portus Pisanus*.

There is here an extensive university, with thirty to forty professors. Two gentlemen whom we sought, Professor Savi and



Professor Matteucci, were away ; but under the care of an attendant, we saw the beautiful botanical garden, rich in palms and other trees, the natives of a warm climate. There is in the garden a monument to the memory of the elder Savi, the late professor of botany. It was erected beneath the branches of a noble cedar of Lebanon which he planted. We of course visited the four great wonders of Pisa—the Duomo or Cathedral, the Baptistery, the Campo Santo, and the Leaning Tower. All the world has heard of these structures, and I shall therefore mention only a few facts regarding them.

The Duomo is a large and splendid cathedral, of the Byzantine order of architecture. I am, however, quite satiated with the gorgeous splendor of Catholic churches ; for we find it more or less every where, from St. Peter's down to the most humble religious structures. There is in these edifices much to engage the senses, but very little to instruct the mind, or to spiritualize the affections. The Pisan Duomo is 311 feet long by 105 broad. The length of the transepts is 237 feet. The great nave is 131 feet high. In the interior there are double rows of monolithic columns of granite and marble, thirty feet high, which were taken chiefly from heathen structures. There is a smaller set of columns above.

The Duomo has ponderous bronze doors, richly adorned with figures in bold relief, representing passages of Scripture history. The silver of the altar cost 30,000 crowns, and was twice repurchased by an archbishop from the French ; the first time for 18,000 and the second for 12,000 crowns. The Duomo was erected on the occasion of a great victory obtained in Sicily over the Saracens in 1063, in behalf of the Normans, the Pisans having espoused their cause. They brought home much booty, and being "triumphant, enriched, and devout," they resolved to erect a cathedral that would do honor to God and their country." The first stone of the cathedral was laid in 1064, and the building was finished and consecrated in 1118. The Duomo is regarded as a very fine building, quite in advance of the age in which it was erected. In conformity, however,

with the bad taste of the age, as seen also at Genoa and Florence, it was covered with alternate layers of white and red marble. As usual in Catholic churches, there is a great profusion of pictures and mosaics. A picture of St. Agatha, and one of a Madonna and child, are very good.

We have frequently observed that pictures in Catholic churches are placed in very bad lights, sometimes almost in darkness. While we were there, vespers were performing by a large body of priests in the inclosure of the richly-carved choir. The service was rehearsed in a monotonous tone, and, as it appeared to us, in a manner any thing but devotional.

The bronze lamp suspended in the nave of this cathedral is said to have first suggested to Galileo the theory of the pendulum. The Duomo of Pisa is certainly a very magnificent building. It is little injured after the lapse of more than 700 years since its completion, and of nearly 800 since the first stone was laid. The treacherous nature of the soil is, however, indicated by the settling of the building. "Not a single line of it is upright: the façade overhangs its base visibly; the lower row of arches had subdivided at the west end three feet before the upper one was superimposed, and none of the arches in the basement story correspond." The grand altar also is much distorted by unequal subsidence.

THE BAPTISTERY.—In the ancient Catholic churches the place for administering the rite of baptism was often distinct from the cathedral—it was called the baptistery; and there was a separate tower for the bells, called the campanile. The Baptistery of Pisa is a very beautiful building, and has undergone very little dilapidation during the 600 years in which it has existed. Its height is 179 feet, and its diameter 100, exclusive of the walls, which are more than eight feet thick. Its form is circular, and being profusely adorned with columns and polished marble, it is a splendid monument of ancient religious zeal. The pulpit, of Parian marble, is elaborately wrought. There is a baptismal font in the centre, fourteen feet in diameter for the immersion of adults, and there are smaller

children. The interior of the building is adorned by columns. The baptistery is a whispering gallery, and has a fine echo. The man who showed it to us had a clear and powerful voice, which he threw out with great effect in prolonged strains, which were faithfully returned from the sides of the building. The baptistery was not built all at once; and an inscription on an inner wall would imply that it was rebuilt A. D. 1278: *Ædificata fuit de novo.*

**THE CAMPO SANTO.**—This *Necropolis* was erected by Bishop Ubaldo about 1200. Being expelled from the Holy Land by Saladin, he brought home fifty-three ship loads of earth from Mount Calvary, with which the inner area of the ground was overlaid to the depth of ten feet. In this earth it was pretended that a dead body would in twenty-four hours be resolved into dust, leaving, I suppose, only the skeleton, agreeably to the belief or avowal of the Capuchins at Rome, that the same effect would, in their sacred inclosure, be produced in a year—a more liberal allowance of time. The Campo Santo is a quadrangle 415 feet long by 137 broad, open above to the sky. It has a covered colonnade running around its interior, beneath the marble pavement of which are interred 600 or more distinguished persons who have died within 600 years. There are many inscriptions and numerous sarcophagi adorned with bas-reliefs. Not a few of them commemorate early Christians, and numbers of them are Roman. Many of the monuments have been brought from distant places. There is also great similarity to the monuments preserved in the Vatican. The interior walls of the building surrounding the cemetery were anciently covered with frescoes, most of which were executed 600 years ago, and being among the earliest paintings of the kind, they are regarded as valuable in the history of art. The Triumph of Death, by Orcagna, we studied with peculiar interest. These pictures have, however, suffered so much by time that most of them are in ruins; and even those that are in the best condition are not as well preserved as were those of Pompeii and Herculaneum. Most of the frescoes in the Campo Santo relate to Scripture his-

tory or to the lives of saints. The Last Judgment, always a favorite subject with Italian painters, is here well preserved. It was painted by Andrew Orcagna, and the artist has indulged his own taste in the selection of the acquitted and the condemned. Human beings of different ranks and conditions in life are rather impartially allotted to reward or punishment by attendant angels; and the individuals are seen manifesting opposite emotions of joy or dismay. In a similar painting in the Strozzi Chapel in Santa Maria Novella, which we saw on another occasion, kings, queens and monks are among the condemned. A Franciscan who had risen among the good is carried by the angel to the other side, and a similar mistake is corrected in the opposite group, from which a wanderer among the lost is brought back to the ranks of the blest. King Solomon occupies a neutral position exactly between the two groups, as if he knew not to which he belonged.

We walked pensively around within these solemn porticoes, walled out from the world, and filled with the remains of human beings. We were in a complete inclosure, a hollow rectangle: although the world was shut out, the sun shone from above with splendor into that place of bones and graves. The same sun that then warmed us, once cheered the sleepers when living and active. Thus the busy races of men pass away; and how few live as if they expected ever to live again!

THE CAMPANILE OR LEANING TOWER.—This structure has excited so much surprise, and been seen with such deep interest by thousands of travellers for more than 600 years, that it is almost universally known, and it is not difficult for one who has not seen it to form a clear and distinct conception of it. Still, on approaching the tower, you are strongly impressed by its grandeur and beauty; and when you ascend it, you obtain an almost overwhelming conception of its majesty; although it is perfectly safe; and if you do not feel apprehension that it will fall, you may not be able to keep that idea quite out of your mind. The height of the leaning tower is 178 feet, the thickness of the wall ten feet, and the diameter is fifty feet at the base.

It is composed of eight stories, all adorned by columns and arches. Its form is slightly conical. It is ascended by 330 very easy steps, very well lighted, and it is a pleasant journey to the top. There are seven bells in this grand belfry; they were rung while we were near, and the sound is very soft and musical, especially of the great bell, which weighs 12,000 pounds, and is placed upon the side of the tower, opposite to that which overhangs. It was this bell which was formerly used to give notice of public executions. The leaning of the tower of Pisa was evidently caused by unequal subsidence of the ground; and it is obvious that the architect, as the work rose, before the tower was half up, perceived it, and he endeavored to counteract it as far as possible by balancing his materials. After a particular height, the columns are higher on the leaning side, and, of course, shorter on the other. The builder appeared to be aiming to bring the upper part of the tower into a vertical position, although he did not succeed. It is about thirteen or fourteen feet beyond the vertical; but the centre of gravity still falls within the base; and as the blocks of stone, being now firmly united by cement, cannot slide upon each other, they, in fact, form one mass. The walls are, moreover, fortified by iron bars, and it is not probable that any thing short of an earthquake can produce its downfall.

I cannot think with some, that it requires strong nerves to ascend the leaning tower of Pisa. We ascended with a perfect consciousness of security, and it is certain that were it filled in every story by an armed host, it would not quiver or vibrate. The view from the summit of the tower is most splendid. The beautiful city is at your feet, and you are in the midst of it. The Mediterranean is in the horizon, Leghorn is visible in the distance, the Arno shows its windings, here and there, and a rich plain in full cultivation reaches far inland to the lofty Apennines, in the vicinity of Lucca. It is said, that, in clear weather, Corsica may be discerned. This tower is one of the most beautiful objects in Italy, and one would never be  
ed with looking at it or from it; so beautiful is it, |

leaning becomes a mere incident, interesting indeed, but the tower possesses commanding attractions independently of this circumstance. We cannot descend from it without remembering that here Galileo made his decisive experiments upon the law of the descent of falling bodies, and upon the vibration of the pendulum.

His great name is associated with the permanent glory of his country, and will be honored to the end of time, while his persecutors are remembered only to be despised and detested.

### Pisa to Lucca.

June 24.

An excellent railroad took us in forty minutes to Lucca, a city which, for peculiar reasons, we were very desirous to visit. We were delighted with the scenes through which we passed: they were rich in all kinds of crops and trees, appropriate to the country—for the moisture of the soil fits it to sustain a rich vegetation in a region where rain is frequently withheld for many weeks at a time; but the stagnant water, almost everywhere occupying the ditches and low grounds, might well give rise to malaria during a hot summer.

We had passed some miles over the plain when we plunged into the bosom of the Apennines, whose lofty cones and peaks looked down darkly upon us as if we were intruders into their solitude. Still, though we were riding among mountains, our plain continued with us, we observed on the road neither up-filling nor down-cutting, and we had hardly realized that we had left one beautiful city, before another, in some respects more beautiful, broke upon our view.

Carriages were in waiting outside of the walls—for, like Pisa, Lucca is entirely surrounded by walls with gates—and the imposing aspect of the line of forest trees, which crowned its ramparts in their entire extent, imparted gracefulness and beauty to its high settlements, rising out of the wide fosse—a

splendid finish of ornamental avenues of trees which we had never before seen in any fortified town.

We drove through the grand portal, deep and lofty, and found ourselves in an ancient city, with excellent buildings in good keeping, although time had crowned many of them with parasitic plants. Very good rooms were furnished to us at the *Hôtel de l'Europe*, and after some refreshment, we went as usual with a local attendant to look at the place.

We first visited a very ancient church, founded nearly 800 years ago. It is very different in style from any one we had seen. The arches are circular; the roof or ceiling is not fretted but groined; the arches intersect each other, while bands of beautifully colored ornaments cross them and each other in a rich and graceful manner. Without entering into minute details, I will add only that there is in this old church a serene and calm dignity that gave us much satisfaction.

We were not a little pleased with the sedulous zeal of the good old verger, a most faithful servant of the church. He wore a blue cloth uniform, white hose and silver shoebuckles, while a metallic token upon his dress, broad as a hand, was the emblem of his official station; his venerable white head seemed almost to testify that he had been cognizant of the building of the church, and could tell all about its origin and progress. Indeed, he showed such eagerness to magnify his office and gratify us, that he could hardly be restrained from giving the history of every tomb, picture, and relic. There were some very good pictures, particularly of the annunciation and of the interview between Mary and Elizabeth. The church is very large, but we saw, only here and there, a humble devotee upon her knees at prayer. The poor, and especially females, appear to be the most frequent worshippers in the Catholic churches.

In this old building there is a gilded latticed octagon, constructed in 1484 to contain a crucifix of wood belonging to Nicodemus, and a fresco represents him as hewing it out of a fallen tree.

There is also a lamp of solid gold suspended in the cathedral; it hangs by chains of the same metal, and was made under

a vow of the inhabitants in 1836, when they were in terror on account of the cholera. My recollection is that the lamp was burning when we saw it, and probably is not permitted to go out.

Our loquacious old guide called our attention to a basket of iron, suspended from the ceiling in the centre of the church, and in a soft voice (as if what he communicated was as important and as mysterious as state secrets) told us that in this they burnt the flax before the highest dignitary of the church whenever he entered the building, while the choristers chanted, "Sic transit gloria mundi."

This cathedral is rich in interesting objects; among the sculptures I will mention only one. It is a marble sarcophagus with bas-reliefs of children, and the figure of Maria del Cavretto recumbent on the top; she was the wife of Paolo Guinigi Signore of Lucca, and died in 1405. This very ancient tomb is regarded as one of the finest productions of the chisel. The lady was beautiful, and her form is a model of grace and elegance. The costume is light, fitting to and veiling her figure; her head is turbaned or filleted; it reposes upon a marble pillow, which lies upon another pillow, and the pressure seems so natural that it appears as if she were only in a sweet sleep. This monument is in high preservation, and cannot be viewed without strong emotion. There is in this cathedral, a marble pulpit, beautifully carved in 1498, and quaintly supported on the back of a lion. An altar erected in 1369, *Deo Liberatori*, in acknowledgment of the deliverance of Lucca from the yoke of Pisa, has always been known as the altar of liberty.

DUCAL PALACE.—On the central square there is a large ducal palace, that of the noble house of Mansi, and in front is a colossal image of the Virgin guarded by an angel. Money gave us admission to the palace, where we found a large collection of excellent pictures and of tapestry, that would make a figure even in Rome. The palace seemed given up to the pictures, many of which stood upon the floor, and were very advantageously situated as regards light. Among them we remarked four



elegant landscapes by Nicolo Poussin, with architectural designs, and one of the best pictures of Francesco Franchesi. One of the finest pictures was the scene on Mount Moriah between Abraham and Isaac.

**THE WALLS.**—The walls of Lucca are so broad, that two or more carriages can drive abreast upon them, and in the bastions projecting at the angles of the walls the included area forms even small squares; the bastions were, of course, intended to contain cannon for the purpose of enfilading the ditches. We ascended the walls in our carriages, driving up a gently inclined plain, and were shaded by elms, poplars, and other trees of full size, which, through the three miles that include the entire circuit of the city, formed a continued vista winding through a forest. We were delighted with this beautiful drive and promenade; it presented, every where, charming views of a splendid country—a vast plain, in the midst of which Lucca stands, surrounded by the richest rural scenes, comprising meadows and cultivated land, and bearing abundant crops which were refreshing to the eye. We had never seen any thing so beautiful in the adornments of a town as this mural drive.

Lucca as it was in its days of prosperity and independence must have been a lovely city. Its surrounding territory was forty-three miles by sixteen. It was a republic, in which personal freedom was protected by wise and good laws, administered by a hereditary aristocracy, the members of which had, however, no peculiar privileges except those of birth, and who, equally with the humblest citizens, were amenable to the laws. Industry and useful arts, in every form, were encouraged and protected. There was in the population great intelligence, vigor, and virtue, pervading both the city and the country. The land was fully and skilfully cultivated, not only in the rich and beautiful plains but in the rugged mountains, which formed the greater part of the territory. It was one of the wisest and best governments in the world; the people were highly respectable, prosperous, and happy, and poverty and crimes were almost equally unknown. But a melancholy change came

over the happy republic of Lucca. The French, already masters of a large part of Europe, came to Lucca. Troops were quartered upon them and subsisted by them, and, as by a torpedo touch, their institutions and their prosperity withered. In the progress of events a Bourbon prince was placed over Lucca, and being finally annexed to the dukedom of Tuscany, its independence was extinguished, probably for ever. Its inhabitants have always been distinguished by a love of liberty, and, in the middle ages, it was repeatedly sold by its masters on account of its liberal principles.

OUTWORKS.—In our ride upon the ramparts, we were much impressed by the extensive works, for the defence of the city, that have been constructed outside of the walls. In advance of them and of their wide fosse, a complete system of earth field-works has been established on a great scale; besides a general circumvallation with breastworks and parapets, behind which men could stand with some confidence. There were also triangular works, with platforms of earth for artillery, the acute angle being pointed outwards, which would enable guns to throw cannon balls and grape-shot in every direction against an approaching enemy, and there was, moreover, a retreat provided within the walls, in case the defenders were obliged to retire.

In the whole of our circuit, however, we observed but four cannon, and those were probably reserved for the firing of salutes in honor of the present masters of Lucca, while its proper artillery, doubtless extensive and formidable in its days of prosperity, has been withdrawn. The present walls of Lucca would afford no protection against a bombardment, and would probably not long sustain a heavy cannonade.

Lucca was founded by the Etrurians, and was a favorite city in the Roman times. Julius Cæsar, Pompey, and Crassus met here, to arrange the affairs of the empire, and they drew after them half of the patricians and courtiers of Rome. The city then belonged to the Ligurian division of the empire over which Cæsar presided; this circumstance, in addition to its convenient

position for communication with Rome, appears to have afforded the inducement for selecting this place for the meeting.

Luccá was an important place under the Lombard kings. After that dynasty fell, it was governed by its own dukes, who ruled all Tuscany. It became free in the twelfth century, and its own consuls governed it for more than one hundred years, when, owing to dissensions, it fell into the hands of strangers. In 1314, it came under the power of a lord of Pisa, and was despotically ruled until 1369, when the citizens paid Charles IV. 300,000 florins for a charter of freedom, which they retained until the French invasion. The present population of the city is about 25,000.

Lucca was early distinguished for the manufacture of silk. There are here remains of a Roman theatre and amphitheatre.

We drove out upon the plain to observe more nearly an aqueduct of 459 arches which supplies the city with water. I presume that the well water of Lucca is bad like that of Pisa, which is also supplied by an aqueduct. Indeed the appearance of so much stagnant water in the plain country around and between these cities, proves *a priori* that the water of wells cannot be good, and hence the necessity of obtaining it from more elevated sources, which are fed by the rains and snows.

### Excursion to the Baths of Lucca.

June 12.

We were in our carriages at five o'clock this morning, for an excursion of fifteen miles among the mountains to the Baths of Lucca, which we reached in three hours. The road, after crossing the plain, winds all the way among the defiles and gorges of the mountains; as it is constantly rising our progress was not rapid, and thus we enjoyed the best opportunities to observe the scenery.

The river Serchio, which runs near to Lucca, descends at the rate of 48 feet to the mile, and therefore brings down so

much sediment from the mountains, that at the distance of half a mile from the city, the summer flow of the river is nine feet higher than the sill of the gate of St. Maria—which is one of the highest points of the city plain. We rode for miles along a high barrier of earth, erected at vast expense, to control the overflow of the river, and then we passed into a splendid valley, in which a very fine road had been constructed, also at great cost, chiefly by cutting into the mountains and filling up the valleys; or more frequently, by building up a wall from the bank of the river Serchio, whose course marks the site of the road. This road carried us on through rich scenes of cultivation abounding with olives, and vines, and chestnut trees, which cover the slopes of the mountains. Chestnuts afford an important article of food to the inhabitants; they are dried, ground, and baked between hot stones, being used as a substitute for bread.

The river Serchio, as you ascend, flows with a stronger current, and small rafts of timber, steered by long poles in the hands of half-naked peasants, were seen by us floating down; the rafts are, however, trifles, the merest wicker work compared with the immense masses seen on our western rivers. High up this valley we saw a very lofty bridge, said to have been constructed in 1322 by Castruccio, but the popular name, *Ponte del Diavolo*, seems to claim for it a different architect. The second arch from the right bank is 60 feet high and 120 feet span. The roadway is but eight feet wide, and, being very steep, is designed only for foot passengers and mules.

*Villages.*—Several picturesque villages occur along the road: one of the largest is called *Ponte a Serraglio*. Fifteen miles from Lucca we arrived at the *Bagna a Villa*. This is a beautiful and comfortable village situated among the mountains, which are here highly picturesque and grand, seeming, as it were, to step out in advance of each other, as if to pass by and thus avert all further progress among them.

This region is much frequented on account of the hot baths. We ascended to them by a good path, winding, at an easy

slope, along the mountain side. We were much gratified by finding the baths both copious and flowing at the temperature of  $100^{\circ}$  Fah. We descended also on the opposite side of the mountain, and there we found the hot water equally copious and of a more elevated temperature, even as high, at the source, as  $127^{\circ}$  to  $133^{\circ}$ ; there are other baths at  $88^{\circ}$ ,  $90^{\circ}$ ,  $101^{\circ}$ ,  $106^{\circ}$ ,  $111^{\circ}$ , and  $117^{\circ}$ . The springs, collectively, supply 65,827 gallons in twenty-four hours, more than 2700 gallons in one hour, or 45 gallons a minute. The bath structures for immersion, are of pure white marble; the water is perfectly transparent, and flowing so abundantly and at so cheering a temperature, it is a beautiful object to contemplate. There are large baths or pools in which several persons may be immersed at once, and there are single baths, and shower-baths, and douche jets besides. Every thing in the bathing houses is perfectly neat and altogether desirable; there are stoves for drying clothes, and every person may find the temperature which pleases him—provided warmth is desired, for none of the waters are cold. They contain chiefly sulphate of lime with chlorides of calcium, magnesium, and aluminum, and a little silica and oxide of iron.

SCENERY AND IMPROVEMENTS.—This is one of the most beautiful and majestic mountain regions with which I am acquainted. It is much resorted to by the English, and their taste, skill and wealth are apparent in the improved condition of the grounds, and in the neatness and comfort of the houses. Their regard also for religion is manifested by a large and neat chapel.

There are handsome villas of ample size belonging to Lucchese nobles, with flower-gardens, which may be hired at 50 to 100 scudi (dollars) a month. They are in general well furnished and convenient; but the situation, in an amphitheatre of mountains, is hot in summer, and the luxuriant vegetation favors the reign of mosquitoes.

PALACE.—The grand duke has a palace here, at a place called Marlia; and there the houses of the gentry are clustered

around. The palace is in the midst of a fine park, inclosed by a wall, which is three miles in circumference. The rural embellishments are in the English style for the shrubbery, and in the French for the gardens, with jets d'eau, as at Marly, near Paris, whence the name Marlia. This is the summer residence of the Duke of Tuscany, who was there at the time of our visit. He is reported to be an amiable man, and to have been a beloved prince, until he adopted, under the Austrian influence, the ultra measures against the liberties of the subject which now prevail on the continent.

**GEOLOGY.**—The mountains here are chiefly calcareous, and are distinctly stratified. There are also conglomerates; but our transit through these scenes was too rapid to admit of accurate observation. One thing, however, was very observable: many instances occurred where the strata were curved or elevated, so as to stand upon their edges vertically; or they were inverted, convoluted, and in some places mingled in utter confusion. Most evidently, there had been great violence exerted on a vast scale; and of the energy of the power, these disturbed strata present legibly to the eye an indubitable record. Nor are we left in doubt as to the nature of the power. The fire that still exists beneath these mountains—of whose perennial activity the numerous hot springs afford full proof—is evidently a branch of those grand igneous dynamics of whose energetic operation there is such ample proof in the condition of the planet, and especially in Italy. By means of aerial agents, they may have operated expansively, lifting, with all dominant but various energy, in different places or at different times; or contraction, and subsequent subsidence, from cooling, may have caused collapse and downward movement, and lateral pressure may have aided, leaving parts comparatively elevated;—thus various modes of action, with earthquakes, may have produced all the positions of the rocks which are here observed.

I cannot leave this mountain home of the invalid, and of the man of retirement, without remarking, that to either of these descriptions of persons it must be a most desirable resi-

dence. The climate appears to be excellent—in the morning cool; and at the early hour when we went out, the temperature as we rapidly ascended on the mountain road, became so cold, that we found all our extra woollen garments quite necessary to our comfort.

THE ROAD is so fine that we drove five miles an hour upon the inclined plane; returning, we added another mile to the hour. As I then sat with the coachman, I was more sensible than before of the rapid descent, and of the perfection of the road, passing as it does along a very rugged and rocky region. The roads in Europe, as far as we have seen them, are very much superior to those in the United States. They are permanently constructed upon the macadamized plan, and are kept constantly in repair by men and boys, who are employed in breaking up the stones to be used as there may be occasion. All through Europe, from the mountains of Wales to the coast of Sicily, the roads, as we have seen them, are excellent. It will be long before our vast country can equal Europe in this particular.

PRODUCTIONS.—Hemp and flax are much cultivated in this region. Beans are raised extensively, wheat every where; and Indian corn is a prevailing crop in Italy. It is planted in rows, not in hills, as with us, and only a kernel or two in a place. The weather here is now equally warm as in our June, but the corn does not appear as luxuriant as with us at the same season. For many weeks in the various regions which in that time we have traversed, there has been no rain; but in Tuscany there is no deficiency of moisture, for the country, as far as we have seen it, appears to be underlaid with water. We met with ditches, both narrow, and broad and deep, more or less filled with water, stagnant, and apparently putrid; and thus malaria may be easily generated; for experience has proved that vegetable putrefaction is more injurious to human health than animal.

ANIMALS USED ON FARMS.—In Tuscany the donkey and the mule appear to be giving way to the horse and the ox, and

the goat to the cow. The oxen are white or mouse-colored, and are sometimes worked alone, sometimes in pairs. The septum of the nose is bored, and an iron ring is passed through it, so that they are as easily governed by a cord, as a horse or a donkey by the reins or the halter. Every where, we see the *women* engaged in field labor. They often bear heavy burdens on their heads; are generally barefoot, and always brown with exposure. Of course, woman, being *physically* the weaker vessel, they suffer, in proportion to their severe labor, more than the men would do; and to the passing stranger, the romance of female beauty is, in Italy, in a great measure done away by the hardship which they endure; for delicate forms and features, we must, with few exceptions, visit the galleries of pictures, or the houses of the opulent.

PONTE DIAVOLO.—On our return we stopped, and ascended the precipitous bridge, *del Diavolo*. It is like ascending a steep roof, and some common men were, with great difficulty, tugging and pushing to take a small cart over this little mountain. No reason appears for an ascent of twenty-five or thirty degrees instead of three to five, the usual average of roads and bridges. This is so narrow, in comparison with its length, that it appears a mere strip in the air. Although more than 500 years old, it is still firm and perfect, without the slightest appearance of decay.

At the end of our mountain journey, we drove again into Lucca, to glance at some interesting public objects, and to obtain a last impression of this venerable and beautiful city. We lingered only a short time, and again driving through the portal by which we yesterday entered, we reluctantly bade adieu to Lucca, and its beautiful mural grove—the forest circlet, which, as it was the first object seen on approaching the town, so it is the last seen on leaving it—and in thirty-five minutes we were again in Pisa.

We at once decided on an evening ride to Florence, and left Pisa at half-past six o'clock, expecting to return



### Florence.

As far as daylight served us, the country appeared much like that between Pisa and Lucca; and after evening came on, we saw, by the light of the moon, several towns and villages, some of the houses having the Tuscan appendage of towers at the corners. At half-past nine o'clock we entered the renowned city of Florence; at ten we were settled in the *Hôtel Royal de Grand Bretagne*, and at eleven we had finished our dinner, and were ready for our beds.

**SITUATION OF FLORENCE.**—This city of the arts, especially of sculpture, architecture, and painting, stands on the Arno, fifty miles from Pisa. Formerly they were rival republics; but Pisa was conquered in 1364 by her rival, when her captured citizens were brought to Florence and treated with indignity and cruelty. They were transported into the city like animals brought in for sale, and were led forth from prison only to work upon public buildings, one of which is now used for a post-office, and bears a name which alludes to the Pisans—*Tetto dei Pisani*. Florence contained in 1845 107,000 inhabitants.

Florence has many large and costly buildings—palaces of merchant princes and of other opulent citizens. As many new and expensive houses have been erected within a few years, and as, at this day, entire new squares are being surrounded with dwellings, we must presume that it is prosperous. It is situated in the midst of a rich and beautiful country. There are four bridges over the Arno, and on some there are houses on both sides, like a continued street. Over one of them there is an arched gallery to enable the Grand Duke and his friends to pass unobserved. The Arno is at present low, owing to a long-continued drought. It sometimes swells to a furious torrent, being fed by mountain streams; it has repeatedly swept away the bridges, risen high above its banks, and inundated the city.

**PUBLIC BUILDINGS.**—We have visited many of the public buildings in Florence. Most of them are ancient, and they have been constructed on a scale of great magnitude and enormous expense. This will probably account for the fact that, both here and in other cities of Italy, as I have already mentioned, there are grand churches which still remain in an unfinished state on the exterior. Indeed I do not remember a single church in Florence, besides the *Duomo*, which is entirely complete on the outside.

**CHURCH OF SANTA CROCE.**—The noble church of the Holy Cross is an example. That end of the building by which we entered, is quite rough with naked and unfinished stone work, now crumbling in decay; it ill accords with the solemn magnificence of the interior. Its dimensions are, length 460 feet by 134 in width across the nave and two aisles. The first stone was laid in 1294. The inside of *Santa Croce* has the dignity of magnitude, with much more simplicity than is common in Catholic churches.

*Santa Croce* is appropriately called the Westminster Abbey of Italy. Here repose many of her illustrious sons, and not a few of the princely house of Medici. As you enter, the tombs of Michael Angelo on one side, and of Galileo on the other, divide your attention. The mausoleum of the former combines in its adornments as many of the arts as possible. A large sarcophagus of red African marble stands upon an immense base, upon which are three figures in white marble—Painting, Sculpture, and Architecture, who are seated as mourners in the order named. In the centre of the sarcophagus a bust of the artist fills a niche above these allegorical figures. Michael Angelo chose this position for his tomb, that when the great doors were open he might see from his resting-place the Cupola of the Cathedral.

The monument of Galileo is opposite that of the great sculptor, and is also graced by allegorical figures, those of Astronomy and Geometry, commemorating his discoveries, and by a bust of the philosopher, and a bust of the astronomer.

His physiognomy is disfigured by the upturned nose, resembling the same feature in the busts of Socrates.

The tomb of Dante surmounted by a colossal statue of himself, crowned with laurels, and having other colossal statues at each corner, is not pleasing, and was contrasted unfavorably with that of Alfieri, over which stoops a fine weeping figure of Poesy, by Canova. Machiavelli, the politician, and Micheli, the botanist, are on the same side.

In a side chapel in the transept is a beautiful monument to the Countess of Albany, the widow of Alfieri, very elaborate in its carvings.

In another chapel, is a monument to a Polish lady, Sophie Laneowska—the most touching marble I ever saw. The couch, which has lions' feet, has an elastic sacking, and the emaciated figure seems to sink with its feeble weight. The face is lovely, so purified and so natural, that we lingered long over her heavenly expression.

Some of the most interesting frescoes in Italy are found in the chapels of Santa Croce, and several of them have been revealed during the last few years on removing the whitewash with which they were covered. The choir books of this church, curiously illuminated with letters several inches long, are also among the most ancient ecclesiastical manuscripts, dating back, it is said, to the fourth century.

The history of the Italian republics is replete with proofs of an ardent devotion to liberty, and the church of Santa Croce is memorable, as the place in which the democracy of Florence first took on a regular form.

In 1250, the Ghibelline nobles had been invested, by Frederick II., with power to be exercised to the exclusion of all other persons, and this oligarchy having imposed heavy taxes, a sudden tumult arose, when the *good men*, as they were called, "assembled here with the determination of taking the power into their own hands, which they accomplished without the slightest resistance." Having made themselves *people*, according to the expressive term of the chronicles, "a resolution of all

derivative powers into the popular will," they elected Uberto di Lucca as *Capitano del Popolo*, and twelve military chiefs, or *Anziani del Popolo*, the leaders of the citizens in arms. Up to this period the Florentines were subject to the emperor; with this revolution began their democracy.

Among the structures of this church, one of the most remarkable is a tabernacle of white marble, surmounted by a statue of the angel Michael, which rises nearly to the roof. It is beautifully finished with the richest marble, laid in as mosaic work. This tabernacle holds a miracle-working picture, of Orcagna in 1348, with offerings made during the great pestilence.

THE DUOMO OR CATHEDRAL.—The decree for the erection of this building was passed in 1294. The length of the cathedral is 454 feet; to the summit of the cross is 387 feet, and the transept is 334 feet long; height of the nave 153 feet, and that of the side aisles 96½ feet. This church, like that of Santa Croce, has a severe simplicity and the dignity of magnitude.

In 1558, an arbitrary ruler, Benedotto Uguccione, tore off the marble of the façade, under the pretence of building it more beautifully. Another façade was begun in 1636, but it has been left unfinished, and to this day it presents on the front a very rude surface, while the rest of the building is faced with polished marble, in alternate colors.

The cupola is the largest dome in the world; it exceeds even St. Peter's at Rome. The pavement of this church is rich in beautiful tessellated marble—red, blue and white—arranged in elegant figures, in the manner of mosaic. More than 600 years have passed away since this venerable church was founded. "This edifice, although commenced long before the revival of the arts, seems to have been conceived by its architect in an original style, forming, as it were, a mean between the pointed and the ancient. It is therefore one of particular interest and instruction in the history of architecture—it was the first that gave the hint for the grandest modern monuments."

THE CAMPANILE, OR BELL TOWER, strikes the observer very forcibly on account of its great height and conspicuous marble sides, banded of different colors. It is square, and rises of the same dimensions, to 275 feet. It was intended to carry it 100 feet higher, a purpose which was not executed, although the decree, in consequence of which it was built, enjoined (1834) that "in height and richness of workmanship it should surpass any structure raised by the Greeks or Romans. This tower cost 2000 florins for every two feet square.

THE BAPTISTERY is very similar to that at Pisa, but is unfinished. It is more than 1100 years old. The massive bronze doors are the same which Michael Angelo said were worthy to be the gates to paradise. The subjects of the bas-reliefs are all from scripture history, framed in rich and graceful borderings of bronze. The interior is ornamented with frescoes by the three brothers Gaddi. Statues of the apostles stand around the interior. While we were in the building, several infants received the rite of baptism; they were taken into the arms of the priest, who not only touched the face of the child with the holy water, but poured it copiously upon the back of the head, holding the face downward over the font. The average number of baptisms is about 3500 a-year, or nearly 10 a-day, and the rite is performed as soon as possible after birth, when the child is only a few hours old. Such exposure would be esteemed dangerous with us.

THE MEDICEAN GALLERY OF FLORENCE—THE UFFIZI.—The building containing this immense museum of the arts, is in the form of a parallelogram, two of the sides being united at one end by a cross and the other end being open. I have seen nothing that can compare with this museum for richness and extent, except the Barbonaco and the Vatican. Many hours are consumed in simply walking through its galleries and rooms, with scarcely a stop, except for a moment, here and there. This splendid museum is almost the Vatican over again, although with some important variations and additions. It was founded

by the family of Medici.\* An ancestor of the family, in 1378, espoused the cause of popular liberty in opposition to the aristocracy, and the favor of the people was transmitted to his descendant, Giovanni, who was gonfalonier (chief magistrate) in 1421. His son Cosmo was born in 1389. He was the head of a commercial establishment, which had counting-houses in all the great cities of Europe and in the Levant. At the same time, he cultivated literature with ardor. His palace, one of the most sumptuous in Florence, was the resort of artists, poets, and learned men.

The wealth of Cosmo de Medici was always at the service of his friends. There were very few poor persons in Florence to whom his purse was not open. The successors of Cosmo acted in the same spirit, and their buildings and institutions remain to this day.

The Medicean museum, established in a permanent building, is a signal example of their intelligence and liberality. It is kept in perfect order, and may remain to distant generations, a monument to the honor of the family. The busts of the Medici line the grand entrance hall of the ducal gallery; and it is lamentable to note the decline of intelligence so plainly visible in the later heads.

STATUES AND BUSTS.—We were surprised to find here so very large a collection of antique statues and busts, chiefly Roman, and entirely similar to those which we had seen in such great numbers in Rome and Naples. Emperors, Consuls, Vestals, and Roman wives, and mothers, and daughters, again passed in review before us. There we saw the originals of those famous statues, the boxers, the dancing faun, the Apollo and the Venus de Medicis; of the two latter especially, innumerable copies have been made, until they have become familiar objects all over the civilized world. The pictures in this museum are reckoned by thousands, of which a vast number are portraits, while there are besides numerous large compositions. I will, however,

\* For a full account of the family, see Roscoe's history of the revival of letters and arts in Italy.

name only one; it is the adoration of the Magi while beholding the infant Saviour. He lies, a naked babe, in the lap of his beautiful and delighted mother; there is no other light than the effulgent glory which emanates from the divine infant, and as the six wise men eagerly stoop to gaze upon him, their features are illuminated by a celestial radiance.

One who has not seen them, can hardly imagine how many pictures there are of the nativity—of the mother and the Saviour, of the Madonna, and of the crucifixion. Magdalens are without number; and generally, subjects derived from the Scriptures, and religious traditions of saints and martyrs, are exceedingly numerous—all Catholic churches are more or less adorned with them. Statues are hardly less numerous, and thus the fine arts of painting and sculpture have been effectually fostered by their association with religious edifices.

PRIVATE CABINET OF THE MEDICI.—There is one department of the collection which is almost unique; it is the private personal cabinet of the Medici, which contains very rare productions both of nature and art. There are here rich collections of the gold ornaments of the Etruscans as well as of the Pompeians and Herculaneans, such as we had before seen in the Vatican and in the Barbonaco Museum at Naples. All that I have said of gold rings, bracelets, brooches, chains, fillets, pins, decorations for the bosom and the head, and every part of the person, with the addition of gems, and in the most beautiful style of art—in a word, all my former remarks on similar things, may be repeated here; and although many of these decorations have survived their former possessors, from one to two, perhaps, in some instances, three thousand years, and have been taken chiefly from the tombs, the gold has not become dim, nor has the most fine gold changed.

The personal ornaments of the Medici, preserved in two flat cases, are of the richest description. The gold, in various modes of setting, encircles the most beautiful precious stones and gems—agates, heliotrope, turquoise, opals, pearls, rubies, emeralds, sapphires, and diamonds. It is a pleasure to

look at them, rich as they are in themselves, and in the elaborate settings, some of which are by Bevenuto Cellini.

Still more splendid, if possible, and certainly more extraordinary, are the contents of four large glass cases, connected at the edges of the glass, without cross-bars to intercept the view. They contain vessels wrought out of rock crystal, so perfectly transparent, and without seam, spot or flaw, that their beauty equals, if not exceeds that of the most perfect glass. These vessels are goblets, urns, &c., of a pint or quart in capacity. They are mounted in gold, and bas-reliefs are wrought upon their sides, in the manner of cameos.

On a casket of rock crystal are engraved in exquisite beauty the events of the passion, in seventeen compartments. The artist, Valerio Vicentino, was assisted by his daughter in this astonishing production of nature beautified by art, which was given by the Pope to Francis I. as a nuptial present, his son, Henry II. having married the niece of the Pope.

There is here also a vase, fourteen inches in diameter, cut out of lapis-lazuli. In addition to the rock crystal and lapis-lazuli, there are vases of agate, carnelian, jasper, chalcedony, and ornaments of various kinds wrought out of hard and beautiful stones. The attention of the mineralogist is also attracted by a series of antique busts worked from amethysts, chalcedonies, and turquoise, and cameos exhibiting portraits of Vespasian, Tiberius and Livia, Augustus and Galba. The triumph of Cosmo I. after the siege of Siena is a splendid cameo—and Cupid riding upon a lion is another. There is a table, two feet square, of lapis-lazuli, inlaid with the most beautiful stones, so as to produce landscapes, and marine scenes with boats. The four principal cases are so arranged that those opposite have, as nearly as possible, counterparts, rock crystal answering to rock crystal, lapis-lazuli to lapis-lazuli, &c. The small apartment which contains these things is supported by four fine columns of alabaster, and four of verd antique.

FLORENTINE MOSAIC.—There is in another room a table apparently about four feet in diameter, constructed of the most



beautiful Florentine mosaic, which is made, not with colored glass, like the modern mosaic of Rome, but with the natural colors of hard and beautiful stones; and the shading and transitions are produced by a judicious selection of the colors. This table is adorned by beautiful ornamental figures inlaid in a dark basis. In these rooms there are several smaller tables of the same workmanship. The Florentine mosaic is the same with the "*opus sectile*" of the Romans. It is very expensive, but very enduring. There are works of this kind now in progress in the grand ducal manufactory, which, as we are assured, will be superior to any heretofore produced.

We have been looking into the private shops, where the Florentine mosaic is made, and, lastly, into the grand duke's national manufactory.

As hard stones are to be cut and set, the process is very slow, and, therefore, this kind of mosaic is very dear. For example, a table of porphyry is to be inlaid with agate, carnelian, lapis-lazuli, or other beautiful stones. The table itself, which is as hard as quartz, is to be bored, drilled, or cut, where the foreign pieces are to be inserted; and these also are not only to be cut so as to fit, but they must be assorted to the figure as regards color and shading. One would think it impossible to accomplish such a task; but it is done with the most perfect success, so that extremely beautiful pictures are produced. Perhaps they are plants, or insects, or quadrupeds, or landscapes, or any thing else copied from nature or dictated by fancy. We are astonished at the result when we contemplate the means by which it is produced. We saw the artists cutting and drilling with emery powder, and they were sawing the hard stones with an iron wire, carrying also the same material. In such labors patience must indeed have its perfect work.

We satisfied ourselves with some very simple specimens as souvenirs of this wonderful art. The prices demanded for this species of mosaic are princely. A round table, about two feet across, most beautifully figured, was priced at a thousand dollars. Upon this scale of price, some of the large and mag-

nificent tables in the great galleries must have cost from ten to twenty thousand dollars. When the picture is formed, the surface, with all its inserted pieces, is polished uniformly; and when finished, it is not only an astonishing production of art, but it is destined to perpetuity, as it will never fade or undergo any change, unless cracked by violence or fire; and except for the effect of such accidents, it will be as perfect a thousand years hence as now.

In the rooms of the ducal manufactory there were some splendid tables, and all around there was a great store of materials ready for use. Agates, carnelians, onyx, petrified wood, jasper, lapis-lazuli, and other colored hard stones, and malachite, cut into thin slices, were assorted on shelves ready for use. I have been astonished at the magnitude of some of the slabs of lapis-lazuli: they were two feet or more in diameter, while it is rare that we see them in cabinets of mineralogy of more than a few inches.

MUSEUM OF NATURAL HISTORY AND ANATOMY.—This admirable establishment does great honor to Florence, and to the present grand duke, who is its liberal and efficient patron. It occupies numerous rooms in a very large building, and is judiciously divided into departments. The elementary mineralogy and geology, including fossils, are on an ample scale. The specimens are generally good, and some of them are very fine. There are well written labels attached to all, and secured to a golden ledge or rib, which without hiding supports the specimens. There are fine tourmalines from Elba, superb crystals of yenite from the same island, and a magnificent mass of flos ferri (stalactitical arragonite) from Styria.

A large meteorite, whose volume would imply a weight of 150 pounds, is without a label, and is placed in a situation so dark and obscure, that it might have been passed by unobserved except by those whose eyes are sharp for such things.

The department of birds is very beautiful, and they are in perfect order. The same is true of the zoology at large, including the fishes; but the latter department is more limited.

Entomology is well represented by a large collection of insects, systematically arranged in classes.

**MODELS IN WAX.**—The principal glory of the museum is seen in the peculiar production of Florence—the wax models illustrating anatomy. The models fill many rooms. The first rooms are devoted to the anatomy of plants. It is surprising to see how perfectly their structure is displayed through the arrangements of the stem, and the flowers and seed-vessels, up to the perfect plant. In some respects the models are superior to nature, inasmuch as they display the structure more perfectly than it can often be seen in the living plants.

Comparative anatomy follows, exhibiting the structure of fishes and quadrupeds. The stomach, the intestines, the lungs, the brain, the bones, the bloodvessels and nerves are displayed with great beauty and perfection. The cephalopods,\* with their prehensile arms and cusps, their large and prominent eyes, their strong and carnivorous mouths, and even their ink-bags and pens, are not forgotten.

But man is the great object. His noble form is fully displayed, including the smallest bone and articulation of a finger or toe—all the individual bones are separately exhibited, and all are again united to form his perfect framework, as it is seen in the entire skeleton. Then follows the progressive investment of muscles, progressive until the skeleton is completely clothed, and furnished with powers of movement, and with all that is necessary, both within and without, for the discharge of every function. All the individual parts also are shown in separate dissection—the alimentary organs, the vascular, respiratory, absorbent, and nervous systems, are displayed to perfection. Nor is man's more delicate counterpart forgotten. All that is peculiar in her structure and economy; all that belongs to the first germ and progressive development of the hu-

\* A name from the Greek, imposed by Cuvier, implying that their organs of motion are about the head. The cuttle-fish (the squid of the sailors) is an example.

man form, with the trials, dangers, and suffering incident to the hour of sorrow, and the protection which it demands—all are recorded with the precision and fidelity, and with the exact science and consummate skill, which so high a duty requires.

The anatomical models of Florence are famous through the civilized world; and many figures from this city are in the museums of the United States.

THE TRIBUNE OF GALILEO.—This noble monumental memorial of Tuscany's greatest philosopher is, however, the central point of attraction in the Museum for the lover of science. It is the most complete, appropriate, and interesting personal commemoration which we saw in Europe. Two large apartments in the most perfect style of Roman architecture, have been consecrated to the greatest genius of Tuscan science. They are joined by connecting arches, forming a rich atrium in the style of Bramante, the antes, pilasters, and floor being encrusted with polished marbles and hard stones, all the produce of Tuscany. At the farthest end stands a noble full-sized statue of Galileo, designed by Asioli, and sculptured by Costoli, Florentine artists. This statue is in full drapery, gathered by the left hand into rich folds, while the right rests upon a pedestal carved with the diagrams containing some of his celebrated propositions. The ceilings are domes, and richly decorated with panels, in which beautifully designed frescoes, in vivid colors, commemorate the noble discoveries of Galileo, and of the other Tuscan philosophers. In one, Leonardo da Vinci communicates before the grand duke and an assembly of admiring listeners, the state of mechanical science in the early part of the sixteenth century. This is the most classic and elegant of all the compositions in fresco contained in the apartment. Others illustrate the first experiment of Galileo on the law of falling bodies, the discovery of the measurement of time from the oscillation of the pendulum, the invention of the telescope, and other subjects commemorative of the discoveries of the Florentine academician. Busts of many of the more celebrated of these rest on pedestals surrounding the inner room, while medallions, in bas-reliefs, of other philoso-

phers and poets fill the spaces under the cornice. In hexagonal spaces between the groinings of the arches are allegorical figures of Nature, Truth, Perseverance, and Physical Science, while corresponding spaces are filled by medallions of Philosophy, Astronomy, Geometry, Mathematics, Hydraulics, and Mechanics. All these are graceful, dignified female figures, seated, and surrounded by appropriate emblems. In the annexed wood-cut is given a copy of one of the frescoes in the anterior rooms. It represents VOLTA demonstrating the immortal experiment of his pile before the French Academy at Paris in 1801. Napoleon, as a member of the Institute, views with the most interested attention this novel experiment. Monge, Berthollet, and Vauquelin surround him. Fonuroy looks on with wondering delight, while La Place, Lapede, Cuvier, Legendre, Morveau, and Biot are recognized among the crowd of illustrious spectators. Tuscany has good occasion to be proud of her great names in art, science, and literature; and all who visit this delightful Temple of Galileo must feel that the present grand duke is deserving of praise for this monument, however we may regret his espousal of principles since the revolution of 1848, so hostile to the best interests of his people.

In glass cases on the sides of one of the rooms are preserved several instruments ever memorable in the history of science. We saw the very telescope which Galileo first constructed—a simple tube of wood, with a double convex lens; and the large burning-glass by which the diamond was burned before Cosmo de Medici.

In one of the cases, and near the instrument to which it refers, we found the following, as we believe, in Galileo's own handwriting: "*Astrolabium Arabicum ex Hispania delatum, et paratum eo tempore, in quo equinoctium verum hærebat in die 15 Martii, id est anno Christi 1252, quo Alfonsus Rex Hispaniarum restituit motus celestes.*"

Milton visited Galileo in his house, which is still standing, and designated by a Latin inscription; and from his tower at



Volta before Napoleon at the French Institute



• • •

Fiesole the astronomer made those observations to which the great poet alludes, when he says, that Satan's shield

“ Hung o'er his shoulders, like the moon, whose orb,  
Through optic glass, the Tuscan artist views,  
At evening, from the top of Fiesole,  
Or in Valdarno, to descry new lands,  
Rivers or mountains in her spotty globe.”

This observatory is still preserved in the Torre de Gallo, near the hill of Arcetri. The tower is not much altered, but is now annexed to some farming buildings.

The story of Galileo's persecution is well known. Being called by the Pope to Rome in mid-winter, when old and infirm, his works were condemned, he was imprisoned in the dungeons of the Inquisition, and was compelled to renounce his alleged errors, before an assembly of monks, as ignorant as they were intolerant.

He was obliged to kneel, and, with his hand on the Bible, to repeat a prescribed recantation: “ *Corde sincero et fide non ficta abjuro, maledico et detestor supradictos errores et hereses.*” \* But as he arose, he indignantly stamped with his foot, and exclaimed, “ *E pur si muovo,*”—and yet it moves.

This disgraceful farce was acted June 23d, 1633; but it ended in his being remanded to the prisons of the Inquisition; the sentence was, however, commuted to banishment to the Episcopal palace of Sienna, and afterwards to Arcetri near Florence, where he died in his 78th year, almost blind, and worn out by persecution and suffering.

AMERICAN SCULPTORS.—Florence, to American minds, has long been associated with the names of Greenough and Powers. Clevinger, a western American artist of great promise, enjoyed only a brief Italian career; and Ives, from New Haven, is supporting worthily his country's fame. Mr. Greenough is in America, but we called on Mr. Powers and Mr. Ives, both of

\* See Galileo's recantation more in full in my Appendix to Baskwell's Geology.



whom we found with compass and chisel in hand. Mr. Ives we had known at home, but we had never before seen Mr. Powers. He received us with great cordiality, and his manners were so frank and winning, that he did not allow us to feel that we were interrupting his work.

It is not quite fair to communicate even to one's friends, much less to the world, all that an artist in his studio, in implied if not in express confidence, kindly imparts, of his doings and his plans, and I will not transgress in a point in which travellers are sometimes too free.

The Greek Slave of Mr. Powers is universally known both in America and in England, and it is now on exhibition at the Crystal Palace in London. The artist has retained a copy of the beautiful head and bust. He has also in hand, and far advanced, two allegorical full-length female figures: America symbolizes patriotism, love of liberty and of God, attachment to the Union and hatred of despotism. How a mute lady can tell all this, without even making a sign, is easily understood; when we see the splendid form, whose high destination relieves one from the painful sympathy with which we view the lovely Grecian victim in chains.

California, the other female figure, will have a freer and wilder bearing, adapted to the far-off Pacific shores, and to the golden visions which there rise in waking dreams. It is to be hoped that the American government will not forget an artist of such high merit as Powers, and that they will place his works, side by side, with those of Greenough and Crawford, whom they have already fostered.\*

In the studio of Powers, we at once recognized the plaster-casts of John Q. Adams, Marshall, Calhoun, Webster,† and Van Buren, and others of our countrymen; and there are many more unknown to me, and of both sexes, from our side of the

\* When this sentence was penned I little dreamed that Mr. Greenough's course was so soon to be finished; I saw him at Washington just before our departure for Europe.

† The four first, alas! are now dead, November 12, 1852.

water. At present, Mr. Powers is engaged in the very honorable duty of preparing busts of the reigning grand Duke and Duchess.

I learn from him that he no longer employs the Carrara marble in statuary. He began with it fourteen years ago, but he finds it less perfect than the marble of Seravezza, in Tuscany, about 60 miles from Florence; this, he says, is the finest and the purest marble known.

He has also rediscovered a forgotten quarry in the Maremma, formerly wrought by the Romans; it is a coarse marble, like the Parian, but less translucent. This is the marble usually called by the Roman virtuosi, Grecian marble. It answers very well for larger figures, and Mr. Powers has sculptured a Washington from it, and a smaller and more beautiful one from the Seravezza marble, both of which we saw. We had the pleasure of an interview in the family rooms with Mrs. Powers and her children. She is a sensible and agreeable American lady, and secures a cheerful and happy home for the artist; a *reality* of domestic enjoyment which, after all the fine *ideality* of the sculptor's art, comes home more to the heart than the eloquent and speaking, though silent, figures in marble can do.

The family of Mr. Powers have little familiarity with the people among whom they reside, and the greater part of his patronage is derived from other European countries or from America. The family do not appear to be at all Europeanized, or to have lost their American attachments, and they do not relinquish the idea of returning to their country for a permanent home. Mr. Powers is in the meridian of life, and it is to be hoped will long live to do honor to his native land. He was a native of Woodstock, in Vermont.

We found Mr. Ives at work upon a fine female form, an allegorical figure of a lady well known to fame, who holds in her hand a casket full of evils, and long renowned as the box of Pandora.

The work of Mr. Ives—a self-taught artist\*—is beautiful, and

\* From our own classical city.

if he had done nothing more than to preserve the noble head and features of the Rev. Jeremiah Day, late President of Yale College, he had deserved well of his country, and I do not hesitate to say, although no artist, but after having seen many hundreds of marble statues, both ancient and modern, that the bust of Day by Ives is worthy of a place in any collection of statuary in Europe. It has more than the merit of fine sculpture; it has the ideality of the living man, and will stand with posterity as the embodiment of wisdom and goodness after they shall have been exalted to a higher sphere.

Mr. Ives was unfortunate in the loss of a bust of the Rev. Nathaniel Taylor, professor in the Theological Institution of Yale College. The vessel was wrecked about three weeks before our interview with the artist. The statue of Mr. Calhoun, by Crawford, it will be remembered, was also, a few years ago, buried in the sands beneath the sea, on the coast of America, but it was recovered with the loss of an arm.

### Return from Florence to Pisa.

June 16, 1851.

When we returned to Pisa after our visit to Lucca, on the 10th instant, we engaged rooms in our hotel, with the intention of visiting Pisa again, for the purpose of seeing its scientific collections and some of the professors, whom we had missed on the former occasion. We had it also in view to be present at a great triennial fête soon to take place, in honor of St. Renaria, the patron saint of Pisa.

Accordingly, our entire party resorted to the early train of cars, which was already filled by well-dressed and joyous people, young and old, who were in buoyant spirits, in expectation of the coming fête at Pisa, to which city they were going. The crowd was so great that many were standing, and when the train, with a sudden jerk in starting from the different stations, threw many of them backward, there was a loud shout of

merriment, especially from the girls, and the gallant young men were no way loth to sustain the falling damsels.

In looking around we could hardly see any difference in complexion, dress, countenance, and manners from our own people at home; all were mirthful and talked incessantly, for none were grave. It was a pleasant exhibition of the average population of the middle classes—there were no high officials, or nobility, or titled clergy, but *the people* themselves, who, careless of government affairs and fond of amusement, were now assembled promiscuously, on a lovely morning in all the brightness of an Italian June, and with faces as unclouded as the heavens above their heads. Among them there was a good proportion of comely people, and some of the girls were blooming with New England complexions, but not veiled by New England gravity and reserve. So, on we went with this jocund party, amused with the development of character, and gratified by the view of a splendid country in high cultivation, most of which was hidden from our sight by the darkness of night when we passed this road before, on our way from Pisa to Florence. At half-past ten o'clock we were reinstated in our reserved rooms in the Reverado Hotel on the bank of the classical Arno. Rooms were in great request on account of the approaching fête, and without a pre-engagement we could scarcely have been accommodated at all, or only at an enormous expense. We had retained all our rooms except one bed-chamber, which a Prussian nobleman eagerly took at twenty dollars for the occasion. For our own apartments we paid forty dollars for a night and a day.

PROFESSOR MATTEUCCI.—We had been invited to breakfast with this eminent philosopher, at his Villa Carliana, four miles out in the country, but our limits of time would not permit us to accept the invitation; some of the gentlemen of our party, therefore, met both him and his lady at the rooms of the physical department in the university, and passed a very agreeable morning with those interesting people, who treated us with great kindness. The lady is from Edinburgh, and both her Eng-

lish tongue and her early sympathies were quite in harmony with my own; for I could talk with her feelingly of good old Scotland, and of Edinburgh, which in my youth I loved, having passed there five very happy months, and I had never been estranged from the warm-hearted Caledonians.

Professor Matteucci enjoys, deservedly, a high reputation throughout the scientific world, on account of his able researches and writings on general physics, and especially in animal electricity. He is a man of noble person and cordial manners—a true Roman, or rather a Tuscan of Galileo's stamp. He is charged with the telegraphic communications of Tuscany, which are conducted exclusively for the benefit of the government, and the wires are not accessible to private individuals. How long would such a system of wires, thus monopolized, remain intact in our country? Professor Matteucci is, however, privileged, for his own personal correspondence. At Florence we received and answered a note from him by telegraph at the distance of fifty miles. He has a fine apparatus in the physical department, which we saw.

PROFESSOR MENEGHINI IN THE UNIVERSITY.—The gentlemen of our party passed the afternoon in the University with the eminent professor of mineralogy and geology. For more than three hours, he was very kindly and zealously employed in exhibiting and explaining specimens, some of which, especially many of those from Tuscany, and some from Elba, were new to us. Professor Meneghini gave to my younger companions a beautiful suite of minerals from Elba and other places; and they were bestowed with the freedom of a warm friend, as well as with the spirit of a liberal-minded man of science. His department is extremely well filled out, and is particularly rich in Tuscan and other Italian minerals and fossils illustrating *geology* and *palaeontology*, as well as *mineralogy*. What adds very much to the utility of the collection is that the specimens are well arranged and labelled. Each piece lies on a block of wood, to the front of which the label is attached. This department of mineralogy and geology is only a portion of a vast

collection in all branches of natural history, and in comparative anatomy. All that I have said of the museum at Florence is true here, with the exception of the department of wax models, which is more limited. But as regards the anatomy of animals, the deficiency is in some respects more than supplied by preparations of the animals themselves. Every thing is perfect in its kind, and put up in the best possible manner. It was really delightful to walk through the numerous rooms. In America, we have nothing equal to the collections in Florence, Pisa, and Paris; but the cabinet of mineralogy in Yale College would be esteemed a rich collection were it in a European university; and the Academy of Natural Sciences in Philadelphia is entitled to a high rank even in Europe. Professor Meneghini showed us a specimen of pisolite in which the concretions were as large as a bullet of the largest size; and they showed the usual concentric structure in a very perfect and beautiful manner. What appeared very extraordinary, they were inclosed in crystallized calcareous spar, and even in compact limestone.

Some of the fossils of the geological collection were also very remarkable. There were jaws and bones of the fossil elephant and of the mastodon, from the valley of the Arno; and from the same region there was a very large head of the fossil hippopotamus, besides other bones of that animal. There was also a great number of tusks of elephants, which were discovered in cutting the railroad between Florence and Pisa. Bones from the caverns were also remarkable. The head of a cavern bear justifies Cuvier's remark, that the cavern bears were as large as an English hunting horse. An indubitable petrified snake, of small size, was attached to a tertiary rock; and worms, some of them giants of their race, were adherent to a tertiary limestone rock, or inclosed in it. We must not leave Professor Meneghini without mentioning his predecessor in office, Professor Pila, who, during the popular struggle in 1848, fell in battle. He took sides with the patriots, and was

cut down in the morning of life. He was distinguished in his professorship, and was the author of valuable original works on the geology of Tuscany. Men of learning in the continental universities have been generally friends of liberty.

### A Fete.

June 16, 1851.

*Twilight before Evening.*—I should enlarge somewhat more upon the beautiful museum, and mention other interesting particulars, were it not that the town is now all alive with moving and animated thousands, many having come into Pisa from the country around. The crowds form almost a dense mass of human beings, covering the bridges and the wide streets along the river. As I wrote this notice while the events were passing, I shall preserve the language as it was entered at the time in my journal.

Half an hour ago, the grand duke, Ferdinand II., with the duchess, drove into the town, followed by their suite; and as they passed in front of our hotel, and near to it, with hats off, and in open carriages, we saw them distinctly from our windows. The duke, with a gray head and gray whiskers, appears like an old man, but has no marks of imbecility. He bowed repeatedly to the people as he passed; but there was no manifestation of enthusiasm;—there was no hurra;—no God save the duke!\* and heads remained generally covered.

I must now stop writing, as the town is bursting into a blaze of glory from ten times ten thousand lamps, which dazzle my eyes, as daylight declines, and I am catching too much of the popular feeling to write any thing more at present.

Quarter past ten P. M. The illumination is now at its height.

\* The duke was formerly very popular, as he was believed to be a friend to the liberties of the people; but having proved faithless to their cause, by conniving at the despotism of Austria over northern Italy, he is no longer regarded with favor by his subjects.

Windows, arches, doors, colonnades, porticoes, cornices, and balustrades; the sides and arches of the bridges; the whole line of the river, for two miles on both sides; the numerous boats flying upon the stream; the towers of palaces, and towers and pyramids erected for the occasion; the famous leaning tower to its highest arch; the great cathedral, in its lower windows; public squares, churches, and hotels, are now in one universal blaze, from double rows of lamps that fling their radiance over the city and its beautiful bow-like river, and seem to illuminate even the heavens. Ornamental figures of light; circles, with their effulgent radii and periphery; stars, crowns, triangles, and festoons, and innumerable other ornamental forms, give diversity to an exhibition whose overwhelming splendor and intense beauty far exceed my powers of description. Our hotel is in the centre of a large sweeping curve made by the river, and the streets which follow it; and thus, looking from our open windows in the third story, we are dazzled in every direction by this gorgeous display.

Having walked for an hour in the principal parts of the city, and among the dense crowds in front of our hotel, we find the illumination general, and the moving flood of people is in most places equally full. Cavalry, in splendid uniform, are every where to be seen on their horses, with drawn swords; and infantry, with fixed bayonets, are at the corners of all public places. Martial music is playing from a military band marching up and down the streets and squares, and long lines of elegant carriages move slowly through the crowd. The horses are of fine form, and in perfect training; the servants are in splendid livery; and more attractive than all the rest of the pageant, beautiful women in tasteful costume, grace the open carriages, and display their features and forms at the open windows of the houses, in a warm night of an Italian June. We had not seen so much female beauty in Europe before, and we could almost feel that we were among our own fair countrywomen at home—for here the most beautiful and elegant women are not seen in the streets of the cities, as with us. On the



continent they rarely mix with the masses, and we are satisfied that very erroneous impressions would be received by the traveller who sees only the humble and often laborious and over-taxed women, who frequent the fields of the country and the thoroughfares of cities. The moon, nearly full, has just risen in a cloudless sky, and now looks down with mild effulgence upon this scene of man's humble emulation—a scene which in a few hours will pass away, while her silver light, which for ages has beamed upon the world, will never go out.

In November, 1805, I saw the great illumination in London in honor of Lord Nelson's victory, off Trafalgar, over the combined fleets of France and Spain. That illumination is the only one among those which I have seen, that can compare with the one now blazing around me, and throwing over this city a scene of enchantment. But it is not draped with sorrow as was that in London, where naval emblems, anchors and warlike prows, and Nelson's name in letters of fire, reminded the spectator that it was an illuminated mourning. The nation mourned for her naval hero, and multitudes more bewailed their friends, slain with their veteran commander in the hour of victory.

I have again looked out at the windows, and am more delighted than ever with this fairy scene, which this bow-like river presents to great advantage. The palace of the grand duke is illuminated by candles, instead of lamps, and there are peculiar figures of light to distinguish the ducal mansion.

In the beginning of these remarks I hinted at 100,000 lamps; I now believe that ten times that number would still be within limits. The cost is to the city 25,000 dollars. As to the saint, I suppose the people neither know nor care much about him. This fête is to be regarded as a *grand spectacle*, got up to amuse the masses, and to keep them in good-humor with the government and the priesthood.

*Eleven o'clock, P. M.*—Again I look out upon a scene which I never expect to see equalled. The gentle breeze,

which the heat of the lamps has created, now produces a flickering of the flames, which adds much to their splendor, without extinguishing any of them.

*June 16th, 6 o'clock, A. M.*—After a brief slumber, I rose at half past one o'clock, A. M., and all was still in full brilliancy; the people were clustering in compact groups, and great numbers passed the night in the streets; indeed, in my half-waking sleep I heard their outbursts of vociferous joy, and when, at my usual morning hour, half past four o'clock, I rose for the day, the throngs still hung around, and most of the lamps visible from my window were still burning; but their diminished light faded away before the Orient sun, now coming forth in all the glory of an Italian summer morning.

REFLECTIONS.—As in the journal which I wrote in Europe in my youth (1805-6), I was sparing of political remarks, I have generally preferred to avoid them in this journey. The interest they excite is often transient, and the course of events is frequently so different from the predictions of politicians, that human sagacity is mocked by the result. In the very interesting position in which our travels have placed us in Italy, we have not, however, been indifferent observers of what was passing around us; we have not exhausted our sympathies upon pictures and statues, and have felt that the welfare of living men and the hopes of posterity were of more value than all the productions of the fine arts. The few suggestions which I shall now make are derived not more from our own observations, than from the superior knowledge and opinions of enlightened people, both native and foreign, to whom we have had access.

Lombardy, in the north, and the three southern divisions of Italy—Tuscany, Rome, and Naples, including Sicily—are now subjected to a rigorous military despotism, without a shadow of political liberty; and personal freedom and security are entirely at the mercy of those who rule. I have already mentioned, that the many thousands of prisoners now confined in the dungeons and fortresses of Naples and the Papal states, fre-

quently on suspicion only, are hopelessly immured; there is no habeas corpus; they are usually ignorant alike of the accusation and of the accuser, and there is little hope of release except from revolution or from the relenting of despotic power. The faithless and perjured king of Naples provoked his people to take up arms, because he virtually annulled the constitution which he had given them, and he closed the doors of the parliament house, as I have already mentioned, against the representatives of the people, when they attempted to assemble to organize the government.\* I have already mentioned the infliction of military vengeance upon Messina, Catania, Palermo, and other places by the royal Neapolitan armies, which, after opposition had ceased, were let loose upon the people to pillage their property, burn their houses, and insult their persons. An Italian gentleman apologized for the king, by saying that he had evil counsellors, and was himself more stupid than wicked, being also very illiterate; but experience has shown that stupidity, ignorance, and wickedness are often associated in the same individual, who may then be managed by the art of those who are equally wicked but more sagacious. The king of Naples would not be safe in his own dominions, were he not sustained by a powerful army of disciplined troops dispersed over the kingdom.

All the world knows that Rome is again a conquered city, and we saw, when in the castle of St. Angelo, in sight of St. Peter's and the Vatican, that artillery, loaded and pointed by French cannoneers, menaced destruction upon the slightest appearance of a popular movement.

The apology for the aggression of the French is, that they hold Rome for the Romans, against Naples on the one hand and Austria on the other. This painful truth only proves the forlorn condition of the Romans, as regards personal and

\* These facts were stated to us on the best authority, and their truth has been since fully confirmed by the well-known publication of the Hon. Mr. Gladstone in England.

political liberty. They have to sustain the incubus of their own priestly government, the insulting domination of a foreign army, and the menace of two powerful kingdoms, should their Gallic masters be withdrawn.

Is Rome sustaining these heavy inflictions as a just retribution for her ancient invasion, spoliation, and subjugation of all the then accessible world, and for her cruel spiritual inflictions in later eras, since she has acquired a magical sway that still exerts an influence, as powerful as it is mysterious, over many millions in foreign lands, as well as in her own dominions?

The Papal government is in the hands of the cardinals, who manage as they please, but the priests, from their having taken sides against the people, are now so odious, that, as we were assured, the charm of priestly influence is dissolved, and that nothing but opportunity is wanting to throw off finally this odious and oppressive sway of wicked men, among whom, however, as I trust, there are, still, individuals who fear God and love their fellow-creatures.

*June 17.*—As we have travelled, I have read again Sismondi's Italian Republics. The Italians, especially in northern and middle Italy, have contended long and bravely for freedom, and have made immense sacrifices to obtain and secure it, especially against the German power, which for eight centuries has waged a sanguinary warfare to establish a permanent dominion in Italy. Austria still holds Lombardy as a province, and Tuscany, with Austrian troops in her cities and fortresses, and Austrian counsels in her state policy, is little better than an obsequious vassal.

But the old Italian love of freedom is not extinct. In Tuscany, especially, as in Sardinia, there is a great spirit of liberty; at present it slumbers in Tuscany, but it will again awake whenever there is a fair prospect of success.

The present duke granted a constitution to his people, but, alarmed at the popular movements, he retired from his dominions and took refuge with the pope at Gaeta. When the

Tuscan parliament met, they wished to place the duke at the head of a constitutional government. For this purpose, a committee was sent to Gaeta to invite his return; we have become acquainted with a distinguished Tuscan gentleman who, as a member of the senate and of this committee, waited upon the duke at Gaeta, and while he tendered the invitation, he accompanied it with a decided expression of his opinion that he should return, *as a constitutional king*, and such was evidently the expectation of the people. He did return, but it was to reign as before. The people have hitherto been disappointed in their expectation of constitutional liberty, although it is pretended by the court that the constitution is still alive; but if the principle of life is not extinct, it is evidently in a deep lethargy. The people are thus aggrieved and even exasperated, not only by this violation of good faith, but because many thousands of Austrian troops are quartered on Tuscany; and the feelings of the people are exceedingly chafed by seeing these Germans in full armor parading the streets of their towns, and ready to put down insurrection, a duty that might not indeed be so safely confided to native troops, whose sympathies may be with the people.

The Austrians are maintained by the Tuscan government at an enormous expense. Personal liberty is however more secure here than in Rome and Naples, and we hear little of state prisoners, except the three young Englishmen who for some acts of imprudence in distributing obnoxious papers have been placed in jeopardy of their lives.\* Tuscany appears, however, to be a prosperous country; the people appear generally comfortable, cheerful, amiable, and kind.

The civilized world owes much to Italy, not only for the efforts and sufferings of its people in the cause of freedom, but

\* After much effort and powerful interference from England, as they were of a high family, they have been released; but from recent accounts religious persecution appears to have taken place of political, as is attested by the well-known case of the Madai, released at last, but exiled.

also for the preservation and revival of learning, for the culture of the arts both of utility and ornament, and for noble discoveries in science. Were they not under the pressure of the great powers, whom they have no ability to resist, they would soon return to freedom and self-government.

Tuscany is a beautiful country, and liberty is not quite dead, for we feel that we here breathe a different atmosphere from that of Rome and Naples. Except the beggars who besiege the doors of our hotel, and watch our egress and return, the aspect of the people is good. We have been much impressed with the fact, that in the great gathering of thousands on thousands at Pisa, there was no disorder. All, in great good-humor, moved quietly about, joyous and delighted with the splendid pageant.

It strikes us also very forcibly, that there are no drunkards visible. In all our wide wanderings *on the continent*, we have not seen any individual who appeared to be decidedly intoxicated or even unduly excited. The low wines which they drink do not appear to be dangerous to sobriety, for they are so very weak that a large quantity must be taken, especially by those accustomed to them, in order to produce intoxication, and they are not sufficiently inviting to create much danger.

We have met with universal civility and the most respectful and attentive manners, both from masters and servants, at all our various temporary homes; and in all the superior classes of society there has been exhibited not only great respectfulness but the most marked kindness. Among men of science in particular, we have been gratified by the great cordiality and liberal feeling manifested towards us every where, and especially in Italy. On this point, there was no distinction between Sicily, Naples, Rome, and Tuscany. While, as men devoted to science, and coming from a far distant continent, beyond the broad Atlantic, we have been warmly welcomed, we have never been permitted to feel for a moment that we were strangers. Men pursuing liberal knowledge appear to form a republic of science and letters in all countries, whose members are every

where recognized as having claims to kindness, and to useful as well as agreeable attentions.

### To Florence again.

June 17, 1851.

On the evening of the day succeeding the fête at Pisa our party returned to Florence, where much remained to be seen.

Italy is so affluent in works of art that it is impossible to see them all in a few months, nor, indeed, is it necessary. As happens in every department both of nature and art, we must be satisfied with a selection of some of the most interesting specimens, and pass rapidly over, or even pass entirely by, the great mass.

When we shall leave Florence two days hence, we shall feel, however, that we have only begun to see its treasures.

THE PALAZZO PITTI.—One of our first objects was the Palazzo Pitti, which was named after the individual Luca Pitti, who was its founder. He was, I believe, distinguished only by his wealth, and his ambition to rival and excel the Medici, who, at the time of his laying the foundations of this building, had become the stars of Florence. Pitti, however, fell into political disgrace in 1466, in consequence of his rivalry with the Medici, and his unfinished palace coming into their hands, is now occupied by the treasures which they collected. I felt the more interest in this establishment from having been long familiar with the well-known folio volumes of prints, copied from the finest pictures, and published by the Tuscan government.

Most of the celebrated pictures in the Pitti collection, as also indeed in the Uffizi, have become familiar to lovers of art by the master-pieces of engraving of which they form the theme, as well as by copies now so commonly seen in our own houses. Such is the Madonna Sedia of Raphael, every where so well known. The original is in wonderful freshness of preservation. The heavenly face of the mother, and the ease of

attitude in all the figures of the group, with the softened tone that age has given to the beautiful contrast of color, has made this one of the most celebrated of the great artist's works. The *Bella* of Titian, the *War* of Rubens, the *Three Fates* of Angelo, and priceless treasures of Andrea del Sarto, Sasafarato, Fra Bartolomeo, Rembrandt, Carlo Dolci, and many others of the great masters of art meet you at every turn. The noble head of Galileo by Rembrandt, conveys a grand impression of the philosopher. But time would fail to enumerate one half the pictures and other objects of art which impress the visitor in the Pitti gallery. Crowds of artists, with their easels, are busy making copies of the most celebrated pictures, often obstructing them from the view of those who are curious to see them. This we observed particularly in Rome, in the stanze of Raphael; and again here we could obtain a good view of some of the more celebrated pictures only while the copyists were gone to dinner.

The *Supper at Emmaus* is one of the most justly celebrated of the pictures of Rubens. Christ is discoursing to two of his listening disciples, who discover their master as he breaks bread. The intense feeling expressed in the faces of the wondering disciples is powerfully contrasted with the Godlike dignity of Him who spake as never man spake.

In the several apartments of this gallery are the most elaborate as well as the largest tables of Florentine mosaic which we have seen, and probably the finest which exist. We were never tired with looking at them, and admiring as well the charming effect of color and form in grouping the various pieces, as the consummate skill with which the work was done. One of the designs presented the tomb of Cecilia Metella; and another small table was formed of a single slab of fossil wood. Numerous beautiful marbles and lesser works of art, as vases of hard stones, and works in gold and silver, attracted our attention.

The domes of the several rooms are profusely decorated with allegorical frescoes, and enriched with gilded stucco. One



cannot avoid a certain painful sensation in viewing these works of art, hung aloft in their aerial perspective, as they are seen only by a constrained effort which cannot be long maintained; and one can never forget how tiresome it must have been for the artist, stretched for hours upon his back, with his work above him.

We presented ourselves at the door of that portion of the palace which is devoted to the grand duke when he is in Florence. It is his town residence. We could not be admitted at that hour, and at the later time mentioned by the guard we were engaged; we, therefore, lost the opportunity. We were obliged to omit also the Palazzo Vecchio, the ancient residence of the Medici. There are several other palaces which we should have been glad to see had our time permitted; that time we should have found, which we had allotted to those objects, had not the succeeding day been devoted to a splendid religious pageant, when all public places are inaccessible. We particularly regretted losing the sight of the Palazzo Vecchio—the old palace—which was founded in 1298 as a residence for the elective chief magistrate of Florence. For ten years, from 1540 to 1550, it was the residence of Cosmo I., who, at the end of that time, removed to the Pitti Palace with his court. The Palazzo Vecchio is now occupied for government offices. It contains a room 170 feet long by 75 broad, very lofty, and very impressive, with faded gilding and elaborate oil paintings, situated in deep compartments. The room was fitted for the assembly of the “Consiglio Popolare,” when an effort was made to restore the ancient popular liberty. There are here several historical pictures representing the victories of the Florentines, especially over the Pisans; and there are many portraits of distinguished sons of Florence. There is a chapel in which is an “altar service of amber, little figures of saints, rosaries, vases, &c., some made of the clear, some of the opaque amber, and beautifully wrought.” There are many statues, and among them is a bronze equestrian figure of Cosmo I., the

founder of the Medicean dynasty, which endured two centuries, from 1537 to 1737.

### Mausoleum of the Medici.

This is in connection with the church of St. Lorenzo. We entered first a room containing two marble tombs of members of the Medici family; upon each is a large sitting figure of the individual whose remains are in the sarcophagus, and on each tomb there are also two recumbent figures, which are allegorical representations of the sleep of death and of the resurrection, and also of morning and evening. They are executed in the bold style of Michael Angelo. There is another mausoleum appropriate to the same family, and called the Medicean Chapel, whose magnificence almost exceeds belief. It was begun in 1604, and it is asserted that its founder, Ferdinand I., intended it for the actual reception of the holy sepulchre. It appears that an attempt was really made to cut the holy sepulchre out of the church of the same name at Jerusalem, and that a fleet was ready on the coast to receive the precious charge, which was considered as the most holy relic in Christendom; but the spoilers were discovered at their work and obliged to fly. Thus disappointed, they converted the building into a mausoleum for the Grand Ducal family. By pacing the room, I estimated it to be fully 100 feet in diameter, and its height is still greater.

The dome is divided into eight compartments; they have a slanting position, in as many inclined planes, which are filled with very beautiful modern frescoes, executed in a style of solemn dignity. The subjects possess the highest moral grandeur; they are—The Creation of Man and Woman, the Temptation and Fall, the Expulsion from Paradise, the Murder of Abel by his Brother, the Birth of the Saviour, the Crucifixion, the Resurrection, and the Last Judgment.

They were executed between 1828 and 1837 by Benvenuti, the director of the academy. The splendor of this mausoleum

is beyond any thing that I have ever seen. Within, the walls are entirely covered by slabs of the most beautiful polished stones, chiefly porphyry (red and green), marbles and jaspers, mixed with agates, producing a grave and princely splendor, which the eye would never tire in beholding.

The armorial bearings of the states of Tuscany, executed in Florentine mosaic, are arranged around the room and upon the cenotaphs. Chalcedony, jasper, mother-of-pearl, turquoises and topazes are lavished in the greatest profusion. When you realize the dimensions of a room as large as the Rotunda of the Capitol at Washington, covered on all its interior with the most beautifully polished incrustations of hard stones such as I have mentioned, and tablets also of many other kinds, which reach continuously to the height of the dome, you will then obtain some conception of that magnificent temple of the illustrious dead which I am endeavoring to describe. Within this vast space only four tombs of the Medici are as yet erected; they are large sarcophagi of red porphyry, elevated upon the sides of the room.

One is astonished at the immense expenditures of this family; they are to be reckoned, I am persuaded, by millions upon millions of dollars. Still this mausoleum of unparalleled grandeur and beauty has only a poor brick floor, and that is worn into unsightly hollows; the entrance by the door is in rude stone-work, and the front of the great church of Lorenzo, of which this cemetery is an appendage, is in the roughest condition imaginable. The frequent recurrence of such omissions in grand buildings in Italy, is doubtless to be attributed to the failure of means. At Genoa, in Lucca, in Florence, and in other cities, we have seen similar instances; the outside, or perhaps only the front, is rude as a brick-kiln, while the interior is adorned most sumptuously.

### Pageant of Corpus Christi.

June 19, 1851.

We have had some compensation for our disappointment in finding all public rooms and shows closed to-day, by having had the opportunity to see what is probably the greatest pageant of the year. It is an annual procession, ostensibly in honor of the Saviour, but it is in fact a pagan show baptized with the Christian name.

An arrangement had been kindly made for us by the people of our hotel, by which we were permitted to occupy a window or two in the third story of a house in another street, through which the procession was to pass. Three of our party had gone to the monastery of Valombrosa, about 20 miles from Florence; it was visited by Milton, and immortalized by him in *Paradise Lost*. After the return of our friends, we found that they had a fatiguing jaunt without much gratification, and that they had better have been with us in viewing the splendid spectacle, some idea of whose leading features I will endeavor to convey.

There were about fifty images of the Saviour, borne aloft under yellow and white canopies, apparently of silk; the standard on which they were borne was surmounted by a cross, and gilded rays of glory were streaming from the Saviour's head. Two flaming wax candles of very large size were carried in front of each crucifix, and an attendant marched, side by side, with a paper or some other receptacle to catch the copious droppings of the wax, as the candles were carried aslant, and the flame flared with the movement of the air and made great waste of these gigantic tapers. Processions, or parts of processions, composed of boys, monks, and priests, in appropriate costume, marched in double file, before, between, and behind the images of the Saviour, and also in the same relation to a number of gorgeous silk streamers or banners, flaming with embossed gold and silver wrought into figures apparently

by the needle. The boys were in squads or platoons, separated by the banners; in one party the boys were covered, head and all, by a flowing white robe, and in front of the eyes there were holes for vision. Another platoon was dressed in brown cassocks; another in black; and still another in dingy red,—all covering the head with a conical cap furnished with the eye-holes. The same arrangement was repeated with different groups of men; some of them were monks, and others priests, and various orders of mendicant friars and lay brothers. All these, moreover, had eye-holes in their robes, forming an exhibition in a high degree puerile and ridiculous. There were still other groups, composed of all these descriptions of persons, who marched with heads uncovered, but in the costume appropriate to their order, which was always a gown-shaped garment; in the case of the monks and friars, it was a very coarse and slovenly loose gown, girded around the waist; all walked with bare heads, and some had sandals on their naked feet.

As we looked down upon the monks, their bald and shaven crowns were very conspicuous; while some of them had only a small circlet shaven. Before the silk streamers were borne huge candlesticks or candelabras, whose surfaces appeared to be covered with silver and gold; four in some cases and six in others, and in a part of them there were lighted candles. The groups of boys and men had any thing but a solemn appearance, for they were full of sport, pulling each other's caps and robes, and those who were near to a poor little urchin who had dropped his cap made a great bustle in arraying him again.

Before the crucifixes and before the banners, there were a number of persons with printed books in their hands, marching, singing and chanting in a harsh and discordant manner, having in it nothing of music or solemnity. Those who bore the crucifixes and the banners appeared to be oppressed by their weight, by that of the banners especially, some of which, including the cross, appeared to be 20 or 25 feet high. The standard which supported the whole was let into a socket of leather attached to a band buckled round the body, and the bearer staggering

under his unreasonable load was occasionally relieved by an assistant. Numerous large pictures were also borne aloft in the same manner; one represented St. Francis in prayer, with a bishop or pontiff on the reverse, and another contained the pictures of Elizabeth and Mary.

After these vulgar groups came genteel-looking ecclesiastics, with white mantles, variously decorated;—most of them were young men; and then groups of priests, of various ages, generally in white, or decorated with splendid cloaks of white silk variously figured. Next succeeded dignified men, over whose silvered heads and stooping frames, many years had passed.

Various faculties followed them—the professors of law, judges, magistrates, and other dignitaries in civil life, all arrayed in costumes which were often very rich. The servants in attendance outshone their masters in gorgeous decorations. Their clothes were in fanciful colors; and their cocked hats were bordered by broad bands of gold or silver lace. A dignified personage, perhaps a bishop, for we could see his person distinctly through the folds, was borne along beneath a rich canopy, like those suspended in palaces over beds of state. Immediately following the moving canopy marched the Grand Duke himself, attended by his suite, while two youths bore his lengthened train along.

I have not yet mentioned the military part of the array. A few *gens d'armes* were distributed here and there to preserve order; and after the ecclesiastics had passed, three distinct bands of music filled the air with their loud and stirring sounds, and gave animation to the splendid procession, in the later groups of which the military men were distributed.

They were both cavalry and infantry of different uniforms and arms. The cavalry wore brilliant brass helmets, and rode spirited horses, which were both beautiful and perfectly trained. The dress of the officers was overloaded with ornament, and the entire military display wore the appearance of a pageant, as it was, rather than of a preparation for serious and effective military or religious service. Last of all came the state carriages, antique

and gorgeous. Three of them were drawn each by six horses, noble animals, in fine condition, of high mettle, but under perfect control. Their harness was loaded with gilded ornaments, and their manes were either dressed like the locks of a lady, by the tonsor, or fastidiously put up in little bags.

The carriages were empty, and two other coaches followed drawn each by a pair of horses. All the while the bells of the numerous churches in the city rang a thundering peal; the streets were crowded with spectators, and the windows exhibited rich stuffs, hung out for the occasion, while the inhabitants and their friends, and those whom either courtesy or money had admitted, were densely clustered together in gazing groups. Several corps of military closed the scene, and all passed on to the church of St. Maria de Novella, which is one of the largest and most richly ornamented in the city. We visited this church two days ago, and saw them decorating the entire interior, vast as it is, with rich crimson velvet hangings. The pillars as well as the walls were covered; and in this church the ceremonies of worship were to be performed. The array of candles was on a vast scale. The entire front above the altar was decorated by them, standing side by side, like sentinels, almost in close columns, and soon to be crowned with living flames. Some of them were of prodigious size. I went up to the altar, and by comparing their length with that of the people, I thought them to be eight feet long, and three or four inches in diameter.

Candles or lamps are constantly burning in all the Catholic churches; and the theory of the regime is, that the lights never go out, that is, some of them are always burning—the Christianized form of the ancient superstition of the vestal fire.

The military and civil part of the pageant was very splendid. The soldiers appeared in perfect discipline; and the martial music, bursting out from large bands of performers, who seemed as if but one breath and one soul inspired all their resounding instruments, might well excite and animate a host to battle.

The religious part of the spectacle, so far as it appeared in the streets, would have seemed merely a popular pageant, had it not exhibited so painful a departure from the noble simplicity and purity of the primeval Christian faith and practice. Were the Bible in the hands of these people, and were they able to read it, such pageantry in honor of the Saviour could not stand before it. How strongly contrasted is it with His life and manners when on earth—with His action, so simple, and without external show! His only recorded ride (except when he was carried an infant by his parents into Egypt), was upon the most humble of animals. He had indeed a majesty and dignity, derived from his divine mission, from his miracles, from the purity of his life and his heavenly teachings, with only the blue vault over his head, which no pope or potentate in gorgeous temple or palace could ever emulate; and he remains man's advocate in heaven, while in Catholic countries his word is hidden from the people by those who claim to be his successors, and the sole heralds of his religious truth.

I will not reiterate the trite, although still unanswered objections of Protestants to the Catholic organization. I will add, however, that I do not think more favorably of it after having seen it at home and in Rome itself.

We have visited many cathedrals, chiefly, it is true, to observe their architecture, their monuments and statuary and paintings, and the riches of their sacristy and collections; but we have not been indifferent spectators of their religious aspect. There appears to be very little religious instruction dispensed in them. We are told that it is occasionally given, but we have heard none. The common people do, indeed, resort to the churches in great numbers, and their devout demeanor (marked by every appearance of sincerity, which we would not call in question) reads a lesson of reproof to Protestants, whose manners in public worship are too often marked by negligence and indifference, and sometimes by levity. Rarely, however, in the Catholic churches, except on the occasion of festivals, have we seen any except the poor, and especially poor wo-



men. They kneel, they pray, moving their lips; they count their beads, and thus keep the tally of their prayers; they cross themselves with holy water, and perhaps confess to the priest; but the Bible, the source, and the only adequate source, of divine knowledge, is kept from them, and they know it not. Their churches are enormously expensive in the original construction and constant repairs, in their gorgeous decorations of pictures and statues, and in magnificent shrines and chapels, adorned by the most sumptuous decorations of precious stones and gems, and silver and gold. The priesthood also, with the appendages of monasteries and nunneries, is maintained at a ruinous charge. Their religious orders being in general in a state of celibacy, are out of the pale of the most interesting of human sympathies: they are not connected by natural ties to the great human family, and are, like disciplined troops, ready to obey the mandates of the supreme head.

Many great and good men have appeared in Catholic countries. I have no doubt that many such exist in them now, and that sincere piety and holy life are found among the masses. I would not indulge an uncharitable feeling towards those of a different faith, or look at the religious institutions of these countries through a bigoted medium; I am, however, if possible, more than ever convinced that they are unfavorable both to political and personal freedom, and to the most thorough development both of human faculties and of national resources. Were the people universally instructed to read and write, and to keep their own accounts—were they indulged with newspapers, unshackled except by the laws of morality, and above all, were they placed in full possession of the Bible, and were its doctrines enforced by able teachers, Italy would again shine among the nations, and her latter glories, under a Christian dispensation, would eclipse those of Rome of old.

### Funerals.

Seeing so many people to-day looking out through eye-holes in their caps and robes, brings to mind a funeral which we met in Portici, near Naples, as we were riding on our return from Pompeii and Vesuvius.

In a crowded street, our attention was arrested by a loud chanting, and we saw that the people, as spectators, were all uncovered, when soon we descried a long procession of men in white robes, covering the head as well as the person. They were furnished with eye-holes cut through their caps, the face being invisible. Next we discovered the corpse lying in full dress, and in full view, upon a gilded sarcophagus, supported on a dias, over which was thrown a pall of scarlet velvet bordered with gold, and covering from view the persons of the pall-bearers, upon whose shoulders the whole was borne aloft. The corpse of a female was in full white dress, with a rose in the mouth and another between the fingers. Some of the young priests in white dresses were talking and laughing, while the link-bearers and postulants were chanting a dirge in a droning and monotonous voice, but very loud. Several similar processions have since come in our way, with supplicants and friars, sometimes in white and sometimes in black, but with eye-holes as before. In Rome we met a funeral procession marching along near the Pantheon, composed of youth in the morning of life. They were dressed in white robes, and their young faces were uncovered. They sung a solemn dirge; the music of their plaintive voices was touching, and their features and demeanor evinced deep and tender feeling, as for a beloved companion dead. They appeared to be fellow-scholars in some seminary of learning.

### Environs of Florence.

June 19, 1861.

This city being situated on a plain, surrounded by lofty hills, has extremely beautiful environs, to obtain a view of which it is sufficient to ascend a tower within the city, or to climb any of the fine eminences in its vicinity. A few evenings since we drove to a favorite spot for perspective, the hill of Bellosguardo, to which, on the southwest, there is an easy carriage road. Viewed from its summit, the city was at our feet, with all its beautiful precincts, and the high mount of Fiesole, on the opposite point on the north, tempts the lover of scenery to ascend that eminence also, as we have done this afternoon. Fiesole cannot be less than five to six hundred feet above the level of the city, but a circuitous and very excellent road, constructed at the expense of the city, conducts the traveller, by a very agreeable route, to this memorable hill. The view from it is very extensive, rich, and beautiful. Florence is again at his feet, and in a direct line is not more than two or three miles distant, while the circuit to reach it is probably four miles. The surrounding hills and valleys show several villages and country-seats. The whole region is extremely populous, and is in a high state of cultivation. As at Pisa, the river Arno, in its windings, shows itself here and there, and thus diversifies the scene. "The situation of Florence is singularly delightful. It stands on one of the most fertile plains, and on the margin of one of the most classic streams in the world, at the base of the lofty chain of the Apennines, which, sweeping round to the north, seem to screen it from the storms of winter, while their sides, hung with chestnut woods, and their peaks glittering with snow, rise far above the graceful slope and vine-covered height of Fiesole."

Fiesole was once the seat of a powerful city, a part of whose ancient Etruscan wall of Cyclopean masonry, on the north, is still standing on its original foundations. We examined it at

leisure; it is constructed of huge masses of stone, laid up without cement. Fiesole was subjugated by the Romans, and was utterly destroyed during the wars of the northern Italian republics. There are now upon this most beautiful hill only a few vestiges of its ancient grandeur. The remains of a theatre were dug out in 1809, by the zeal of the Russian Baron Schellersheim. "Large and perfect portions of the external wall, and of the semicircle, intended for the spectators, were brought to light," but are now chiefly covered with earth.

There are churches and a convent here. We entered a church which was filled with people engaged in worship; they were singing with a devotional manner. There are here several private houses, of good appearance. It is said that Catiline chose Fiesole as the place for the deposit of his treasures. "In 1809, a treasure of about 100 pounds of Roman silver money, all of a date anterior to the Catiline conspiracy, was found in the garden of the Villa Mozzi, erected by Cosmo il Vecchio. This place was designated to us as we drove down the hill. In the vicinity, and almost in sight of Fiesole, the battle was fought,\* which proved fatal to the conspiracy.

The ceremonies of the day had closed the doors of the house of Michael Angelo, in the city, to which we drove on our return, but were obliged to content ourselves with a view of the outside. It is a large mansion of good external appearance. I have already mentioned the house of Galileo, in the country, which our time did not allow us to visit. Both these houses contain relics of their great possessors.

We drove several miles around the walls on the outside. They are in good preservation, and it is intended to extend them so as to inclose a more ample area for the city. The gates also are sustained. But such walls as these, and those also of Lucca and Pisa, although sufficient for the age in which they were erected, would be quite ineffectual against a bombardment, or even a cannonade with heavy artillery. In

\* At Pistoria in Etruria.

the present age, they answer the purpose of police, to collect duties, and to regulate the ingress and egress of the citizens, and of strangers. In our ride we passed by the public gardens, which are adorned by fine shade trees and grass. A mile or two out of the city, we came to the Cascine, where there are very extensive shaded walks and drives, adorned with fountains and statues, and beautiful fields in fine verdure. There are three roads leading to these grounds, parallel to each other; the middle is for carriages, and the two side roads are appropriated, the one for equestrians and the other for pedestrians, and thus interference is avoided.

Both here and in the public gardens, we saw many hundreds of people of all ages and conditions, and of both sexes, recreating beneath the dense shades rendered grateful by the heat of June. The Cascine is a favorite drive, where, as in Hyde Park near London, and at the Bois de Boulogne near Paris, the beauty and fashion and the gay equipages of the city are daily displayed in fine weather; and here, to-day, the number and style of the equipages were surprising; it was almost like Paris, and the more extraordinary as the city has a smaller population than that of Boston.

Every where in Europe we have found, in the immediate neighborhood of great cities, fine public grounds for the recreation of the people. They are laid out and maintained from the public purse, and are the universal resort of all classes. Here the aristocratic noble, the wealthy merchant, the prosperous tradesman and the poor *employé*, meet on terms of equal enjoyment and freedom, each in his own way, with their wives and families. They walk or sit, lounge, read, chat, or drive, exactly as they choose. Every one is regardful of the rights and enjoyments of those about him, there is no breach of good manners, no unseemly conduct, no abuse of the proprieties of the place. There are beautiful plants, choice ornamental and flowering shrubs, velvet grass, perfectly smooth walks, regularly-cut edges, sparkling fountains, secluded retreats, public drives, national monuments, all, in fact, that can

render rural grounds attractive. If there is a garrison stationed near (and where on the continent is there not?) there is at set times the most perfect instrumental music, and on such occasions the crowd in the public grounds is immense. When shall we in America learn to copy the good which we may find in the European system, and secure for ourselves and our posterity such healthful and innocent enjoyment for the crowded masses of our population, as we may do if we will, before all the points of beauty in our suburbs are appropriated by city lots. In America, where there is more land to be had at a nominal price than in any other civilized country, there has been less provision for public parks and pleasure grounds. Why do not the people provide for themselves?

The warm season is now so far advanced, that we are reluctantly forced to abandon the long-cherished hope of a visit to Sienna, and to the boracic acid lagoons of Tuscany. The country surrounding them is represented as one of the most malarious in Italy, and we are strongly advised by our friends, resident in Florence and Leghorn, to abandon the excursion.

The water of the Arno is very low, and the effluvium from the broad surfaces of exposed mud under the powerful rays of the sun, has made us sensible that it was not desirable to prolong our stay in our present situation. We have, therefore, decided to turn our faces toward the Apennines, and to forego the pleasure of seeing more of the wonderful art-works of this delightful city, having secured already those of greatest interest. At Florence we had the pleasure of meeting Professor Cooke, of Cambridge, Mass., with a family party.

### *Florence to Bologna.*

June 20, 1851.

As we were now to pass a mountainous country, our courier had engaged two vetturines, one with four, and one with three horses. At eight o'clock, we were in our carriages, with many

kind wishes from our American friends, and a hearty "bon voyage" from the whole corps d'hôtel, who were assembled to witness our departure, with evident kindness of feeling, which we could but regard as sincere, since they could never expect to see us again.

Leaving the city, we began immediately to ascend the hills which surround Florence. Fiesole, where we were yesterday, was in full view on our right. The country through which we passed presented a constant succession of high rounded hills and of deeply indented winding valleys, with nothing peculiar in the cultivation. An excellent road led us circling round the hills, which for many miles were so steep that our contractors added more horses—six on one carriage, and five on the other—with an additional postilion to each carriage. Here, for the first time, oxen were brought to assist in hauling the vehicles up the steep hills—they were hitched on in advance of the horses.

Our stopping place for *déjeuner*, 18 miles from Florence, was a very antique house, I presume 500 years old; it was a plain and humble building, but with characteristic national taste there was hanging in the common room a large picture, but so smoked and defaced that we could hardly make out the story of Acteon intruding upon Diana's bathing nymphs.

THE APENNINES.—In our progress (after the mid-day rest of three hours) we were soon embosomed in the high Apennines—an ocean of mountains rising all around, far and near; many of them were dreary, with cliffs of naked rocks and stoney valleys, relieved, here and there, by a smiling vale or village, or by a few scattered habitations. In the progress up our winding road, we ascended and turned, and turned again, reversing frequently our course, while, in our gyrations, we sometimes looked down from a great height upon the road over which we had just passed. Frequent precipices, defiles and thickets, reminded us of the bandits who have heretofore infested these mountain roads. Some of the robbers have been captured and shot the present season near to Bologna, an event

which may have contributed to our security. We passed many places where robbers could be perfectly concealed, and from which they could dart out at the instant upon a carriage slowly toiling up the winding mountain road.

HOTEL AT CAFFAGLILOLO.—At the end of our day's ride, we found a most comfortable inn, nearly on the crest of the mountains, at the elevation of nearly 3000 feet. Here we enjoyed a cool invigorating atmosphere, quite above malaria. The droves of snow-white cattle\* gave us promise of good milk and butter. This is the first instance of our finding good butter in Italy; it is not salted, which is the continental custom, but was sweet, and of a pale yellow color. We were lodged in a substantial and spacious house, built in a solitary place, for the accommodation of travellers over the mountains. We felt that we were in quite another climate; our overcoats had been rendered acceptable as we rose to higher and yet higher elevations, and we were glad at twilight to close our windows.

A comfortable supper and kind attentions were very grateful; our books and pens employed our evening, and we were enlivened by instrumental music, in other parts of the house, playing the national airs of Italy.

## Bologna.

June 21, 1851.

We reached this city at 4 o'clock, P. M., having travelled 38 English miles from Caffagliolo, and about 75 or 76 miles from Florence. As yesterday, we rode in the midst of mountains, until we were within a few miles of Bologna. Many of them were bleak and barren, but among them there were fruitful slopes and valleys, and habitations here and there, but the villages were few and small.

\* In all Southern Italy and Sicily we found vast herds of goats, but none in Tuscany.



**GEOLOGY.**—Soon after setting out in the morning, we again entered the dominions of the Pope. Near the boundary, the limestone, which had prevailed through our journey, was succeeded by sandstone of various consistence, from fine grained to pudding-stone, and the disintegrated rock produced the appearance of banks of sand upon the tops and slopes of the mountains. In many places, however, the rock appeared both distinctly stratified and inclined. It was very much cut up by diluvial action, and the mountains were frequently sharp-pointed and conical, running up into very high peaks and ridges; the valleys having a depth of many hundred feet. We had now been travelling 50 or 60 miles across the Apennines, and we found, without interruption, a most beautiful road, which was carried with great skill around the mountains. It was every where guarded by a strong parapet of hewn stones, laid in mortar. Snow-posts were standing at short intervals, to inform the traveller in winter where the buried road runs, when, as always happens at that season, these high mountains are covered by beds and drifts of snow.

In the morning of this day, as well as in the preceding evening, our warm outer garments were quite comfortable, but now in the evening our usual apparel is oppressive.

Our few hours in Bologna were diligently employed in seeing as much as possible of this city and its environs. Like most other Italian cities it has many narrow streets, and on both sides high houses, which, in hot weather, afford great relief by their almost continual shades. There are, however, in Bologna wide streets and open squares, and palaces, and numerous churches and other public buildings. The Campanile or bell tower is the most lofty in the world, being 375 feet high; and, just at hand, there is a leaning tower, also very elevated and built of bricks. There is here a church which is 100 feet longer than St. Peter's, and longer than any other in existence.

The environs of Bologna form an extensive plain with contiguous hills, all in high culture. Upon one of these hills, in a very conspicuous situation, stands the church of St. Iake,

which is connected with the city by a covered way two and a half or three miles long.

CEMETERY.—In this vicinity is the public cemetery, a Campo Santo, which we found to be a most interesting place.

When Napoleon was master here, he forbade interments in the city. In consequence of this order, they appropriated the corridors of a Carthusian convent to this purpose, and have added other very extensive structures upon the same plan, in the form of a hollow square.

The middle of the area is left open for the poor, who are buried in trenches continued without interruption quite across the ground; the corpses are laid in, four deep, and are covered with earth. This inner area is surrounded by a hedge-row of yew kept neatly trimmed.

The corridors surround these interior squares, and in them, both beneath the pavement and along the sides, are deposited the remains of the distinguished dead, whose story is to be recorded and their memory perpetuated by a monument. Most of the graves have simply a slab of marble, laid even with the floor or inserted in the side wall, with a suitable inscription. There are, however, many niches or recesses in which there are elaborate monuments. Usually there is a sarcophagus containing the mortal remains, and statuary often adds its beautiful embellishments. Often the bust of the deceased rests on the sarcophagus or stands in a niche contiguous; or there is a family circle, one parent or both attended by the children, or a beautiful female form stoops mournfully in sorrow, or joyfully points upward in hope. Allegorical figures, among which Time, with his hour-glass and scythe, is conspicuous, stand as solemn admonitors of our frail and brief tenure of life. There are also a few distinct chapels, for particular families of distinction, in which all that the art of the sculptor can effect has been done, to embellish the receptacles of the dead, and to evince the sorrow of the living.

This great cemetery contains, I believe, six squares of corridors, distinct, but still connected, and also an included

square for the common people. There is one square for men and another for women; one, also, for boys and another for girls—with avenues between the different squares, and other avenues leading beneath roofs, which cover tombs and tablets. We saw also ancient tombs and sarcophagi; one was pointed out, which was said to date as far back as the third century.

The entire cemetery is surrounded by high brick walls with gates. It is a very pleasing, and, at the same time, solemn place; there is nothing distasteful or disagreeable, and the whole arrangement is in harmony with our best feelings.

THE PICTURE GALLERY AT BOLOGNA contains the best provincial collection in Europe. The school of Bologna is celebrated in the history of art, and many of the great works of its masters still remain. We devoted all our available time to the study of the *Accademia delle Belle Arte*, which occupies several rooms in a very large building, formerly the Jesuits' College. A chronological order is observed in the arrangement of the pictures. The early masters of the first epoch of the school (1320) occupy the hall of entrance, where are pictures retaining the golden grounds of the Byzantine period, and others by Francia, in a style resembling that of Perugino, the master of Raphael. But it was to the works of the Caracci, of Guido, of Guercino, and of Domenichino, occupying chiefly the largest room of the gallery, to which our attention was directed with peculiar interest. Among the works of Caracci, we were particularly impressed by the *Transfiguration*, the *Conversion of St. Paul*, and a *Madonna* by Ludovico Caracci—all noble pictures. Among the works of the other brothers (Agostino and Annibale Caracci), the *Conversion of St. Jerome* and the *Assumption of the Virgin* are prominent.

The pictures by Guido in this collection are numerous, large, and very fine. The *Crucifixion* is a work of the grandest effect, and if it is ever desirable to present so painful a subject, it could not be done with more dignity and solemnity than in this wonderful composition. A distinguished critic has said of it, that it is, perhaps, the finest and most finished picture in existence.

There are, as usual, many Madonnas and infant Saviours. Some are very beautiful; and this gallery is very remarkable for the number of its lovely women. Our view was quite too rapid to afford time for detailed remarks. One thing of minor importance struck me forcibly in these rooms, and that was the singular beauty of the arrangement, which is such as to dispose of the large and small pictures in the happiest manner, so as to produce symmetry and to heighten effect; the light also is excellent.

Guido's picture of Samson is a noble work; it is not, however, the unwieldy animal giant he is often represented to be, but a perfect Apollo in manly form and graceful beauty. In his hand he grasps the natural weapon which he used with so much effect; his victims are lying all about, and his foot is placed on the neck of one of them.

The Immolation of the Innocents, by the same master, is a most painful picture—horribly beautiful, and full of the most intense agony of feeling. The figures are of full size, and the murdered infants, thrown confusedly into one corner, upon a marble pavement,—the naked ruffians, reeking with the slaughter, and the utter dismay and desperation of the mothers, convey to the observer a conviction of the reality of this most afflictive scene, second only to the impression of an eye-witness of the massacre. Such scenes of slaughter and agony are very painful to behold, and it seems to me better to leave the details to be painted by the imagination.

I have seen in the Italian galleries so many pictures of the murder of the innocents, and of martyrdom in all its varied horrors, that I shrink from meeting them, almost as I would do from the assassins themselves.

I have elsewhere\* expressed my disapprobation of any attempt to develop from the marble, or to portray by the pencil an ideal form of Jehovah—the Supreme God. No human mind is equal to the conception, for no human eye hath seen

\* Travels in England, &c. London, 1805.

or can see him and live. Still in the Italian galleries this fruitless, not to say profane attempt has been often made, as here in Bologna, by Guercino. This picture was painted, it is said, in a single night; and had it been called the image of a saint, or of an apostle, it would receive unqualified admiration.

### The University.

We passed some time with much pleasure in the halls and cabinets of the University, which is a noble institution of high antiquity. In the thirteenth century, it had ten thousand students; and there were so many from foreign countries, that it became necessary to employ professors of the different nations to which the pupils belonged. The University of Bologna has produced many eminent men, and eminent women too, for several of its distinguished professors have been females. "In the fourteenth century, NOVELLA DE ANDREA, daughter of the celebrated canonist, frequently occupied her father's chair; and her beauty was so striking, that a curtain was drawn before her in order not to distract the attention of the students." LAURA BASSI was professor of mathematics and natural philosophy. Her lectures were attended by learned ladies of France and Germany, and she was made LL. D. At a very recent period, MADONNA MANZOLINA was professor of anatomy, while her husband filled the chair of surgery. We saw a series of wax preparations of human anatomy, that were skilfully and beautifully modelled by her own hands. Portraits of two, and a bust of the third of these ladies, are preserved in the University Halls. A lady is at present the librarian.

MATILDA TAMBRONI, in our own times, has filled with learning the chair of Greek literature; and she is said to have been the friend and immediate predecessor of CARDINAL MEZZOFANTI, who made the perhaps unprecedented attainment of speaking forty languages, and who, as Byron says, ought to

have been interpreter-general at Babel. He was the son of a mechanic, and died a cardinal at Rome. Here we had the pleasure of seeing the portrait of Galvani, whose name is perpetuated in the beautiful department of science, of which, in 1790, he was the discoverer and founder. He is represented as sitting at a table with a dissected frog before him, and two plates of metal are added with wires properly connected, to show the contraction of the muscles. His costume is that of a gentleman of the old school, with frilled ruffles over his hands, a powdered wig, and flowing cravat. There is also a monument to his memory, with a Latin inscription commemorative of his discovery, and his bust is placed over the monument. We saw in the physical cabinet several of the articles of apparatus which he used, and we visited the rooms in which he performed his experiments and gave his lectures.

All the departments of this University are extremely well furnished, as was fully apparent even in the rapid survey which we took of them. There is a very large suite of specimens of fossil fish from the celebrated locality of Bolca, and one specimen surpasses in magnitude any thing which I have seen from that or from any other place.

The department of comparative anatomy in this museum is probably the richest and most extensive in Italy. The specimens are in admirable preservation. Among them I observed the jaws of an immense modern shark, having a gape of eighteen inches, and belonging to a fish not less probably than twenty or twenty-five feet in length. The height of the teeth above the jaw was about one inch. What shall we say then of those *fossil* sharks whose teeth were three or four inches high, and of a proportionate breadth? There are fossil teeth of sharks in existence whose dimensions, root and all, were little less than those of the hand of a mature man. Such sharks, if their entire frame was in proportion to that of their teeth, must have approached a hundred feet in length; and they doubtless had several rows of teeth, like their modern representatives.

At Pisa I alluded to Cuvier's remark, that the cavern bear

must have been as large as an English hunting-horse. This inference is confirmed by the specimens preserved in the museum here.

Attached to the University is a library of 140,000 volumes, with 3000 manuscripts; and there are other public libraries in the city.

Bologna is a very ancient city. It was founded, as is said, by the Etruscans 984 years before Christ. It is surrounded by a wall, and, as at Lucca, trees are planted on the battlements. The ditch at the foot of the walls is filled with water. The population of the city was, in 1845, 71,000. It abounds with churches and palaces, and some of them contain interesting collections which we have not time to visit. Ample colonnades or piazzas run along the principal streets. They are not added to the fronts of the houses, but retire within them. They are wide enough for three or four persons to walk abreast.

The remark already made regarding the walls of Pisa, Lucca, and Florence, is true also of those of Bologna. They would not protect it against the missiles of modern war, as was proved here in 1849, when the Austrians threw a few shells into the town, which occasioned its immediate surrender. Bologna has ever been distinguished for its intelligence and love of liberty, which it maintained in the early ages, nor are this spirit and its proper results even now annihilated, notwithstanding its present political connection with the Papal government.

### Bologna to Ferrara.

Estimated by time, these cities are five hours apart, equivalent to twenty-five or thirty miles. This morning's ride, begun at five and a half o'clock, took us through a perfectly level country, covered by wheat quite ripe for the harvest. Hemp also and grass abound. Indian corn is in vigorous growth, and nearly half mature. The weather was hot, the road very

dusty, and being raised two or three yards above the fields, had deep ditches on its sides, containing stagnant water, covered with a green mantle, which gave us no very favorable impression of the healthiness of this district. Farm houses occurred at short intervals. The people whom we met were decently clad, and we were less annoyed than the day before by beggars.

We entered the gates of the ancient city of Ferrara before noon. Our hand-book very truly portrays the condition of Ferrara. It was "once the residence of a court celebrated throughout Europe, and it still retains many traces of its ancient grandeur. The broad, regular, and ample streets appear like those of a deserted capital. Grass grows on the pavements; the magnificent palaces are untenanted, and falling into decay; the walls, seven miles in circuit, which once contained nearly 100,000 souls, now inclose little more than one-fourth of that number. The population is collected together in the centre of the city, and thinly scattered over the remaining portion, like a body still retaining life while the extremities have lost their vital power." It was impossible for us to afford time to range over this fallen city; and we were the less disposed to do it, because we saw enough to convince us that the above sombre picture is not shaded too deeply. Every thing looks like decay; and we observed only one object which bore a cheerful aspect. In the centre of the city, among churches and palaces, the remains of ancient grandeur, there was a gayly-painted arbor, resembling a summer-house in a garden. It bounded two sides of a square, and appeared to afford both a promenade and a shelter for the venders of fruits and small wares.

Ferrara was founded in the fifth century, by fugitives who escaped from the invasion of the Hun, Attila. Its walls were built by the exarchs of Ravenna, in the sixth century. It became a city 1200 years ago, and was the residence of the illustrious family of D'Este, from which, through the house of Brunswick, the royal family of England is descended.

During the sixteenth century, the court of Ferrara was unsurpassed by any other in Europe for its refinement and



intelligence; and its university was so famous that, as at Bologna, the English students here formed a distinct body. Ferrara was the retreat and the burial-place of Ariosto, and here Tasso endured a long imprisonment. This city has produced a series of distinguished poets and artists, and here the Reformation met with great favor, under the influence of the Duchess Renée, daughter of Louis XII. and wife of Ercole II. Previously to her departure from France in 1527, she had been enlightened by the good and learned men who frequented the court of Margaret, queen of Navarre. Here, the fugitives from religious persecution found an asylum, and among them were the French poet Marot, and his friend, Lyon Jamet; here, Calvin also, under the assumed name of Charles Neppeville, spent some months; and Olympia Morata, the most distinguished female of her age, became here acquainted with that religion which supported her in her future trials. Ferrara was, in the middle ages, one of the great commercial cities of Italy, but its trade began to decline in the fifteenth century.

The library of the *Studio Publico* contains 80,000 volumes and 900 manuscripts; among the latter, are those of Ariosto and Tasso. The library possesses copies of 52 editions of Ariosto, and his house and tomb are still in existence here. On leaving the city, we observed that the extensive ditches surrounding its walls were filled with stagnant water and overgrown with swamp plants. Ferrara is but six and a-half feet above the level of the sea; the ground having been redeemed from an extensive morass. A religious council, assembled here in a former century, adjourned on account of the sickliness of the place.

THE RIVER PO.—About five miles from the city, we came to the river Po, which appears here about half a mile wide. We crossed by a ferry having a peculiar arrangement of boats, nine in number, attached to a rope, and anchored high up the stream at suitable distances; being at liberty to turn with the fluctuations of the current.

The ferry boat was composed of two boats covered by a

platform to receive carriages, and the passage is effected by the impress of the current, which, as long as the rope does not break, must necessarily carry the ferry boat from one shore to the other.

The rope is at this ferry quite too small, and it appears, from the numerous knots, to have been frequently broken; but the river, as we saw it, was so smooth and tranquil, that had the rope failed, there would have been nothing to fear more than delay.

ALLUVIAL ACCUMULATIONS OF THE PO.—Sir Charles Lyell's statements respecting the alluvial accumulations of this river were remembered on this occasion. He states that the river bed, in consequence of the alluvium and ruins which the current has borne along, has been so much raised, in the course of many centuries, that it now flows at a higher elevation than the tops of the houses in Ferrara. It must be recollected, however, that the city being five miles distant from the Po, the comparison, as to relative elevation, can be made only by levelling, or by observing the embankments of the river; there is a high levee along the margin on both sides. Upon this high artificial ridge the road runs, except in one place where, for some distance, it leaves the curve of the Po and strikes two miles through a swamp, where again an elevated causeway, over which we travelled, has been constructed, with much labor and expense. After passing this distance we returned to the levee, from which we enjoyed a beautiful view of this river—the great river of Italy, whose course is 410 miles, while it drains a basin of 22,656 geographical square miles. The Po has its sources in high and snowy mountains, and is therefore liable (in common with all its tributaries) to great and sudden flooding, from the melting of Alpine snows. It is turbid with the transported materials derived from the Alps, and hence the source of the deposit in its bed and the necessity for a levee. This embankment must be ever maintained in order to secure the country in elevation has been

season. Here the road appears to be from 20 to 25 feet high, and broad enough for an ample carriage way. The classic Po is on one side, and a very fruitful country in high elevation on the other. The levee, of course, proves the increasing elevation of the bed of the Po, and the great river Mississippi presents a case exactly parallel. In both cases, the artificial barrier (on the Mississippi this barrier is in part the work of the river itself) must be raised, from time to time, in order to secure adequate protection against inundations, often very destructive in spite of every precaution. The confinement of the rivers increases their velocity, and thus more alluvial matter is deposited, as well as borne onward to the sea; the river beds are therefore raised, and the barriers must be raised correspondently. In the dry season, the materials to form the embankments are taken partly from within the barriers, but the bed of the river is, on the whole, rising, year by year; thus, in consequence of the hydrostatic pressure, the water permeates the soil, and this is the reason why all the ditches and hollows are filled with the stagnating fluid, which may thus become at once the source of vegetable fertility and the vehicle of miasmata.

A few miles before we reached Ferrara, we crossed a small river, which was restrained on both sides by a high and strong embankment extending away in the distance beyond the limits of vision. The country adjacent had evidently been swamp, and some parts of it were still in that condition.

All these regions appeared to us eminently malarious, and as the weather had become very hot, we were anxious to reach a more salubrious region—although we had experienced not the slightest inconvenience in health, even for a single hour, during all our Italian wanderings.

Nevertheless, the hints which we had received at Florence from the sickness of a fellow-traveller, and from the effluvia of the Arno, the malarious regions through which we had recently travelled, and a sudden, although brief illness of our worthy courier, convinced us that we had been long enough among the rich and beautiful fields, upon which an Italian sun was now

pouring down his full flood of light and heat which must exhale miasmata from the putrid waters.

The ancient port of Adria, which, 2000 years ago, was on the coast, and was a principal Roman station for ships, is now 20 geographical miles from the sea-shore; its ruins can be but imperfectly traced, but its site is believed to have been near to Rovigo.

Our morning's ride carried us over the Adige, only two or three miles from our comfortable resting-place at Rovigo, which is a small, active, and cheerful-looking city. The Adige is not half as wide as the Po, although the current, as we saw it, is more rapid. Our passage was quickly effected by the same mode of ferrying as at the Po. As we travelled onward, the country was, for two or three hours, like that which we had passed after leaving Bologna. At last, however, satiated as we were with the rich scenery of a perfectly level region, we with great pleasure descried a mountain, and at a little castellated town, called Monssilice, we emerged from the low malarious country, at the distance of ten miles from Padua. Here, more than almost any where else on our travels, miserable, deformed and importunate beggars clustered around our carriages, and could scarcely be repelled. A few miles farther on our journey we came to another town called Battaglia, where there is a splendid establishment for hot-water baths, fed by natural springs, concerning which I was not adequately informed until we reached Padua; otherwise we should have stopped to see them. These springs are copious, and a natural mound of fifteen feet in height has been raised by deposits from the water. Doubtless these hot springs belong to the system of internal volcanic heat, of which there are many indications in northern Italy. The springs are in the territory of the duke of Modena, whose castle-like palace we passed. It appears to be an ample establishment, but contiguous to it, there are barren fields of a very forbidding appearance.

No rain having fallen for a long time, and the weather being very hot, our ride was rendered uncomfortable by dense

clouds of almost impalpable dust, which, even when the windows of the carriages were closed, penetrated through the interstices, covered our clothes, and almost choked our respiration.

### Padua.

We had only a few hours in this venerable city, which is said to be the most ancient in northern Italy, and more than 600 years ago, was a rival of Ferrara. We hastily visited the natural history rooms in the university. They are well furnished, and the department of fossil fishes is particularly fine. There appeared to be about 400 specimens of ichthyolites, chiefly from Monte Bolca, near Verona. Some of them are three or four feet long, and a large proportion show both sides of the fossil on the two parts of the rock, which was dexterously split at probably a natural joint, or at a partial separation made by the body of the fish itself. These impressions are singularly perfect, and in many instances nearly every bone and scale is in its place.

There is in this museum a very perfect specimen of a fossil shark. It is about four feet long; and this fish has the peculiarity which distinguishes the modern member of his family. I allude to the long fluke in the upper member of the tail.

Padua is said to have been the earliest school in which dissections from the recent human subject were made. We visited the anatomical theatre, which was the first ever constructed, and which is singularly like its modern representatives, but very small, and provision is made only for standing students. I remember often to have heard, in my youth, at Philadelphia, in the Medical School there, from the lips of the eminent Dr. Wistar, the names of the illustrious professors of the University of Padua, of the fifteenth and sixteenth centuries—VESALIUS, FALLOPIUS, FABRICIUS, SPIGELIUS, SANCTORIUS, and also MORGAGNI of more modern times. The roofs, and, to a great ex-

tent, the sides of the interior of the corridors of the University surrounding the included hollow squares, are almost entirely covered with armorial bearings of academical men; but time has done much to render the inscriptions almost illegible. At the top of the staircase is the statue of the celebrated ELLENA LUCREZIA CORNARO PISCOPIA, who died in 1648, aged forty-eight years. In addition to her native Italian, "she spoke with entire fluency Hebrew, Greek, Arabic, Latin, Spanish, and French. She was a tolerable poetess, and excellent musician; wrote mathematical and astronomical dissertations, and received a doctor's degree," and of choice, died single, having refused the most advantageous offers of marriage.

We visited several of the churches; two of them were very large, and very rich in all the embellishments that are usual in Catholic countries.

Here as elsewhere, when it was possible to do so, we procured the official calendar and scheme of study of the University, containing the names of the professors, the times of the several courses of lectures, and the laws and regulations of the institution. As all the saints' days, and religious observances of the Catholic church, are strictly regarded in the Italian colleges, it happens, of course, that a very large proportion of idle days fall into the scholastic terms. On the calendar of the University of Padua we counted 160 such days, on which there are neither lectures nor recitations. The professors, however, continue their labors of research on these days.

We visited a small chapel, well known as Giotto's Chapel, which was adorned by the fresco paintings of that artist, which are among the earliest specimens of the modern era of this art. The subjects are drawn entirely from the Scriptures; and although the paintings are dimmed by time, they are still beautiful and interesting. The inclosure in which this chapel is situated is the site of a Roman amphitheatre, of which all that remains is a portion of the stone wall.

We had no time to look into any of the palaces of Padua. In general the city has a grave and antique appearance; there

is, however, a public square, that is made cheerful by a grove, around which are arranged a multitude of marble statues of the great men of Padua, forming a brilliant assembly. Like Bologna, Padua has its corridors or piazzas receding into the body of the house, and thus making the streets effectively wider, while they afford protection against sun and rain. It is also surrounded by walls, on which trees are planted, as at Lucca. Padua has been involved in the calamities of Italian warfare, and has been taken and retaken once and again. The Venetians once captured it by a night assault.

### • Venice.

June 24, 1882.

Here we are at the eastern limit of our journey, so long desired, and at last attained. We are in Venice, city of the isles, queen of the lagunes, fallen indeed from her glory, but still beautiful in sorrow!

On a fine railroad, in little more than half an hour, we came twenty-five miles from Padua, and arrived, in full daylight, at seven o'clock in the evening. We passed through a lovely champagne country, in high cultivation, adorned by rows of trees, often the Lombardy poplar, which has, indeed, attended us all the way from Bologna, bordering both sides of the road; and similar lines of trees and shrubs generally form the boundaries of the small fields into which the country is divided. Vines were often seen hanging in festoons from one tree to another, thus forming elegant curves. This feature of rural scenery we have observed every where in Tuscany and Lombardy. As we approached Venice, we began to discern its towers, rising, like those of Holland, out of the waves; and almost before we were aware of our approach to the city, we were darting over a grand stone viaduct two miles and a quarter long, which now connects Venice with the main land.

Austrian soldiers, as we stepped from the cars, were in

waiting ready to receive us. They treated us with much civility; and we were detained only half an hour, until our turn for the examination of baggage should come. The trunks and bags of all the party were grouped together and displayed on a kind of counter, and from its quantity might well have excited attention, if not suspicion. But François, who has great tact on these occasions, found an old acquaintance among the officials, and although we had, as usual, given him our keys, to be at the command of the inspectors, not a parcel was opened; every thing was cleared at once, and both we and our baggage were promptly received into the same water-coach—a Venetian gondola.

Behold us now, darting along in the grand canal of Venice, the "Broadway" of her citizens. As our oars were cutting the water, and the lights were already flickering in the windows, we had hardly time to realize our novel position before we turned into a side canal, between the palace of the Doges and the prison, its gloomy companion. With no small emotion, we passed beneath the *Bridge of Sighs*; and soon we stepped from our gondola upon the stairs of our hotel. It was the *Albergo Reale Danieli*, very near to the ducal palace. The hotel was formerly the palace, called the *Mani Moceningo*. The morning light of the next day displayed to our view the broad basin that forms the harbor of Venice, in which were steamers and sailing ships at anchor, while gondolas and other boats were plying in different directions. The view from the front windows over the Canal and the Lagoon is very fine. The city forms a crescent along the bay; and from our windows several domes and towers of churches rise into view.

Venice, at the end of the seventeenth century, had 200,000 inhabitants, but now has only 125,000, without including the numerous islets in its waters. The chief island is called *Isola de Rialto*. Rialto means the deep stream, and the bridge erected over the great canal is, therefore, called the Rialto. This is the same bridge that is mentioned in the "Merchant of Venice,"



and is the only one over the great canal, which is, I suppose, 100 yards wide.

There are 146 smaller canals, crossed by 306 public bridges. In Venice, neither horse, donkey, nor mule, nor riding-carriage of any kind, is seen. A barrow, or some other hand machine, for the transportation of commodities, is occasionally observed, but in general the gondola is the sole vehicle for persons and effects. The far-famed gondola is shaped somewhat like an Indian canoe, and will carry a dozen persons. There are 3000 gondolas in the city, and more than 6000 gondoliers. For promiscuous use, and for merchandise, there are large boats. The gondola is almost universally black, and rarely has any ornament besides its beak of polished iron, fantastically wrought. For the comfort of passengers, there are cushioned seats, and an awning averts both the sunbeams and the rain.

In the gondola the merchant transports his casks of wine, and the lady of fashion makes her calls. Instead of a coach waiting at the door, you see a gondola reposing on its oars, or secured at the front door by tying it to a painted post, several of which are frequently seen planted at the doors of the principal houses. Their steps come down to the water, and the most splendid palaces are on the water line of the canals. In some few instances there is a green area, with shrubs and trees, but this is rare.

There are some advantages in this mode of travelling in a city by water; the conveyance is easy, especially for the aged, and for invalids, and the machine will not run away, and can hardly sink; there is no dust to annoy persons or apparel, and in the houses there is much less dust than in towns whose population move through streets. There are in Venice numerous narrow streets and alleys, and along some of the canals there is a broad walk. There is a spacious area of solid ground in front of the principal basin, besides the large paved square of St. Mark, in front of the ducal palace, and of the church of St. Mark.

Before most of the churches, also, there is an open space.

Venice is built upon 72 islands; Gibbon mentions 100. It should be remarked that the bridges are constructed with broad steps of ascent for human feet only, as no vehicles or animals ever pass over them. The reader will recall, in this connection, the descriptions of Venice by Rogers and Byron.

Around the square of St. Mark cluster some of the most interesting associations of Venetian history. It is the centre of business, of fashion, and worship. It is surrounded by brilliant shops, stored with the richest productions of Venetian art, and you approach them and the saloons of refreshment under beautiful piazzas. Here the people promenade, and here the sacred pigeons in large flocks are fed at the public expense. The church of St. Mark, with the celebrated bronze horses on the front, the palace of the Doges, and the lofty bell tower, form one side of the square. At present, Austrian cannon attended by Austrian cannoneers, and pointed from the front of the palace into the square of St. Mark, leave you in no doubt as to what would follow any popular movement.

The Ducal Palace is a magnificent Byzantine pile, with oriental architecture and regal grandeur, little impaired by the lapse of centuries. Contiguous to the palace are the two famous granite columns brought from Constantinople; and there was a third, which, in the attempt to land them, was lost in the mud.

On the top of one of them is the winged lion of bronze, which, as well as the four gilded bronze horses on San Marco, having, under Napoleon's sway, made a journey to Paris, have been, in consequence of his reverses, restored to their places.

Between these granite columns Carmagnola, one of the great Venetian commanders, was beheaded, because he had lost a battle.

We have been conducted through the Ducal Palace, and through the prisons, and have crossed the Bridge of Sighs. God heard the sighing of the prisoners, although no pity was felt for them by the cruel aristocracy of *Ten*, who, on mere suspicion, or on secret accusation, and often without trial, con-

demned the prisoners to death, which was often inflicted within the prison, and nothing more was ever heard of the victims. Sometimes, when they chose to make an impression on the public by some illustrious sacrifice, the victim was publicly beheaded, as in the case just cited.

The only communication between the Ducal Palace and the prisons of Venice was by this gloomy bridge; a covered gallery, high above the water, and divided by a stone wall into a passage and a cell. The state dungeons, called *pozzi*, or wells, were sunk in the thick walls of the palace; and the prisoner, when taken out to die, was conducted across the gallery to the other side, and being then led back into the other compartment or cell upon the bridge, was there strangled. The lower portal, through which the criminal was taken into this cell, is now walled up. The *pozzi* are under the flooring of the chamber at the foot of the bridge. They were formerly twelve; but on the first arrival of the French, the Venetians hastily blocked or broke up the deeper of these dungeons.

In Byron's time it was necessary to crawl through holes, choked with rubbish, in order to descend to the third or lower story. The passage is now cleared, and we went down by torch-light to the lowest cells contiguous to the water. Byron thus accurately describes what we saw:

"If you are in want of consolation for the extinction of patrician power, perhaps you may find it there; scarcely a ray of light glimmers into the narrow gallery which leads to the cells, and the places of confinement themselves are totally dark. A small hole in the wall admitted the damp air of the passages and served for the introduction of the prisoner's food. A wooden pallet, raised a foot from the ground, was the only furniture. The conductors tell you that light was not allowed. The cells are about five paces in length, two and a-half in width, and seven feet in height. They are directly beneath one another, and respiration is somewhat difficult in the lower holes."

All this corresponds perfectly with what we saw, but one important fact is omitted. The prisoners were strangled in this lower region also, in a place pointed out by the guide. He showed us a niche in the wall, where the victim was seated, and perhaps, until that moment, ignorant of his impending fate. We inferred that a cord was then applied about his neck and a wrench or wheel (whose place of fixture in the wall we saw, although it is now removed) being turned, the deed was done in silence and darkness. In this deep hell, there was a still more profound abode of death, to which the corpses were conveyed, beneath the place of execution.

Thus, not only real criminals, but the suspected or accused, or those whom there was an interest in removing, were quietly struck out of life by one of the most heartless and cruel despotisms that ever existed; a government sagacious and efficient to promote the interests of the state, but terrible to the subject.

We made the tour of the state rooms of the ducal palace. They are numerous and large, and embellished in regal style, with splendid paintings in oil on canvas; both the sides and the ceiling of the rooms are thus adorned. I have neither space nor inclination to describe them. Of course the glories of Venice and the portraits and actions of her eminent men are prominent subjects.

A Venetian painter (Tintoretto) has devoted one end of a very large hall, 70 to 80 feet wide, to the subject of the last judgment. In executing his work, he has taken the occasion to pantheonize his friends, and the great, by exalting them to heaven. Among them he introduces the portrait of a lady who had accepted his addresses, while he sends in the opposite direction another lady who had rejected him; the figure of this second lady is a portrait, and she is pitching down headlong in company with as many more, both women and men, as he chose to dispose of in that manner.

At Pisa we saw an immense fresco on the same subject, by Orcagna, occupying a larger space, and in treatment even more objectionable.

The painter has taken similar liberties, and the priests, who seem to have been objects of particular displeasure to the artists, are pushed downward by demons, in form both hideous and ludicrous; while the prince of darkness is in the act of swallowing one victim, who is writhing and struggling as if he were in the folds of an anaconda. I need not say that such attempts are equally vain and improper.

Among the numerous halls which we saw in the ducal palace, was that in which the secret Council of Ten—the effective government—held their sessions; and contiguous is the far-famed mouth of the lion—an aperture so called—into which secret information was conveyed by letters.

The door was shown to us which leads to the tower of torture, where the victims were put to that horrible test, in order to extort a confession. The infernal instruments are still preserved in the arsenal, to which, when we were in Venice, strangers were not admitted.

CHURCH OF ST. MARK.—I have but a few remarks to make upon the splendid old church of St. Mark, both because I have neither room nor time, and because I despair of conveying any adequate idea of this stupendous pile of Oriental magnificence.

A thousand years do not cover the whole period of its existence. It is adorned with the columns and gems of the East, and no wonder, for every Venetian captain of a ship and every traveller of that nation was required to bring home something to adorn this temple; Greece and Constantinople, Palestine and all Europe have contributed to its embellishment. It is totally unlike to any other temple that I have seen. It has round arches and regular domes, and from every part of them, there look down upon you, in permanent mosaic of gold and colored stones, and even precious gems, colossal images of the Saviour, of the virgin mother, of apostles and saints, and of multiform beings of religious allegory, so numerous and various, and so fresh, rich, and gorgeous, that you are almost bewildered, and involuntarily drop your eyes to the floor, where you are almost equally dazzled by the precious marbles, and jaspers, and

serpentine, and verd-antique, and red porphyry, disposed in endless variety of most beautiful patterns, as if it had been the work of a magician artist. You read there also the instability of human glory in the worn and mutilated condition of parts of the pavement, and in the waving hollows and upward curves which prove that its foundations were laid in the sea.

You again lift your eyes, and in the permanent mosaics (for no perishable frescoes or oil paintings are here) you read in large and distinct historical figures the early Bible history of our race, and the annals of the patriarchal families.

Around the church, hang rich lamps of silver and gold. Huge candles and lights perpetually burning, symbolize the immortality of the soul.

Passing out of the church, precious columns are on your right and on your left, columns of marble and porphyry brought from Constantinople, and Jerusalem, and St. John d'Acre.

Lifting your eyes again to the roof, you there see domes, and dome upon dome; minarets and carvings in arabesque, and other rich forms of Oriental architecture, with images and statues innumerable, standing as sentinels on all the cornices and angles, and in the niches.

Crossing the area in front of the church, you look up to the giddy top of the Campanile or Bell Tower of St. Marco, and although it is 325 feet high, you cannot resist the temptation to ascend to its gallery, especially as the inclined spiral plane which leads you up is so gentle in its ascent, that you arrive at the summit without fatigue, and there enjoy a glorious view of the city—of the numerous islands and their villages—of the more distant ship harbor of Venice, in the long island of Lido—of the Adriatic stretching far away in the distance—of the continental shores and remote mountains. You learn also where were planted the Austrian batteries, which, in 1848, after a brave and protracted resistance by the Venetians, broke down the spirit of national independence, and bowed them beneath a foreign yoke—not that they had never been worn long before.

Descending from the tower, you see Austrian troops all around you—their burnished arms gleaming in the sunbeams, and their field artillery planted before the National Palace, ready to put down any popular movement.

Walking down the Square of St. Mark, on your right and on your left, and crossing before you at the remote end, are the splendid piazzas of St. Marco already mentioned; it is a circuit of a third of a mile, in which the fronts of the piazzas or corridors are filled with shops, glittering with the beautiful manufactures of Venice—in silver and gold, in glass and silks, and in innumerable other productions of art.

As you walk on, you hardly disturb the numerous flocks of sacred pigeons, which, from time immemorial, have been fed here at the public expense; they pick up the grains of wheat and corn in conscious security, as no one dares or wishes to molest them. They are not of the domestic breeds; they are wild pigeons tamed by the kindness of man, usually their enemy, but here acting as their friend.

THE CEMETERY, which we visited, is on one of the islands. It contains a department for Protestants, and there repose the remains of Mr. W. A. Sparks, late American consul here; he was in Yale College a classmate with my son, and came to Venice, as he little thought, to die.

MANFRINI PALACE.—We have visited the splendid Manfrini Palace, one of the most magnificent in Venice; splendid, not so much in its external architecture (for there are many in the city which surpass it in this respect), but splendid in its vast gallery of paintings, numerous and various, and among which are chefs-d'œuvre of the Venetian school of art. It has also statuary.

The noble proprietor of this palace has also amassed a small cabinet of minerals, and excellent specimens of the fossil fishes of Mount Bolca, which we hope soon to see in their place in the mountain.

GLASS.—The Venetian glass has been celebrated for centuries, and although it is now much surpassed by the Bohemian

and Austrian, as well as by the products of other countries, we still had no small curiosity to see some of the processes of its manufacture on the same islands where it has been made so long. The curious spiral-waved, and interlaced patterns of various colors are produced in the most simple manner. The various colors are prepared separately, and small rods of each color are drawn of a uniform size, about as large as a small goose-quill. Some are colorless, others of every shade which art can produce. As many colors are selected as it is desired to introduce, for example, into a toilet-bottle. The rods are broken off of an even length, and laid side by side, touching each other, upon a slab of iron, which is then introduced into the furnace. Here the glass is softened by the heat, and the several rods adhere together like sticks of candy in the sun. When they are sufficiently plastic, the workman, with his blow-pipe, rolls them into a scroll, closes the open end adroitly in the fire, heats the mass until it is soft, and then blows and moulds it into any desired form. The original colors are preserved, but become curiously entwined in the process; and the article, when finished, offers a great puzzle to the uninitiated to tell how it was done. Several specimens of Venetian glass were made for us while we stood by and looked on. These colored rods are spun so fine that the glass is woven into mats and baskets, quite flexible and elastic. We saw also beads of many colors made from glass tubes.

CHURCHES.—The churches in Venice are very numerous, but we have seen only a few of them. In Catholic countries they are always open and accessible. Commonly no fee is demanded; if, however, any thing particular is shown by an attendant, a little money will be expected; but a small sum will answer, and never, except in a single instance, have we known more to be demanded. We were surprised at the readiness with which the attendants in the churches conducted us into the most sacred places; within the altar, into the sacristy, into private rooms containing treasures of gold and silver, and gems, and relics deemed sacred—into the crypts among the tombs of the venerated dead, and into private chapels—por-



tions of the churches being often filled up as chapels by particular families; they are usually much decorated, and sometimes splendidly adorned by the great and opulent.

The internal splendor of the churches in Venice is excessive; at least, this is true of several of those which we saw. The ancient prosperity and opulence of the republic are nowhere more strikingly recorded than in the wealth lavished on the churches, in every form of ingenious, and often tasteful as well as gorgeous decoration.

The fine arts have been in Italy much indebted to the taste for decorating the churches; many of the finest pictures and statues being found in them; and the arts connected with architecture, both in its substantial and ornamental forms, have been much encouraged by the same cause.

The vast size of many of the Catholic churches admits of sepulchral monuments of great dimensions and prodigal expenditure. In Venice there are colossal structures of this kind erected to the memory of their great men, especially of their military commanders; some of these mausoleums are of stupendous magnitude, and consist of many parts, all of which are gigantic, and still so combined, that the members appear in proper proportions and in unity with the design. For example, in one of the churches which we visited, a tomb which appeared to rise 50 or 60 feet high from the floor, was crowned by an equestrian statue of the deceased. The great commander, mounted on a bronze or gilded horse (both man and steed of colossal size), seems prepared to ride in the air, over the heads of the humble people who walk on the pavement.

A grand monument has been erected in another church to the memory of the great sculptor Canova, from drawings which Canova designed for a tomb to Titian. It is a lofty pyramid—a tomb, whose door stands wide open, and several allegorical mourners, in a funereal train, are mounting the steps, as if to enter and weep there. This genotaph is solemn,

chaste and beautiful. It was erected by a subscription taken up in all the cities of Europe, and to some extent in America.

A magnificent tomb is in progress, to the memory of Titian, the great native painter of Venice, at the expense of the Emperor of Austria. We resorted to the workshop of the sculptor, and saw the principal statues and bas-reliefs for the structure. Some of Titian's own pictures, for example, the Assumpsit Maria and the St. Peter Martyr, are here perpetuated in sculptured marble. His own figure is of course a principal object; and it is far beyond the size of life, in order to correspond with the magnitude of the tomb, in which it will occupy, as it ought, the most conspicuous position in the arrangement. Honors to the illustrious dead are the proper tribute of posterity, and should excite the living to worthy deeds.

THE ACADEMY OF THE FINE ARTS at Venice is much celebrated, and demands for its study more time than we could devote to it. I passed rapidly through its ample saloons, admiring the splendid coloring of the gorgeous pictures, often representing the grand state ceremonials of the Venetian government in its days of conquest and glory. The magnificent picture of Titian, the Assumpsit Maria, or translation of the Virgin to the regions of celestial bliss, remains foremost in mind among all the superb things with which this gallery abounds.

### Farewell to Venice.

We left this city of the islands and lagoons with feelings of oppressive sorrow. Venice is a fallen city. Even the splendor of her palaces and churches fills one with melancholy, for it is a waning splendor. The steps and foundations of the houses, as well as their general aspect, indicate decay; and when we see how limited is her commerce now—how few are the ships that frequent her ports—how small the fleet along her

quays and wharves; even the joyous ebullitions of her improvisators, and the burst of musical instruments and voices among her still teeming population, clustering in front of our hotel, seem little in accordance with her prostrate condition—prostrate at the foot of a foreign despotism, whose cohorts meet you at every turn.

The eloquent and touching description in the prophecies of Tyre, as she had been, in her days of prosperity and glory, is almost perfectly applicable to Venice as she was, and the picture of what Tyre was doomed to be in her day of humiliation, may yet be realized here; the time may come when the fisherman shall spread his net upon the ruins of her palaces. The iron arm of a foreign master holds her down, his foot is on her fair neck, and we can see no hope that she will ever rise again.

RAILWAY.—We left Venice at 4 P. M., in the railroad train for Verona, and arrived there at 7 o'clock. I suppose the distance is about 75 miles, allowing 25 miles an hour for the speed of the cars, and the stops were very brief. Although the road is very good, the cars do not run smoothly, and there is so much noise that we found it very difficult to converse. Smoking was very common among the passengers, and no one appeared to regard it as an annoyance, much less as an offence. Smoking, so little known in England, except among coarse people, is very general on the continent; and as no indecorum is intended by its introduction in public places and vehicles, it would be very foolish to quarrel with this venerable folly.

This ride of three hours conducted us through a lovely country, clothed in the exuberance of summer, with a cloudless sky, and perpetual sunshine. During two months that we have passed in Italy, traversing it in its whole length, we have not been hindered an hour by rain.

One is at first surprised to see such exuberant crops in a country in which, at the season when it would appear to be the most needed, rain is almost unknown. I have already remarked that the remedy is found in irrigation; and it has been mentioned, that the confinement of the rivers in channels, secured from overflow by high mounds of earth, rescuing

league after league in extent, and the elevation of the river beds by their own deposits, afford the explanation. The Alps are perennial sources of fertility to Lombardy and Piedmont, and, to a degree, to Tuscany; the dissolving and yet perpetually renewed snows of those mountains, afford inexhaustible supplies of water.

The soil thus reposes upon a substratum thoroughly imbued with water, which, as already stated, appears in all the ditches, oozes out through the ground, and is both raised by capillary attraction, and by hydrostatic pressure, and bailed or pumped up to supply moisture.

A full crop of wheat now loads the fields, and the sickle is busily at work in levelling the golden harvest. In the vicinity of Verona there are also large fields of melons, of the different kinds, flourishing in great luxuriance; and the Indian corn is now in promising progress. At the station opposite to Padua we stopped only a few minutes; and we glanced with regret at its fine towers, which we were so soon to see for the last time.

Leaving Padua, in an hour more, we were near Vicenza, but the railroad passed only within a mile, and not into the town, whose buildings made a handsome appearance. It contains, with the contiguous villages, 30,000 inhabitants, and has nine bridges across the river Bacchiglione, on which it stands.

Vicenza is the birthplace of Palladio, a celebrated architect, whose buildings adorn his native city. It stands in the midst of a region beautifully varied by hill and dale. The country continues equally beautiful quite to Verona; and the lofty Alps, with their snowy ridges and crests, bound the fertile plains on the northwest, and produce a splendid contrast.

BATTLE FIELDS.—In this vicinity were fought two of Napoleon's great battles—that of MONTE BELLO in June, and that of ARCOLE in November, 1796. The first was a drawn battle, in which neither party could claim a decisive victory. In the last, after a tremendous conflict, which continued two days, Napoleon with \_\_\_\_\_ over the bridge of Arcole, while \_\_\_\_\_ A flourish

o \_\_\_\_\_ ering

there, alarmed their commander, and thus the victory was won. The surprising career of triumphs which were then achieved by Napoleon in the north of Italy astonished all Europe, and the Italian republics were, for a season, liberated from the hated dominion of Austria.

### Excursion to Monte Bolca.

This celebrated locality of fossil fishes, having long commanded our attention, both by the report of its interesting geological characters, and by the fine specimens of its ichthyolites in the cabinet of Yale College, and still more recently by conspicuous specimens in the cabinets of Italy, we gladly availed ourselves of this opportunity to visit the spot.

The distance from Verona is thirty miles; and for the first sixteen miles we retraced our journey upon the railroad as far as the station at Sanbonifacio. A carriage for our accommodation, had gone forward from Verona early in the morning, to be ready at the station; and on our arrival we lost no time in proceeding ten miles by this conveyance, which we left at the village of Argignano, where we were provided with five horses and mules. Our valet declined going any further, and was, in fact, a useless encumbrance, as we could well have reached this place without him; and as he knew nothing of the region of the fishes, we took a mountainer, and an extra mule to transport him. Two men more, unbidden by us, proceeded on foot, and a third was added on the mountain, our entire party numbering then eight. Our whole course was ascending, and after the first mile the road became steep.

Soon after leaving the station, we observed trap pebbles, mingled with quartz; the dry beds of the mountain streams, and the banks, were tessellated with this beautiful alternation of black basalt and white quartz. Near the village, regular basaltic columns appeared here and there: they were

lying about loose, or they were used for corner stones; but we had not proceeded far before we found them in place, in the side of a hill, and projecting at an angle of forty-five degrees. They were regular, well-defined prisms of five and six sides, but did not exceed a foot in diameter.

The group extended seventy or eighty feet in length, along the front of the hill. It was a grand leaning colonnade, as if some vast building had been partially engulfed by an earthquake, and had left its columns aslant in the ruin. This, however, did not bear the appearance of a ruin, for it was symmetrical, and orderly in arrangement; and had the columns been washed clean from the dirt that was sprinkled upon them, they would have been beautiful. We thought ourselves fortunate in having seen three fine examples of basaltic columns—those on Mount Etna, those at the Cyclopean Islands, and the columns just described.

As we ascended the mountain we found a great deal of trap rock, and the structure of much of it was columnar. Our journey proved very fatiguing and uncomfortable. On the backs of our humble animals, or upon our own feet, we were exposed, during five hours, in ascending and descending, to a burning sun. We clambered 2000 feet above the sea-level, and placed ourselves on the very crest of the mountain. Near the summit, we found an inhabited cottage, and on the highest rock a church of small size, but furnished with the usual Catholic symbols.

The master of the cottage went with us to the church, and hospitably offered us a portion of his wine; but it was a very sour and miserable beverage, which none of the party were willing to drink. The view from this summit was glorious; on every side was a vast billowy ocean of mountains, and the gorges and valleys seemed like the deep hollows between conflicting waves.

Under the direction of the local guide, residing on the spot, we descended in a new direction quite down to the foot of the mountain, over exceedingly rough and precipitous places,

where we were obliged to dismount from our horses and mules and trust to our feet.

THE FISH BEDS.—This was the object of our descent and of our journey. Arrived at the quarry of slaty indurated marl, in which the fishes are found, we had the satisfaction of seeing them *in place*, along with the vegetable impressions which attend them.

It was not our purpose to explore for the sake of discovering new specimens of fossil fishes, which would have required much more time than we could command. Our main object was to see the place, and to mark its geological position. Our time was sufficient for that purpose, and we were not willing to expose ourselves longer than was necessary to the intense action of an almost vertical sun, which, from a perfectly cloudless sky, was pouring down upon us a flood of light and heat in a deep mountain cavity, while the vast masses of broken calcareous slate, which lay in immense piles, threw back from their grayish-white surfaces a most oppressive reflection; and there was no breeze to agitate the stagnant and overheated air. Such has been the demand for fossil fishes from this famous locality, that it has been long and perseveringly explored; hence the great number of these ichthyolites which are found in geological collections, and which we have so often seen in the cabinets of Italy and Paris; hence also the enormous piles of broken marl slate at the place.

We satisfied ourselves as to the geological position as well as the character of the rocks. The strata containing the fish are evidently a muddy calcareo-argillaceous deposit, arranged in delicate layers by deposition, from a state of turbid suspension in water, and in this the fishes were entombed. The immediate neighbors of this fissile slate are trap rocks, and the junction is quite distinct. At the junction, the marl rock was broken, and its structure disturbed as by violence, but there was no distinct change in the character of the slaty rock consequent on the intrusion or vicinity of the trap. The columnar basalt was visible on the top of the hill near the old church.

Many years since, the eminent geologist, Professor Alexandre Brougniart of Paris, visited this place and reported upon it in a printed memoir. We were satisfied, both from an examination of the ichthyolite quarry and from acquaintance with the memoir of Mr. Brougniart, that he had correctly described the peculiarities of the locality.

The marl slate containing the fishes is referred by geologists to the early tertiary (Eocene of Lyell). Besides portions of several fishes, we saw a large and good ichthyolite lying in the quarry, but there was no time to dress it out from the rocks, which, on account of their extreme brittleness, requires great caution, and we preferred purchasing some fine specimens to bring away as souvenirs of the place.

Among the ichthyolite quarries of Europe this is one of the most celebrated. More than one hundred species of fossil fishes have been obtained here, including many thousand individuals, and generally they are in a high state of preservation; and are figured in Professor Agassiz' splendid work on fossil fishes. They are of every size, from two or three inches to as many feet in length, and some of them by a happy splitting of the stone present both sides of the skeleton, in concave or in relief. We could perceive across the valley, strata apparently of the same kind of limestone as that which we had been inspecting, and we were assured by our mountain guide, that the fossil fishes are not confined to this locality, but are found elsewhere in this region.

The mountains here are on a grand scale; they rise into very high peaks, torrents have cut deep gashes in their sides, and their appearance is that of savage wildness. We saw fields of snow lying in an elevated valley, at the distance of a few miles. Cultivation is, nevertheless, extended high up the sides of the mountains, and cultivation implies people and dwellings.

TRAP ROCKS AND THEORETICAL VIEWS.—Trap rocks abound in these mountains, and the trap varies between compact basalt and inflated lava. It must be obvious to every one, that the Bolca fishes were introduced from their native



waters. Innumerable specimens have been extracted from their beds: doubtless thousands more wrapped up in the calcareous marl beneath the trap repose under this great mountain; and we may presume that other schools or shoals of fishes (considering their abounding numbers and their great powers of locomotion,) may be now lying beneath other mountains in this vicinity. It is obvious that any theory which proposes to account for the sepulture of these fishes, almost 100 miles from the nearest sea, and in a chain of mountains so elevated that snow remains in view in the high valleys, even now when it is almost midsummer, must account for the mountains also.

It appears probable that eruptions of volcanic mud, or of sediment moved by volcanic power, may have suddenly buried the fishes, and subsequently another outburst of really molten rock flowed over them; hence the origin of the trap which the surrounding waters would soon congeal, and the heat would make but little impression upon the ichthyolite bed, which, being a porous material, would be a very bad conductor. All volcanic action subsiding, surviving fishes might reassemble, sporting over the graves of their predecessors—mud might accumulate again, and a renewal and alternation of the phenomena already described, might result in the formation of repeated ichthyolite deposits with attendant igneous rocks. Successively other strata, calcareous, argillaceous, &c., must have been deposited by the waters to form the volume of the mountains. All this was evidently done beneath the water, and the entire region was afterward lifted by geological powers above the waves where we now find the mountains and their contents.

Similar views I had long entertained, and the inspection of the country and of other fossilized and volcanic regions, especially in Italy, has confirmed me in the opinion that some such state of things as I have described must have existed. We were very much impressed by the conical form of many of the smaller mountains, very exactly resembling the parasite cones which we have recently seen on Etna. I will not, without examination, venture to say that they are volcanic, ~~they now~~.

have been explored by competent geologists, but I have not seen any account of them.

DESCENT FROM MONTE BOLCA.—We were obliged first to ascend the rugged steeps from the deep pit in which the ichthyolite quarry is situated, and then very slowly to descend the mountain side, depending on very infirm saddle furniture and ill-trained animals. On we went, tardily indeed, down a steep and stony mountain—feet and knees sorely pressed upon the stirrups and against their leather straps, with no small apprehension of a fall. It reminded us of our still more tedious and painful descent from the Val del Bove on Etna, and as then, but now at a more advanced season, we were roasting under a burning Italian sky in the hottest period of the day. The exposure was very fatiguing, and not quite safe in a climate to which we were unaccustomed. Gladly therefore did we resign our despicable quadrupeds and our craving guides, happy to have brought our beautiful fossil fishes\* safely to the village.

In the small village which terminated our equestrian trip, we found many of the common people assembled to see the strange travellers and to inspect their fishes. With these they were delighted, and we were equally pleased with their pretty children; trifling presents and caresses from us to the little people of course won both them and the mothers. Thus we were placed on friendly terms with these simple people, and were allowed freely to use their apartments for our ablutions and fitting up again after our rough fatigue.

We have now been many times in company with the common people in different parts of Italy, and after assuring them, by some little advance, that we were disposed to be on good terms, we have found them kind and warm-hearted. Besides the children, which were both handsome in their features, and with complexions as fine as those of our children at home, we saw, as we went through the village on our way to the mountain, a beautiful girl, employed in winding silk from the cocoons,

\* For a large double specimen, both sides perfect, and nearly a foot long, I paid a Napoleon.

which she did very adroitly. She was out of doors near a comfortable stone cottage; she wore shoes without stockings; but was neatly dressed—her hair tastefully put up on her head, and on the neck she wore a gold chain with a gold cross and charms. When we returned, we found the result of her industry in several beautiful skeins of raw silk, dressed and ready for use. This scene of Italian common life was a pleasant one to us, nor did we see any marks of vulgar vice or coarse manners among the villagers.

We were right glad to be transferred from the backs of our poor quadrupeds—first to our vetturine—and then, after riding in it ten miles to the railroad, it was a luxury to sit quietly, at eventide, in the swift cars, and thus to find ourselves again in Verona after a hard day's travel of sixty miles.

### Verona.

Verona is a walled town, with 58,000 people, and from early times has been conspicuous in the history of Italy. The excursion to Monte Bolca deprived us who went thither of the day we should have given to Verona, and we could not spare another to look into its antiquities and its arts, both of which, it would appear, are well worthy of attention. There are more than 40 churches, ancient and modern, some of them of curious architecture. There are collections of pictures and statues, but we had seen so many such things that we felt the less regret at missing them; they were, however, visited by those of our party who remained in Verona. There are also objects of local interest, especially antiquities.

There are public buildings for civil and military purposes, and for those of humanity; there are palaces of Veronese princes, ancient and modern, and tombs of the Scaligeri and other distinguished personages.

Some Roman ruins remain, especially a portal—the Porta delle Borsare, which now stands erected across a wide street; it is more than 1500 years old. We drove through it, and, as is usual with Roman portals, there are three avenues, the central one for carriages, and the two side ones for pedestrians. There were also six windows in three rows, one above another. A lofty campanile is connected with an ancient duomo. The site of Verona is very beautiful—the blue hills and mountains, the rushing stream, and the finely varied landscape, dotted with villas, surrounded by groves, in which the tall cypress contrasts with the other trees, and the towers, which rise upon the bold and picturesque hills, contribute to form a rich picture.

In general, the houses, lofty and sombre, wear the aspect of other old Italian cities. Some of the streets are wide, but in general they are narrow. There are public squares and market-places.

The Adige, flowing down from the Alps, rushes through the city with great rapidity, and is crossed by four bridges. As is common in other cities in southern Europe, the natural current turns numerous mills, which are anchored in the stream. The vicinity to the snowy Alps subjects Verona to destructive floods. In June, 1737, the Ponte delle Navie was destroyed; and on the last day of August, 1845, after three days of deluging rain, the greater part of the city could be traversed only in boats.

There is a fine collection of Bolca fishes in the Palazzo Cancesa, and in the neighborhood of this town there are fossil shells which early excited attention. In 1517, certain excavations, that were made for repairing the city of Verona, "brought to light a multitude of curious petrifications," and Frascàtaro had the courage to give the opinion that they had once belonged to living animals, and had not been produced, according to the absurd language of the day, by the *plastic power* of nature.

questions are no longer debated, and no person who

is well informed in geology doubts that marine animals, now found in the solid strata, once lived in the sea.\*

**AMPHITHEATRE.**—The most interesting antiquity in Verona is a Roman amphitheatre, which is in a high state of preservation, at least, as regards the interior, the seats having been repaired or replaced from time to time. Still, the outer circuit has suffered much from spoliation, and was greatly damaged by an earthquake in 1184. It consisted originally of 72 arches, of which only four remain. But it is still a most imposing ruin. It is built of the most beautiful marble of Verona, found in the vicinity. The diameter of the amphitheatre is 513 feet by 410; the arena is 248½ feet long by 147, broad, and is very perfect. The circumference is 1470 feet; the height of what remains is, from the pavement, 100 feet. It was capable of containing 22,000 people! Its age is supposed to be contemporary with that of the Coliseum, between 81 and 117 of the Christian era. There are 43 steps, each 16 inches high. This amphitheatre is much larger than that of Nismes. There are sculptured on the arches of the outer circuit the numbers LXIII, LXV, LXVI, LXVII, as guides to the spectators where to present their tickets. We saw smiths and small tradesmen occupying some of the arcades as shops, and the interior is frequently used for exhibitions of horsemanship, rope-dancing, fire-works, and various shows; in the twelfth century it was used for judicial combats. We have seen so many Roman amphitheatres, that we can form a very correct conception of their appearance when they were filled with crowds of all ranks, eager to see the bloody combats which appear to have been a feast to Roman eyes, and doubtless there was a higher zest of enjoyment when human beings, and especially Christians, were the victims.

The fortifications of Verona have been celebrated in all ages, from that of the Roman Emperor Gallorius to the present day.

\* See the History of Geological Opinions on Lyell's P

## TO BRESCIA.

JUNE 28.

When we left Verona in the morning, on our way towards Brescia, after passing the gate, some of us descended from the carriages to observe the strong defences erected by the Austrians, and we had just time to glance at the formidable work of hewn stone which they have constructed in the profound fosse that surrounds the city walls. It extends all along in that deep and wide trench ; there are bastions at the angles which are constructed in a similar manner ; loop-holes have been made on all sides for musquetry, and are obviously designed to destroy any troops that might attempt an escalade by crossing the ditch.

Our first stage toward Brescia was 20 miles, which, through oppressive heat and suffocating clouds of dust, brought us to the beautiful *Lago di Garda* (Benacus of the Romans), on whose outlet, at the town of Peschiera, is a strong fort, and the town is inclosed by high walls. We passed along the lake to the town of Defenzano, where we dined on excellent salmon from the lake. Our hotel was situated on the very shore of those now peaceful waters, over which we enjoyed a sublime view of a semicircular barrier of Alpine mountains, of great altitude, which form its remote boundary. Their dark frowning sides, especially that of Mount Balco on the eastern shore, which is 3000 feet high, formed a strong contrast with the quiet lake, 50 miles long, which is, however, frequently agitated by violent tempests, and has been visited by the storms of war. In that celebrated campaign of Napoleon, in 1794, in which he destroyed army after army of the Austrians, a powerful host of that people marched along the western shore of the *Lago di Garda*,\* and, instead of remaining embodied, in which case they would have been too formidable to be successfully attacked by the French army, diminished as it was by numerous sanguinary conflicts, the Austrian commander

\* I cite the fact from memory, without an authority before me.

divided them into two armies, which passed around the opposite ends of the lake, agreeably to Napoleon's most ardent wishes, for he then attacked and destroyed them successively.

Some of our young men made an excursion in a row-boat on the lake, but I preferred the view from the balcony of the hotel. There is a steamer here, which gives great facility in visiting the mountain scenery. Leaving this beautiful lake, we passed Lonato, an ancient walled village, with a large cathedral. The wall was in some places broken down and removed, and appears now to be of no use.

BRESCIA.—We arrived at Brescia before evening, but not in season to observe the town, and as we were to leave it very early in the morning, there was no opportunity even to walk about the streets. Brescia contains 35,000 people, and is said to be prosperous. In passing through it, the appearance was much like that of other Italian cities. It is well built, and the streets intersect each other at right angles. It has good pavements, and side-walks laid with flat stones. Flat stones are placed, also, for the wheels of carriages, while round stones form the remainder of the pavement. It is worthy of particular notice that most of the Italian cities that we have seen are paved with very large and heavy stones, quarried for the purpose, and fitted to each other, but not in regular forms. The pavements constructed in this manner, being very smooth, produce no jolting.

In this region water-worn stones, borne down from the Alps, abound in every water-course, and in every excavation.

Brescia is a walled city. There are beautiful avenues of trees, among which horse-chestnuts are conspicuous, encircling its fortifications, as at Pisa, and they are equally picturesque and grateful to the eye. Brescia has been conspicuous in the wars of Italy. In 1512, when vastly more powerful than now, it was captured by the armies of Louis XII. after a brave but ineffectual resistance. Gaston de Foix, the commander, and nephew of the king, gave up the city to assassination, pillage, and violation; and it was the boast of the French that they

slaughtered 46,000 of its inhabitants, many more than all which it now contains.

An interesting story is related of the famous Chevalier Bayard, who, being desperately wounded, was borne by the soldiers on a door torn from its hinges, to the house of a noble family, where he was kindly cared for and saved, chiefly by the assiduity and devotion of the noble lady and her two lovely daughters. The mother, supposing that, according to the bad customs of war, her house was forfeited to the enemy, presented to the brave knight 2500 ducats as a ransom. He reluctantly accepted it, but on going away to rejoin the French army, he gave 1000 crowns to each of the daughters towards her marriage portion, and the remaining 500 he directed to be distributed among the poor nuns, whose convents had been pillaged.

DESOLATIONS OF WAR.—The invasion and division of Italy early in the 15th century, by the three great powers, France, Austria, and Spain, acting in malignant concert, was as unprovoked and wanton as it was wicked; the war was waged with a degree of ferocity and cruelty characteristic of savage rather than of civilized nations. They slaughtered not only troops which had ceased to resist, but the entire population of cities, towns, and villages was indiscriminately massacred. Italy! fair and beautiful Italy, has been ravaged less by the volcano, the earthquake, the tempest, and the pestilence, than by the cruel wrath of man.

RIDE TO MILAN.—In our ride of 47 miles from Brescia to Milan, we passed through five or six towns, but they did not appear to possess any particular interest, and therefore I omit their names. There was one place, however, called Calceo, where we rested at mid-day, and opposite to the hotel our attention was called to a garden and ornamental grounds connected with a gentleman's house, through which we were permitted to walk to see the arrangements. At the bottom of a long descending lawn there appeared a sparkling fountain, bursting from a pile of rocks; beyond we saw a group of low,



pointed mountains; in front of them, and nearer to the observer, was a tall pagoda tower. There was also a temple, with statues, and a knight in full armor mounted on horseback. Had we gone away without a nearer approach, we should have had no suspicion (unless from the presence and quietness of the knight and his horse) that it was all an illusion; but on approaching nearer, it became evident that the whole was fresco, painted on the end wall of the garden.

We thought that the gentleman proprietor should prohibit his visitors from any other than a distant inspection, and they would then remember this remarkable combination of scenery, as one of the most beautiful things in Italy. Our detention of three hours in this small town was far from being agreeable, in a hotel where there was neither neatness nor comfort.

Through the whole extent of country which we passed to-day, there was apparently a perfect level for nearly 50 miles; not the slightest inequality of surface was perceptible to the eye; but as the rivers, flowing from the snowy Alps, which were in full view, moved with vivacity in their channels, an actual declivity of surface was thus proved.

IRRIGATION.—The system of irrigation, which I have already mentioned, has here some peculiar features. The rivers are, at proper points, diverted in part from their channels, by leading off rivulets in artificial courses, and these are again subdivided to such an extent, that water not only percolates through the soil, but can be dipped out at pleasure, as is often done by hand, and thus in both ways it is copiously distributed over the fields.

The vicinity of the snowy Alps, affording abundance of water from the melting of the ice and snow, and the skilful use made of it by the people, explains the astonishing fertility and exuberant crops of this garden of the earth.

The country is divided by rows of trees and shrubs, and by artificial lines, into numerous small lots, of one, two, or three acres; and the whole region, although the surface of the road is ground into impalpable dust, is so rich in vegetable pro-

ductions, and is so beautiful, that it forms a lovely picture, or series of pictures, which appear very brilliant under the azure canopy of a sky without a cloud. It is no wonder that the rude barbarians who first poured down their fierce legions from the Alps were charmed with Italy, and their descendants have not ceased, for 1500 years, to contend for the possession of a country which is still so delightful and lovely, although in chains. The Alps are more valuable to Lombardy than would be the gold of California; from the coldness of these mountains they condense the watery vapor of the atmosphere, and form those everlasting snows and glaciers, which, despite of the drought of summer, irrigate the fields and insure perpetual fertility.

Our ride was concluded by a railroad of eighteen and a half miles. It is intended eventually to connect the road from Venice, which now reaches to Verona, with this fragment of a road from Milan, and there is already an extension of it to the Lake of Como.

### Milan.

Milan is a beautiful city, and the few days we have passed in it have enabled us to understand its principal features. It is very well built, with large and handsome houses, the principal streets are wide, and the whole town, with its soft yellow-colored masonry, has an airy and agreeable appearance.

ITS RESURRECTION.—Probably it may have arisen from its ruins more beautiful than before. I allude to its complete destruction, A. D. 1167, almost seven hundred years ago, by Frederic de Barbarossa, Emperor of Germany, who, in his attempts to subjugate Italy, met with a determined opposition from Milan, which resisted him during three years, and was finally reduced by famine to surrender at discretion. He then razed the city from its foundations, demolishing completely both its habitations and its walls. In this work of destruction he was zealously aided by the rival cities of northern Italy, Pavia,

Cremona, Lodi, Como, and Novara; they even incited the Emperor to this barbarous course, and the inhabitants of Milan were distributed in four neighboring villages, after the people of the rival republics had effectually performed their appropriate tasks in destroying different parts of the city. When the Emperor departed in triumph for Pavia, only a few churches were left standing in the midst of the general ruin. But the scene was soon reversed. Only five years after the destruction of Milan, the Lombard league was formed, being a confederacy against the imperial authority, and several of the same cities which had acted as auxiliaries in the destruction of Milan, now combined to effect its restoration.

Cremona, Brescia, Bergamo, Mantua, and Verona, came to the work. The city was rebuilt; and, being restored to prosperity, it ultimately attained to wealth and a high state of the arts. Milan was sacked by Attila, the ravaging Hun, in 452; and this may account for the absence of Roman remains.

It is surrounded by walls, which inclose a larger area than its population of about 150,000, or, including the garrison about 165,000, would imply. As at Lucca and Bologna, a beautiful drive has been formed upon the walls, or rather upon a raised area within the walls. This area is splendidly adorned with stately trees, chiefly horse-chestnuts. The circuit within the walls is eight miles, and without ten. In driving through this circuit towards evening we met many equipages of Milanese and strangers, for whom it is a favorite resort. There are large areas within the walls, that are not occupied by houses, and, in most instances, they are planted with trees and shrubs. There is in the N. E., and beyond the inhabited portions of the city, but still within the walls, a large military parade ground. This area was cleared by Napoleon, who removed old fortifications and other structures in order to afford room for troops and their evolutions—a space in which, as in the Champ de Mars at Paris, 100,000 men can manoeuvre.

In the midst of this ground, the remains of the ancient castle of Milan, once a terror to the inhabitants, may still be

seen. After the death of that ruthless tyrant, Giovanni Maria Visconti, in 1412, the castle was destroyed by the people; but Sforza, a tyrant hardly less formidable than Visconti, had the address to persuade the Milanese to suffer him to restore the castle, under the pretence that it was necessary to the defence of the city, and it remained until finally dismantled by Napoleon.

THE ARCH OF TRIUMPH.—Napoleon, after his splendid victories in this country, established a kingdom of Italy, and with his own hand he placed the iron crown of the Lombards upon his head, saying, "God has made me a king, and I will place the crown upon my own head." As he had broken down the Austrian dominion in Italy, the people hailed him with enthusiasm as a deliverer. It is true he had removed the Austrian yoke only to substitute his own; but he did so much during his reign to adorn Milan, and to improve the condition of the country and people, that he enjoyed a high degree of popularity; and to this day, his memory is fondly cherished in all Italy. His son-in-law, Eugene Beauharnois, the son of Josephine by her first husband, was made viceroy, and reigned for a season in Milan. To celebrate his marriage, a temporary triumphal arch was erected of wood and canvas, but it was soon succeeded by a permanent and beautiful structure of white marble, modelled after the arch of Constantine at Rome. This arch of triumph stands at the opening of the Simplon road, which crosses the Alps, one of the greatest and best of the works of Napoleon. It is not as large as the arch of triumph at Paris, but it is large enough to be very magnificent. We ascended to its summit, and there saw with admiration the ten colossal bronze horses, which are thus arranged; six of them are placed in the centre of the front, attached to a large triumphal car, in the style of the old Roman war-chariot, and in this car, surrounded by suitable emblems, stands erect a grand bronze figure of Peace, instead of the statue of Victory which Napoleon had intended to place there. The other four horses are stationed at the angles, each sustaining an allegorical female

figure of Fame riding sidewise, and with appropriate embellishments announcing the return of peace.

At the Brera, formerly the Jesuits' College, we saw a colossal figure, in bronze, of Napoleon, by Canova, which was intended as the statue of Victory, to occupy the triumphal car. On his downfall, this statue was set aside, as were the bas-reliefs commemorative of his triumphs, and others were substituted in honor of the victories of his enemies.

**NAPOLEON'S PLANS FOR MILAN.**—Napoleon, in conformity to the general tone of his mind, entertained large views for the adornment of Milan as the capital of his Italian kingdom. A forum was in contemplation, probably on the plan of that at Rome; but he had so many wars on hand that he did not carry out his design.

A peculiar kind of amphitheatre was constructed, called the Arena. It is 800 feet long and 400 broad, and it is capable of containing 30,000 people. As it could be filled with water, it was intended as a naumachia, and a bath, in which 2000 soldiers could bathe at once. Repeated baths were furnished by drawing off and renewing the water. It was used likewise as a hippodrome. It is at the present day much used for horse-races, and for shows of various kinds, and in the summer it is often filled with spectators. Being surrounded by a circle of stately trees, erected upon its exterior border, it has a fine rural aspect, and is adorned by grand porticoes and numerous decorations.

**THE CATHEDRAL OF MILAN.**—A good picture is necessary to give even a faint impression of the richness and harmonious proportions of this wonderful building; but it is possible, from description, to form a correct conception of its magnitude, and of its principal parts. Its length is 485 feet, breadth 252, breadth across the transepts 287 feet, height of the nave 153 feet. The height from the pavement to the top of the crown of the Madonna, on the summit of the spire, is 355 feet. This cathedral is one of the most stupendous piles ever erected; but it is not yet finished, although it has been almost 500 years in building.

Several duomos have been destroyed that once occupied this place. The first cathedral was destroyed by Attila in the fifth century; the second was burnt by accident in 1075, and the third was partially ruined by Frederic Barbarosa. A lofty bell-tower, demolished by him, crushed the duomo in its fall. The first stone of the present cathedral was laid in March, 1386, by G. G. Visconti.

The interior presents a wilderness of columns, some of which are almost twelve feet in diameter at the base—more than eight in the shaft. Fifty-two pillars, of the height of eighty feet, support the pointed arches on which the roof rests. The exterior shows equally a wilderness of statues and pinnacles. Each pinnacle, if placed on the ground, would appear a considerable spire. The statues already in place number 3000, and 4500 are necessary to carry out the plan.

Each pinnacle or minaret is crowned by a statue, and there are many more in the niches, among the pinnacles, as well as in other situations. In order to become acquainted with them, you must ascend to the roof, and then you will see life and meaning in them all; if seen from below, they appear indeed as a multitude of statues in marble, but without any obvious design. Whatever the moral may be, it is exhibited at an immense expense of treasure; but, in Italy, it is a national passion, which has come down to them from the Romans, to people their ideal world with marble forms, commemorating those who once lived on earth, or the imaginary beings of allegory and of a fabulous mythology.

In this cathedral, in addition to statues of the size of life or beyond its dimensions, there are many of inferior magnitude; little pretty cherubs and imaginative beings are seen, single or in clusters. In all parts of the building, there are delicate and elaborately wrought carvings in marble, and even in situations where they cannot be seen except by a diligent explorer.

We ascended to the roof of the cathedral, and while walking over it, observed that it is composed of massive blocks of marble accurately adjusted to each other, and although the

weight is immense, no cracks are visible. We moved freely upon the roof as if it had been a mountain of marble composed of the natural strata. The view was glorious.

In the beautiful city at our feet, our cicerone pointed out numerous palaces, and a vast hospital founded by the great Catholic saint, Carlo Boromeo; we glanced also at the palaces of the civil and military governors, the house of the police, the mint, the imperial palace for the Emperor's occasional residence, the Ambrosian library, and many other institutions. Included within our view, was the canal, which passes through Milan; also the wall encircling the city, with its splendid boulevards, adorned with forest trees of stately form and dense foliage, being the scene of the fine drives which have been mentioned. We saw also the splendid fields of Lombardy, the Champ de Mars and its ancient castle, the magnificent arch of triumph, and the verdant amphitheatre. In more distant view, were the colossal Alps crowned with ice and snow. Those who are familiar with the landscape can discern Bergamo, Cremona, Mantua, Novara, and in a transparent atmosphere, even Turin in Sardinia.

We ascended to the highest attainable point of the principal pinnacle, on which is the colossal gilded figure of the Virgin in bronze. We were surprised to see many mutilations, especially among the small statues, and the more delicate parts of the carved marble monuments; pieces are knocked off, as we were assured, by marauders, who, in the numerous windings among stairs, balconies, and spires, and behind innumerable projections, have little difficulty in skulking unobserved.

Sufficient care has been taken to guard against strokes of lightning. The beautiful madonnas and the dignified saints and apostles who stand as sentinels on the pinnacles, are furnished with metallic chains, terminating above in metallic plumes or other metallic ornaments, expanded into points and held in the hand of the statue, to conduct harmlessly away the electricity of the atmosphere. All these conductors are duly connected below with the earth.

The intention to finish this cathedral, although not carried

fully into effect during four or five centuries, appears not to be relinquished. They are slowly erecting more pinnacles and balustrades, and other ornamental parts, and the contrast between the dingy appearance of the old marble, and the brilliant white of the new, is quite striking. Much of the old marble, the statues included, is invested by a coating of parasite vegetables, mosses, and lichens.

In some parts of the walls, branching evergreens have fixed their roots, and commenced that invasion, which, a thousand or two years hence, may cause this cathedral to appear in ruins; but perhaps not without the help of man's despoiling hand, which, more than time, has mutilated Parthenon, Pantheon, and Coliseum.

In so complex a building, great vigilance and constant expense are necessary to keep it in repair, and much more to carry out fully the views of its founders, in constructing a glorious temple to Jehovah, in every part of which should be inscribed, as the design was declared to be, "holiness to the Lord."

Whatever we may think of their faith, there can be no doubt, that those who erected this building were in earnest, and believed that the millions thus expended were given as a religious duty; a tribute of enduring and beautiful materials which they intended to pay back in an acceptable form to the great Creator; doubtless also some have intended thus to expiate sin and purchase merit, forgetting that the Saviour wrought out our salvation, and that it is not of works but of grace through his name.

Napoleon gave a strong impulse to the efforts to finish the cathedral of Milan, and during his reign three and a-half millions of francs were expended, derived from the sale of the lands belonging to the establishment, and from the property of the suppressed monasteries. These funds had been badly managed, and their income impaired by the luxurious living of the commissioners; when the downfall of Napoleon frustrated his purpose of finishing the cathedral in twelve years, and its com-



pletion now remains a charge upon the Austrian government. There is much painted glass in the windows, and a considerable part of it is modern, having been fabricated to replace that which, during the reign of the French, was broken, not in war, but from the concussion produced by the discharge of artillery near the building.

One of our ladies, who chose to remain below while the gentlemen ascended to the roof, was fortunate in being present at the baptism of 500 children. An occasion so important required the attendance of the bishop, and we all saw the conclusion of the ceremony.

The interior of the cathedral is grave, and not so brilliant as some of the churches which we have seen; the floor of tessellated marble is very much disfigured by showers of melted wax that have fallen from the candles, and which appears to have been long accumulating. At the main door, are two beautiful monolithic columns of polished gray granite—35 feet in length and 4 feet in diameter, which cost £1948.

Among the relics of the church, they show a nail from the true cross, which is contained in a crystal box, in the centre of a solar circle, high up in the nave! The ascent to bring it down for a solemn annual procession is made in a balloon, which we saw. It is kept in the church for this purpose; and the nail is afterwards returned in the same manner to its elevated position! There are, however, other relics here which are probably genuine. In the sacristy, to which we were admitted, is an ivory cup presented by Archbishop Godfrey nearly 900 years ago. It is curiously ornamented with carved images in relief representing the Virgin and Child and the Evangelists. There are also full-length silver statues of St. Ambrose and St. Carlo Boromeo; also several busts of saints and eminent ecclesiastics in silver. Precious gems, or successful imitations of them, are set in the silver.

**TOMB OF SAINT CARLO BOROMEO.**—The bones of this worthy man are the relics upon which, at Milan, they appear to set the highest value. They are in a separate chapel, sunk below

the pavement of the church. To this sacred recess, light is imperfectly admitted through a grated opening; and we were aided in our inspection by several burning candles, furnished by a priest who attended us, and explained the treasures of the place. It is a chapel consecrated to the memory of the saint. Its form is that of a lengthened octohedron. On the walls are oval bas-reliefs in massive silver, gilded. On them are represented the principal events in his life. They are all extremely well brought out. The subjects of the two principal are, his distribution of 42,000 crowns to the poor, and his escape from assassination *by a priest*. As the ball fired by the assassin glanced, it was, of course, believed to have been miraculously turned; and it was indeed remarkable that San Carlo was, at the moment, on his knees at prayer, when the people present were singing, "Let not not your heart be troubled, neither be afraid."

He was not disconcerted by the explosion, but continued in prayer, while his companions were agitated by terror and amazement. The wicked priest, whose licentiousness, and that of his companions, St. Carlo had denounced, was afterwards apprehended and executed, although the benevolent man, in the true spirit of his Master, endeavored to save his life.

When Boromeo died, his entire body,\* gorgeously apparelled, was deposited in this sumptuous shrine, and there it remains a hideous spectacle for posterity. The shrine was a gift from Philip IV. of Spain. There is a movable front of massive silver, superbly wrought; and this front being let down by a windlass, "displays the corpse, dressed in full pontificals, mitre, cope, sandals, gloves and ring, reposing in an inner shrine or coffin, and seen through panes of rock crystal." These panes are so large, transparent and perfect, that we might well suspect them to be glass of the finest quality, were it not that by the light of the tapers the crystalline structure of the interior can be distinctly seen. Still we were amazed at what we saw: plates

\* Of course embalmed.

of rock crystal set in rims of gold, and the spaces between filled with solid silver! Silver reliefs were also in front, and all in a state of such brilliancy, as would be incredible, especially in a dark and damp place, where silver is so prone to tarnish, were it not often cleaned and burnished by human hands. But the custode would not allow that the silver was ever burnished; and, of course, we were left to believe, if we would, that in this case as well as in others, the sacred bones could work miracles, for which they enjoy a high reputation.

The dress is splendid embossed silk; the slippers and gloves are embroidered; a golden crown by Benvenuto Cellini, rich with precious gems, diamonds, rubies, emeralds, and sapphires, hangs over the poor naked skull; a crosier of gold, set in the same manner, is held in the skeleton hand, and the tongueless mouth is open and void!

I never beheld any thing which is at once so puerile and revolting! Miserable delusion, that reposes confidence on the relics of our poor humanity, which ought to find their repose in the dark grave, instead of being sumptuously and ostentatiously decorated in princely attire! A fortune has been lavished on this tomb, which is said to have ruined those who undertook its construction.

### Ambrosian Library.

In this establishment, we visited its numerous and extensive rooms, which are replete with interesting objects. Many pictures, original drawings of large dimensions, by Leonardo da Vinci, Michael Angelo, and other eminent artists, and an extensive library, not only of books, but of manuscripts, the latter amounting to 5500 volumes, are the attractions of the place. There is a manuscript psalter of the seventh century, with a commentary by St. Jerome, also Virgil copied and commented upon by Petrarch, with beautiful illuminations. There is a copy of Josephus, translated into Latin by Rufinus, and written

upon papyrus; and fragments of Homer, of the fourth century, with fifty illuminations. Here is a huge volume, with original drawings by Leonardo da Vinci. There is a missal of San Carlo, very finely illuminated, and an early copy of Dante, in excellent condition. The printed volumes in this library are about 87,000, and 12,000 more are to be added. We saw here an original letter of Galileo, another of Tasso, and one from Lucrezia Borgia to Cardinal Bembo, and a lock of her hair. Unfortunately, the arrangement of the library is not by subjects, but by the size of the volumes, as soldiers are assorted, infantry and grenadiers, by stature.

A gallery is attached, containing important historical monuments and works of art. Raphael's cartoon of the School of Athens is in the second room. It is the original of the great fresco which we saw in the Vatican.

The immense picture gallery of the Brera can only be mentioned, as my time allowed me only to walk through the very large and numerous rooms. The building, a vast quadrangle, formerly the Jesuits' College, is almost entirely filled with pictures; some of them are of very great size and superior excellence, but they are badly arranged for study, and badly lighted.

In the chapel, we saw a large and beautiful fresco of the marriage in Cana of Galilee, which had been removed bodily from an old convent. We went also to the refectory of the convent of Santa Maria delle Grazie, to see the original of the celebrated picture of the Last Supper by Leonardo da Vinci. The room, a very large one, was for a time used as a stable for cavalry belonging to the army of Napoleon, and contrary to his express orders. It has also more than once been inundated; and the picture has been the subject of strange vicissitudes. It is very large—by my estimation, without measurement, twenty-five feet by twelve. Although it is in ruins, it is still very interesting, and especially as it is so generally known in all Christendom from the print of Raphael Morgan, so often copied.

On the opposite end of the large room containing the Last Supper there is a picture of equal length and greater depth. It is Gandenzio's Scourging of Christ, painted in 1542, and still in tolerable preservation; while the picture of the Last Supper, which was painted in oil, has flaked off extensively, and has been besides wantonly abused and wretchedly daubed by repainting. It is observable also that a single figure in the Crucifixion, which was repainted by Leonardo in oil, has entirely failed.

THE OLD SEAT OF THE INQUIBITION is just across the court, within the same quadrangle. We, of course, entered the building; but it is totally changed, being now occupied as stables for the Austrian cavalry, where the troopers, in fatigue dress, were busily engaged in grooming and feeding their horses. A venerable church is also at hand, which we entered; it is full of interesting relics of antiquity.

CABINET OF NATURAL HISTORY.—By appointment we paid a visit to the *Museo Civico*, or Natural History Museum, and were highly gratified. It was begun some years ago by a private individual, who labored in the cause with great success, and at his death, left his collection to the city of Milan. Professor George Jan, who now has the care of it, has greatly enlarged this cabinet, which embraces all departments of natural history; the arrangement, the labelling, and the careful protection of the specimens are all the work of his own hands and head, and are worthy of all praise. I cannot enter into particulars, but it is only justice to say that this museum is worthy to stand side by side with those of Pisa and Florence. In the department of the fossil fishes of Mount Bolca it is rich, and some of the ichthyolites are very large. I measured one, of which both sides are preserved; it was four feet long. A spacious palace has been purchased to receive this collection, and it is soon to be removed to those more ample accommodations.

In this palace there is also deposited a collection of the fossil remains of the warm-blooded air-breathing animals of the

ocean, doubtless contemporaneous with the terrestrial animals of the tertiary, or early alluvial era. There are fossil dolphins and whales, whose skeletons are nearly complete. There is one whale which was nearly 30 feet long, by my measurement. These skeletons were found near Placenza, in the alluvial, or tertiary, 60 or 70 miles from the sea, and, of course, the country where they were entombed was once beneath the waves, although now far inland.

OUR HOTEL.—I cannot leave Milan without stating that we were lodged in a noble hotel (the new Hôtel de la Ville, by Bairr), where comfort, courtesy and elegance made our brief stay very agreeable. The master of the house is well known in Europe, a Swiss, whose wife is English. The apartments of this house were in the style of a palace. The ceilings were frescoed; the halls were ample, and the dining-room had a roof very richly ornamented in squares. Twelve large cariatides encircled the room and supported the ceiling. The interior court, into which the carriages were driven, was quite clean and free from any annoying effluvia; this is more than can be said of most continental inns, and even of many private establishments. We found no other hotel in Europe better than this new one at Milan.

### Milan to Como.

Who has not heard of the Lakes Como and Maggiore? They were embraced in the plan of our journey, and, leaving Milan at 5 o'clock, A. M., upon a railroad, we were quickly conveyed 40 miles to Como. At Milan, François unexpectedly fell in with our old vetturino, Giovanni, who had taken us from Nice to Genoa, and he was immediately engaged to accompany us over the Simplon to Geneva, with Paulo, whom we had brought from Florence. We had thus two four-horse carriages for our Alpine rambles, and these were sent forward

with the baggage from Milan to meet us at Como. In the true Neapolitan style (for both our coachmen were Neapolitans), our horses were much decorated with silver, ribbons, plumes, and tinkling bells vibrating over their heads.

We passed on the railroad through a lovely country, in the highest state of cultivation, and adorned with numerous villas and villages. Upon the summit of a castellated building on our right, we observed horses in bronze, as I suppose, and we concluded that the palace was that of Monza, where Napoleon held his court after his Italian victories.

LAKE COMO.—We were in time for the miniature steamer, the *Véloce*, which shone conspicuously in blazing red. One of our young men, who was somewhat indisposed, remained for quiet and repose at the hotel, while the rest of the party embarked without delay upon the bosom of this peaceful lake. It is bounded on both sides by barriers of mountains, rising abruptly from the shores to the height apparently of 1500 to 2000 feet, verdant to the very top. The lake may be, judging by the scale on the map, 40 or 50 miles long, and including its branches of Lecco and Mesola it must exceed this extent. Our navigation upon it, however, did not exceed 20 miles; as we intended, according to the arrangements of François, to visit villas and palaces in the vicinity of the place where we disembarked, at a comfortable inn, which we made our head-quarters, while the boat proceeded on her trip to the upper end of the lake and back. But a powerful rain (only the second that we had met in Italy, the other having occurred in Genoa) drove most of the passengers to take refuge in the small cabin, while our party, the ladies included, unwilling to lose the scenery, kept the deck most of the time, both on the out and in passage, protecting ourselves, imperfectly indeed, by umbrellas and a temporary canvas awning.

We should have preferred a bright day, such as we have enjoyed almost all the time that we have been in Italy, but it was a comfort to be free from heat and dust, and it was so cool that our warm outer garments were very acceptable. The

scenery of this lake has not been overpraised ; it is, indeed, charming, and with a mild beauty that would never tire the beholder.

The shores, all along, and the green slopes of the mountains are decorated both by villas and villages, and also by the permanent residences of native Italians, who here enjoy their homes, occupied by rural affairs, or by useful and ornamental arts, for both of which the Italians have a peculiar aptitude. An intelligent Italian, but established in England, was a fellow passenger, whose perfect knowledge of the country and good English made him a useful and agreeable companion.

Our sombre day was not without its advantages. The clouds, in dark and dense masses, rested upon the crests and ridges of the mountains, leaving their slopes and the habitations upon them in full view, and the narrowness of the lake prevented any of them from being far off. Sometimes the grave and dusky drapery that was festooned upon the mountain tops was rolled gracefully up, disclosing the highest summits, decorated occasionally with rocky pinnacles. In the few places where the ribs of the mountains were exposed, the rocks were distinctly stratified ; they are mainly primary slates for the northern and limestones for the southern portion.

A hope that the sun would break out upon us before we should leave the lake, was realized the next morning ; and from what we then saw of the splendid gilding of the solar beams around our little harbor at Como, we could easily, in imagination, invest the whole lake—with its mountain barriers, its picturesque villas and villages, and its quiet azure bosom—with the glories of a brilliant day.

We were disappointed in our plan of visiting villas and palaces during our sojourn of four hours, while we waited the return of the boat ; the powerful rain confined us to the house, where, between reading, writing, and repose, we passed our time not unprofitably.

We found here excellent strawberries from the hills, and upon the borders of the lake we saw the beautiful villa where Queen



Caroline, the wife of George IV. of England, lived during a part of her exile, and in which also Napoleon for a time resided. Queen Caroline was the victim of a cruel persecution worthy of Henry VIII.

If she was guilty, her husband was infinitely more so, and against him, as the primary cause of her errors, the thunderbolt should have been hurled. Napoleon, from cold calculations of interest, repudiated his devoted and estimable Josephine; but he never assailed, and always vindicated her character.

Como is a walled city; the walls are high, and are constructed of stone, while those of the other cities which we have seen in northern Italy are built of bricks. Como contains 20,000 inhabitants and was founded very early by the Greeks, of whose language traces remain, in the names of places in this vicinity. It was anciently an independent republic, and had wars with Milan, by which it was finally subdued. It has produced eminent men. Pliny, the younger, was born here; probably Pliny the elder also, and it was a favorite resort of both. A villa bearing the family name is said to stand on the site of Pliny's villa, on the shores of Lake Como. The celebrated philosopher Volta was also a native of Como. His residence was at Pavia, where, in 1800, ten years after the observation by Galvani of the muscular contractions of the limb of a frog, he made the great discovery of the pile which bears his name. This discovery opened the way to wonderful results both in science and art, and is still in successful progress.

It was therefore right and laudable in the citizens of Como to do honor to the memory of their distinguished fellow-citizen. This duty they have fulfilled by erecting to his memory a grand statue.

It stands in a public place, and is a full-length and beyond the size of life. The person, countenance, and manner of the philosopher have a commanding dignity. Mounted on a lofty pedestal, Volta stands with his right hand leaning upon the Voltaic pile, while in the other hand he holds a volume partly

folded in his robe. Upon the panels of the pedestal are seen various philosophical instruments which he invented.

### Como to Lake Maggiore.

A beautiful morning made amends for the clouds of yesterday, and we were early in our carriages on our way to the greater lake, as the word Maggiore implies. The country through which we passed, was splendid, and in the highest state of cultivation and productiveness. The people were engaged in harvesting their wheat, in which labor a large share falls upon the women. They are usually without shoes, and, more frequently than the men, are seen with the sickle in hand.

We took our morning repast at the considerable town of Varese, containing apparently ten to twelve thousand inhabitants. It is surrounded by the villas of the opulent Milanese, but we had no time even to walk in the streets. Soon after we were on our way for our afternoon's ride we met a thunder storm, and the rain descended abundantly. Still our coachmen kept bravely on their way,\* and we were delighted with the extreme beauty of the country and with its productions.

We left the level country before we arrived at Como, and since we passed that place we have been travelling among hills and valleys, and boulders of primitive rocks having begun to make their appearance, indicate our approach to the primitive Alps; for a long way back the gravel pits have contained primitive materials.

By a strange misunderstanding of our wishes on the part

\* We were interested to see Paulo stop his horses, and descend from his box to aid a poor youth, who was struggling and weeping in the ineffectual attempt to pull his loaded hand-cart up a hill slippery with mud. Paulo kindly taking hold with him soon placed the cart on the summit, and then returned to his own duty.

of our courier, we missed seeing the celebrated statue of San Carlo Borromeo, which stands on the shore of the lake, and as we had passed ten miles beyond it, and were near Isola Bella, we did not turn back.

At Sesto, before we reached Arona, which is an ancient town of 4000 inhabitants, we were ferried over a river which forms the outlet of Lake Maggiore and the boundary between Lombardy and Sardinia. On entering again the latter country, we were liable to a strict examination of our baggage, but François managed, I presume by an adroit application of *buono-mano*, to get through with the officers by opening only a single bag, our trunks remaining unmolested; and so the affair was finished in ten minutes.

A little below Sesto was fought the first great battle between Hannibal and Scipio, in which the former was victorious. It was called the battle of the Ticinus, that being the name of the river now called Ticino.

In the village of Soma is the ancient cypress, which is 121 feet high and 23 feet in the girth. Julius Cesar and his legions are said to have passed under its shade, and if so, it must have been a mature tree in his time. We were very glad to find ourselves extricated from Austrian dominion, and breathing the air of a country in which freedom is still a vital principle. Neither in Naples, nor in Rome, nor in Tuscany, nor in Lombardy did I feel free to write my thoughts without reserve, but here both tongue and pen are free.

The admirable road over which we have travelled in Tuscany and Lombardy is continued in Sardinia. Before sun-setting, we were established in a comfortable inn on the borders of the Lake Maggiore, and we found a neat and substantial village, in which we had time to visit an old church, to see a picture of Leonardo da Vinci. We proceeded in the rain, and rode 8 or 10 miles along the shore of this most lovely lake, on a part of Napoleon's great Simplon road, which is almost one continued mass of solid masonry, skilfully built up

from the shore; the wall sustains the road, which, for excellence, cannot be surpassed.

At the little village of Baveno, 7 miles from Arona, a boat can be obtained to make an excursion to Isola Bella.

ISOLA BELLA.—The beautiful island! a name which we found to be well deserved, but its beauty is attributable quite as much to art as to nature. The island and its palace belong to Count Borromeo, one of whose ancestors, in the year 1671, converted a small island consisting of little else than a mass of barren slate-rock, into a luxuriant garden, rich in tropical trees and plants. A magnificent palace now renders famous and memorable this formerly obscure and barren rock. It is shown with great liberality, and we were courteously conducted through the entire establishment; which, both within and without, is replete with every thing that can gratify taste or reward a liberal curiosity. In making our circuit through its halls, it seemed as if we should never have done. One splendid room following another, displayed numerous and many of them beautiful pictures and statues. There were also cabinets; and the gardens were embellished by all that nature and art could produce.

Count Borromeo—father, I presume, of the present possessor—was a warm friend of Napoleon, who found a home in this palace, and the bed in which he slept was shown to us. I presume it is more than 50 years since it was occupied by the great Captain; for we were conducted to a tree in the garden, on which, with his knife, he inscribed his name, and the word *battaglia*. The inscription is said to have been made just before the battle of Marengo, which was fought on the 13th of June, 1800.

Although the tree is still living, most of the bark has been plundered for relics of Napoleon, and only the three first letters of his name are now visible. The present Count Borromeo, having taken part with his countrymen in the great struggle of 1848, is now an exile from Milan, and about 30 other noble families are said to be in the same condition. How long will

this state of things be endured ! Native Milanese exiled by a foreign invader !

The views from the palace of Isola Bella are very grand and beautiful ; sublimity and beauty are combined in the fine mountain ranges, and in the milder scenery which surrounds the lake. It is not unlike Lake George, in the State of New-York, except that the mountains here are less rugged, and much more has been done by cultivation. The garden, as seen from the lake, rises in green terraces, supported upon heavy arches of masonry, which stand upon the solid rock of the island. Every particle of soil, having been brought from the continent, has been accumulating during nearly 200 years, until it is equal to the support not only of plants, but of forest trees. There are here cypresses larger than any we have seen in Italy ; there are also southern exotics, for example a large camphor tree (*laurus camphora*), whose leaves, plucked by our attendant, exhaled the fresh odor of camphor. The tree is also here which produces the shattuck of the West Indies ; it was loaded with fruit, as were also numerous lemon and orange trees. Many American flowering trees were there, the magnolias, the rhododendrons, &c.

The environs of the garden are, in fact, a wilderness of trees and shrubs, growing in the wild exuberance of nature, but so far subdued and regulated by art, as to form an appropriate inclosure to the paradise within, which the garden exhibits in perfect beauty. Two fairy-like little girls, just blooming into early womanhood (daughters of the Count), flitting about the garden, seemed gracefully appropriate to the place. As in Venice, the structures of this palace come down to the very water's edge, and even project into it ; and from the walls the happy fishes can always be seen sporting in the clear crystal water. It appears that those flying quadrupeds—bats—being denizens of the island, and probably not easily extirpated, have been provided with a comfortable cavern, beneath the foundation of the arches of the garden ; when we were approaching the mouth of their cavern, their twittering could

be heard, and they could be seen flitting along on leaden wings through the twilight of the cave. Beneath the palace we saw a suite of rooms in rustic work. Pebbles of dark color, and shells, are set in cement, and the patterns formed by them are both separated and connected by rustic mortar, fretted by art so as to represent rude stone work. These lower apartments, adorned in this way, run quite around the building.

### Entrance into the Alps.

We retired with reluctance from the beautiful Lake Maggiore, along whose shores we would gladly have passed the day. At the distance of ten miles from Arona, our road turned into a great Alpine valley; and, soon after entering it, we passed two quarries wrought in the sides of the mountains, where they were obtaining very handsome granite for architectural purposes. Some of our young gentlemen had previously obtained, at the hotel near the lake, some good crystals of feldspar from this quarry. The Baveno feldspar crystals are well known to collectors. The mountains rose majestically on our right and left; and the road, still excellent, was made to follow the windings of the valley, half a mile or more in breadth, in which beautiful meadows and fields of wheat and corn were in strong contrast with the wild and rugged mountains, rising on both sides in such steep precipices that scarcely could the active chamois climb them; while the patches of snow, seen upon them here and there, told of winter not yet subdued in those elevated and frozen regions. The rain of yesterday had swollen a mountain river, the Tesa, over which there had formerly been bridges; but in two places where we passed it with our carriages, the bridges had been swept away by the mountain floods of former years, and we were ferried over by a rope secured on opposite sides of the river, the strong current being the chief moving power.

We passed 20 miles in this Alpine valley, whose walls of granite rocks rose apparently 1500 to 2000 feet, and at an angle of 60 degrees from the horizon. The structure of the rocks was generally schistose, and afforded excellent flags and tables.

As we advanced, the patches of snow became more frequent and more extensive; the Alpine ruins were scattered more abundantly in the valley and on the slopes of the mountains; they occasionally covered large fields, and those loose masses of rocks, that had been concealed in former times, were again disclosed, having been uncovered by more recent floods; they showed with what materials the valleys are filled, doubtless to a profound depth; they were ruins of primary rocks. We saw houses, villages and churches, which had been planted not only in the valley but on the mountain sides, and even in situations seemingly inaccessible. As we advanced, we observed, with pain, that the goitre became more and more frequent and terrible. We saw also with sorrow, the servile toil of women and girls, who bore heavy burdens, performing all kinds of field labor, in a very rough region, and usually without shoes or stockings. They not only carried heavy burdens, and grievous to be borne, upon their heads; but their shoulders and backs often sustained great baskets or panniers, filled to the brim, and bowing them down with the weight.

DOMO D'OSOLA. *July 4.*—This national anniversary was not forgotten as we entered the Alps. We lodged at Domo d'Osola, which is apparently of some importance, especially from its position, being the place from which the traveller takes his departure to cross the Alps. It has good houses, built of stone, which abounds on every side, and a busy Italian population, apparently engaged in some species of manufactures as well as in a limited agriculture—limited both by the mountain barriers and by a cold climate—gave an appearance of life and activity in this secluded region. The people in the village were amused, also, on the evening of our arrival, by the antics of a showman, who was balancing a pole in many strange positions,

and he thus gathered a circle of idlers around him in front of the windows of our hotel.

We were rendered very comfortable for the night, and arose, cheered by a fine day, and refreshed by repose, for our interesting journey over the mountains. The expectation of viewing the magnificent scenery of the Alps made us feel less regret at leaving beautiful Italy—Italy, adorned by the Creator with a delightful climate and lovely physical features, and rich in the productions of art, but cursed by military and priestly despotism.

### Passage of the Simplon.

All the world has heard of this stupendous structure, conceived and executed by Napoleon between the years 1800 and 1805. Our day was laboriously occupied in climbing the Simplon to its summit, and descending upon its western side, a distance of nearly fifty miles, from Domo d'Ossola, to the banks of the Rhone. In passing through and over the Alps, our previous conceptions of Alpine scenery have been fully realized. We have travelled through deep gorges, where the walls of rock rose perpendicularly to such a giddy height that they seemed to touch the sky. The dark awful cliffs, sometimes impending over our heads, menaced destruction, while the vast masses that had fallen, and lay in huge piles below, told of dangers already past, but which are liable at any moment to recur.

A roaring river, the Doveria, attended our progress, dashing impetuously along over immense heaps of ruins, the spoils brought down by frost and gravity from the cliffs, while many cataracts were precipitated from the mountain side, their silver columns and snowy spray, with rainbow tints, adding delicate beauty to solemn grandeur.

This road was constructed in the most admirable manner, especially as a large part of it is built up from deep gulfs, with



solid, substantial masonry. More than 30,000 men were employed upon the work. Between Sesto, where we crossed the river flowing from Lake Maggiore and Brigg, the first town at the foot of the mountains, in the valley of the Rhone, the number of bridges is 611.

Terraces of massive masonry, many miles in length, were constructed. Ten galleries were cut out of the solid rock, or built of firm stone work. Twenty houses of refuge, for the safety of travellers, and for the accommodation of the workmen, were reared along the road. A large hospice, in the manner of that of St. Bernard, but more ample and accommodating, was added; and all these buildings remain, to the honor of Napoleon. The road is at least twenty-five feet broad, in some places thirty, "and the average slope nowhere exceeds six inches in six and a half feet"—less than an inch to a foot. The cost was 5000 pounds sterling a mile; the average of the English turnpikes is 1000 pounds to the mile. In point of time, the road over Mount Cenis to Turin was in advance of the Simplon; but one of our American friends, who recently passed it (in May), informed us that, owing to the snow, it required several men to walk on each side of his carriage to prevent an overturn.

It was immediately after the battle Marengo, in June, 1800, that Napoleon resolved on the construction of the Simplon. There can be no doubt that his views were chiefly military; and this decisively appears from the question twice propounded to the chief engineer when he reported progress:

*"Le cannon, quand pourra-t-il passer au Simplon?"*

He intended to command Italy, and he had experienced the difficulty of passing his army and artillery over the great St. Bernard.

Still his large mind, although bent on conquest and dominion, did not forget the interests of humanity. The hospice and the houses of refuge redound more to his honor than his battles. These are situated about half a mile from the summit, on the side of the Rhone.

For a distance of eight miles, the tempests of 1834 and

1839 destroyed a large part of the road, sweeping away walls and bridges, and of some of them not a vestige remained. The repairs executed by the Sardinian government are much inferior in thoroughness to the original work; they are still in progress. There is, however, no difficulty in passing over the whole of the road with heavy carriages, although some of the bridges are only temporary structures. The highest point of the road is within twenty-six miles of Brigg, in the valley of the Rhone, and more than thirty from Domo d'Ossola. It is nearest to the valley of the Rhone, and most remote from the Italian side.

This culminating point is 6578 feet above the level of the sea, a little more than the elevation of Mount Washington in New Hampshire, the Alpine mountain of New England.

THE HOSPICE OF NAPOLEON.—This very large building is occupied by three or four of the Augustine monks, of the same religious community as those of St. Bernard. Over them is a prior, Father Barras, for twenty-five years at St. Bernard. The house is more comfortable than the more ancient hospice, although it was never entirely finished according to the original plan of Napoleon. It contains thirty beds for travellers, besides "several neat bedrooms for masters, a drawing-room, with a piano, a refectory, and a chapel."

The ascent of the Simplon road is so long, being thirty miles or more from the Italian side to the summit, that our coachmen went forward in the night with their own teams, and left us to follow with extra post-horses. We found them waiting for us at the last public house on the Italian side, where, at one o'clock *p. m.*, we took breakfast. We had passed the Sardinian boundary a few miles back. Our passports had been viséd by the officers, and we were now in a Swiss village in the Vallais—a cluster of very poor stone houses, the tavern being the only one that appeared comfortable.

This village is called Sempione. The Simplon road is named after a mountain having the same appellation. The descent from the summit into the valley of the Rhone was

rapid and easy. The scenery is grand in the extreme; indeed, the sublimity bordered upon the terrific. Instead of looking up, as we had done on the other side of the mountains, from profound valleys and narrow gulfs, where the view is cut off from every thing but a narrow zone of the sky, we now looked down from an awful elevation of thousands of feet; and below was a yawning chasm, a narrow, deep profound, which seemed as if cleft down to the very roots of the mountains. In general, the carriage rolled along upon the very brink of the precipices, with only a stone parapet for our protection; and still we felt safe, while mountains hung over our heads, and almost fathomless gulfs ended in darkness below. The road winds round and round; and when having passed the summit, and looking eagerly down into the valley of the Rhone, we were told that "there is the village of Brigg in full view," still sixteen miles from us, it seemed incredible; but the time—perhaps three hours—that elapsed, while the horses were in full speed, convinced us that the statement was correct.

The Simplon road is described by the houses of refuge, which are numbered first, second, third, &c., beginning at Brigg. Between the fifth house of refuge and the summit, there is a portion of the road which is peculiarly dangerous. There avalanches take place every year. About twenty years ago, as our courier informs us, an English carriage and four horses were swept away and destroyed; but providentially the travellers were walking, and escaped death.

As we ascended the Simplon from the Italian side, the snow on the mountains became more abundant as we advanced. We had seen patches all along, here and there, and they became more numerous the higher we mounted, until the valleys on and near the mountain tops began to exhibit long masses of snow, wide above, and narrowing as they descended. These were, in fact, glaciers; and from their great elevation they must have been really much larger and deeper than they appeared. We were surprised to see great masses of snow, or rather of ice and snow, lying at the foot of the cliffs, just by

the road. They seemed to us to be accumulations deposited in those places, probably by the avalanches of the winter, and preserved from melting by their great thickness. Some of them were so thick that mountain streams, falling from above, had perforated, and run beneath them, and distinct arches of ice and snow had thus been formed. As our elevation increased, the glaciers became both larger and more numerous, and some of them descended continuously to the valleys below. The weather grew cold as we ascended, and our winter garments became again necessary. Vegetation in a great measure ceased; some straggling larches and other coniferæ being the only trees, and they of stunted growth.

A few blue gentians, and the red Alpine rose, with abundance of mosses and lichens, still preserved some lineaments of vegetable beauty, even after the larches had ceased. One of our ladies collected 32 species of flowers on the high Alps, and this was by no means the extent of the flora in these unfruitful climes. Our day had been fine, and the sunlight had been beautifully contrasted with the deep mountain shadows; but at three o'clock P. M., clouds and thick mist, with dashes of rain, rolled over the Alpine tops, often by their movements alternately veiling and disclosing the desolate masses of rocks and the brilliant glaciers. As we began to descend from the highest summit, the sun however burst out again, and lighted up, with glorious effulgence, all those wild scenes of sublime and awful grandeur, which cannot be described in words, adequate to convey a full and vivid impression of the reality.

Human habitations had almost ceased to appear, still there were a few small stone houses, here and there, and often in situations apparently almost inaccessible; but where small grass-plots appeared to have held out the temptation to ascend almost beyond the reach of humanity. Still, religion had not been forgotten, for small solitary churches were visible, here and there, among the high mountains.

In the lower regions there were cows, and in the higher goats, and these animals appeared in good condition. Among

the galleries cut in the rocks of these Alps, that of Gonda is the longest, being 596 feet in length. For more than eighteen months, 100 workmen, in parties of eight, worked day and night to form this gallery; and to shorten the time, two lateral openings were made by suspending the miners by ropes contiguous to the face of the rock, until a lodgment could be made. The number of accessible points was thus increased, and these openings now serve as windows to enlighten this long and gloomy gallery; it was delightful to us as we travelled onward to look out through them upon the cheerful face of the sky. The stranger coming from Italy, enters the gallery by a sudden turn in the road, when he passes over a bridge, beneath which rushes a roaring torrent that descends in a cataract from the mountain side. The scene is both startling and highly gratifying. In another place the stream is carried over the gallery and falls in a graceful cataract into the abyss.

It is startling to be suddenly brought with safety under a roaring waterfall, from the under side of which a good view is had through an opening cut in the walls of the gallery. These galleries are partly built up with masonry and partly excavated, and over them in winter the avalanche with lightning speed takes its fearful plunge to the awful gulf below. These three galleries, two houses of refuge, and the hospice, are all provided as places of retreat from danger between the fifth station and the summit.

Our entire journey from Domo d'Ossola through and over the Alps occupied twelve hours, including the hour of breakfast; if we reckon from Sesto, where strictly the Simplon begins, we may add ten hours more.

THE GEOLOGY OF THIS REGION is exceedingly simple and intelligible, as regards matters of fact. The rocks are all primary or primitive, the hypogene rocks of Lyell.

Granitic rocks prevail from the foot of the Alps on the Simplon road, to about the summit, and after that point is reached, there is no other change than the introduction of hornblende rocks; that is to say, the gneiss becomes changed with hornblende

or amphibole, and of course the strata have a darker color; they are also, in some instances, contorted, and present beautiful curvatures. In commencing the ascent of the Simplon in the morning, the gentlemen left the carriages and climbed a considerable elevation, for the sake of observing a quarry of white marble, which had been opened, in years gone by, to afford the columns for the arch of triumph at Milan. The ledges are very thick and the marble perfectly sound. The marks of the tools that had been applied to detach the monolithic masses were visible. A road had been constructed down a steep mountain declivity, in order to transport the blocks to the Simplon road on their way to Milan. There are materials enough left in the quarry for any future demands for columns or other works of architecture.

Among the Alpine mountains, there is great diversity of form. Some rise into acute cones, the *aiguilles* of De Saussure; they are so high, that only eagles or other birds of powerful wing can scale their summits. They may have been pushed up into forms resembling those in which we now see them, becoming, of course, in the progress of time, more and more acute by exfoliation, in consequence of the cleaving off of portions from exposure to the weather. Most of the granitic rocks of the Alps have a structure more or less like gneiss, with a schistose arrangement of parts.

In other instances, the mountains are more obtuse, although they approximate to the conical form, and whether *aiguilles* or obtuse cones, they stand out in distinct individuality, although growing, as it were, from a common root.

Not unfrequently a series of cones or of summits, with waving lines, forms a distinct outline against the clear azure of the heavens. In other cases, the stupendous walls of perpendicular rocks rise abruptly from a profound and narrow chasm, with a torrent running between the walls, which seem to close in upon you and to touch the heavens; not a plant relieves the dreary aspect of the prison, and you feel almost as if buried alive in the profound abyss of nature's awful solitude. The appearance

is absolutely terrific, and you can hardly draw a long breath, until you feel that you have quite escaped from the perilous gorge.

In such a place on the south-eastern slope of the Simplon, I realized, more than any where else, the vast altitude of mountain wall above my head—thousands of feet in height, and the brain turns giddy when the eye is endeavoring to scan the summit cliffs, and to catch a glimpse of the sky.

RUINS.—From the hour of their birth, the mountains have been undergoing degradation. The sun, with the heat, and the cold, the rain, the ice, the snow floods, the incessant pull of gravity, and the concussion of earthquakes in countries where they occur, conspire, with various other causes, to depress the height of mountains; chemical decomposition aids mechanical disintegration to produce a severance of parts, while the tendency is constantly downward, as well for minute fragments as for those enormous masses—cliffs, precipices, and sometimes entire sides of mountains, which fall with tremendous concussion into the gorges, valleys, lakes, and river courses, where, accumulating, year after year and age after age, they present convincing proof that the mountains are constantly losing in their altitude, while their ruins are elevating the valleys and the plains.

VALLEY OF THE RHONE.—The region contiguous to the Rhone presents very interesting phenomena. The river flows through Brigg, and passes on through Visp and Tourtemagne to Sion, and so on to Martigny.

At the village of Visp, two miles below Brigg, it receives the river Visp, and several other rivers flow into the Rhone from the high mountains, which, on both sides, form the boundary of its valley, and Mount Rosa is one of them. The main river, Rhone itself, issues from beneath a glacier in the Alps; both it and its tributaries rush along rapidly, turbid, and turbulent, while the spoils of the mountains, being spread far and wide, evince that the rivers occasionally overflow their banks and strew the fields with sand, pebbles, and boulders. Large tracts are in that manner irremediably ruined, and agri-

culture is evidently very insecure, especially in the upper part of this valley, as we had occasion, in many places, to observe.

The Saltern river flows by Brigg, and its channel is eleven feet higher than the village. The bed of the Visp, also, is thirteen feet higher than the village of the same name. This arises from the transportation of loose materials from the mountains, which, year by year, accumulate in the beds of the rivers, and thus the chance of inundation is constantly increasing.

The inhabitants, with small and precarious resources, are thus compelled to contend against the elements; the rivers, swollen by the melting of the mountain snows, sweep along in furious torrents (the very condition in which we saw them); the barriers are breached, the waters overflow, bearing along over the fields the ruins of the Alpine regions, and desolation follows. We found immense accumulations of the spoils of the mountains spread far and wide over the valley of the Rhone.\* They are much more considerable than the greatest collections of rocks and pebbles which we ever find upon the shores of the seas and oceans. They are, almost exclusively, the fragments of primary rocks, and their accumulations are not confined to the bottom of the valleys. They are spread out at high elevations, far above the present flow of these rivers, proving that the waters have often swept over those higher regions; and as the fragments are generally rounded, and being very hard, the action of the waters producing friction of the materials against each other, must have been repeated, either continuously, or with intermissions, which, of course, would require a more prolonged period. Our observations, in the course of the forty miles that we travelled in the valley of the Rhone, fully sustain the strongest statements of the distinguished writers on these regions, and prove decidedly the great denuding, wearing, and transporting effects of the floods that sweep down from the Alpine summits.

\* As described by De Saussure, Charpentier, Agassiz, Forbes (of Edinburgh), and other writers.



We observed, also, other very interesting facts. As we proceed down the valley towards the Lake of Geneva, the mountains continue to be very high on both sides; thousands of feet—I will not venture to say how many—above the bed of the Rhone; in estimating magnitude where every thing is on so vast a scale, there is, however, little danger of exaggeration. The high cliffs are generally snow-capped, or invested with glaciers. The sides of the mountains are deeply lacerated, grooved, and channelled; their summit cliffs often stand out in strong relief against the blue sky, like ruined walls and battlements, stretching along for miles and miles, and appearing so shattered and infirm that they are every moment menacing an avalanche of rocks, which frost and gravity are sure to produce from year to year, and which earthquake movements may at any time accelerate with frightful desolation.

The immense masses which we find here and there below, prove that such events have often happened, and that they will assuredly recur again and again.

The regular accumulation of ruins has formed a vast talus or slope, which sometimes, and for miles in contiguity, has formed a bank of ruins reaching far up the mountain side. The ruins are often lying at the highest angle of elevation at which (about forty-five degrees) loose masses will remain without rolling down. Indeed it was obvious that all the lower country in the valley of the Rhone, to the unknown depth which would reach the solid rock, is formed from the accumulated ruins of the mountains. The deep sections in the masses that have been cut through by the torrents, disclose nothing but such ruins; and it is said that in some of the Alpine valleys they are 1000 or 1500 feet in depth.

MORAINES.—There is a still more remarkable fact seen in this valley. Many mounds are observed, up and down, and on both sides of the river, but more frequently on the left or eastern bank. They are of every size, from that of a cottage to that of the Coliseum at Rome. They are generally composed of loose materials, that have evidently been shoved and pushed

along until they have formed these accumulations, when the cause that formed and moved them having ceased to act, they became stationary. This cause Professor Agassiz believes to have been the movement of glaciers, which are supposed once to have filled this valley, and that, by their downward progress, they forced along the movable materials before them; or perhaps, in some cases, the fragments falling from the cliffs upon the glaciers, were borne along by them, and, when the ice melted, they were deposited below. Both suppositions may have been true; and this will explain the fact, that we sometimes find in these mounds large masses of mountain cliffs, entire, and retaining the original structure of the rock from which they were detached; but they are wrapped up in loose materials, proceeding from disintegration and decomposition; and in such cases we must suppose that the glaciers have both transported the rocks, and pushed up the mounds.

The masses of which I am writing are quite distinct from the general talus or slope of the mountain ruins, and are, in most instances, far removed from the foot of the mountains to the other side of the plain. We ascended some of them, and found them very eligible look-out stations for viewing the scenery of mountain, valley, and river, and other moraines rising on the right and the left, as the Pyramids are seen on the Egyptian plains.

FEATURES OF THE VALLEY.—The valley of the Rhone, where we first entered it, is narrow, not exceeding half a mile in breadth, and a large part of it has been buried under mountain ruins. The floods have disregarded man's feeble barriers of walls and dikes; and in the course of ages, the soil in the upper regions watered by the Rhone may be entirely covered.

As we proceeded down the valley it gradually expanded to two miles or more in breadth. The river now flowed below the level of the fields, its channel growing deeper as we proceeded. Below Sion, and quite down to St. Maurice, where the valley becomes again narrow, the surface was free from ruins, and was expanded into most beautiful fields, covered with

a rich harvest of wheat, which the people were engaged in gathering by the sickle, this instrument being universally employed, and generally by the women. We never saw it in the hands of men; and frequently it was wielded by young girls, apparently fifteen or sixteen years old.

The scythe is almost exclusively in the hands of men; afterwards, however, we saw women mowing with the scythe.\* The people here do not appear to be acquainted with the use of the cradle,† which with us so much abridges the labor of reaping.

The hay is made by the females: they toss it, ted it, put it into cocks and ricks; using the same rake as ours. The pitchfork is nearly the same, but often it is made of wood. The hoe is longer, like a mattock.

Mr. McCormack's reaping machine may, perhaps, in the course of a century, travel into these regions of unchanging precedent. In the central and southern parts of Europe there is very little disposition towards improvement in agriculture.

APPEARANCE OF THE PEOPLE.—In Italy there is no want of civility. The people are always kind when spoken to. At the hotels, the servants, the waiters, the coachmen, and the master of the house himself, never allowed us to pass without touching the hat, or showing some other token of respect. The priests, who never bowed first, and seemed to wait for an overture, always raised their broad beavers when we bowed to them. Since we have entered Switzerland we have observed, however, a marked increase in respectfulness in the manners of the people. Very many of them, even among the common masses, voluntarily raise their caps to us as we walk the streets in towns or villages, or travel on the roads. It reminded us of the good old custom in New England *in days of yore*, when a whole

\* Much shorter, however, than ours—more like what our New England farmers call a stub scythe, used with us for cutting up bushes.

† A scythe furnished with long parallel fingers of wood, which receive the falling straw, and enable the reaper, by a skilful movement, to lay it down smoothly in regular rows.

school of children would turn from their play, and bow respectfully to the passing stranger.

The appearance of the common people in Switzerland, as far as we have seen them, is rustic. The women whom we see abroad in the streets and fields are coarse, sunburnt, and masculine in their movements. They walk with a sturdy stride, like the men, most of whose duties in the field they perform; and woman's loveliness of person and features appears to be little known, and still less regarded, among them. How can it be otherwise, when they are constantly subjected to servile toil and exposure to the weather? Indeed it is, therefore, the more to their credit that their manners are always kind. They invariably manifest an obliging disposition; and from a rude external form, and rough, dark features, the stranger hears with unexpected pleasure, a gentle, winning voice, showing that although masculine from necessity, woman dwells within.

THE GOITRE.—There is a still more painful circumstance which often met our eyes. In every group composed of several women, you will see the goitre, and among the aged women it is often frightfully large. It is painful to observe its incipient manifestation, even in young girls; and there is apparently no disposition to hide these unsightly tumors by any arrangement of dress.\* Among the men, the disease appears to be far less frequent.

SION AND ITS MOUNTAINS.—The small, compact, and handsome town of Sion received us in a clean and comfortable hotel. The manners of the people were so kind, that we seemed to have arrived among our friends. To this day, I remember it with a feeling of home.

Sion, with three ancient ruined castles on its lower hills, is surrounded by a magnificent amphitheatre of very high and

\* An eminent physician in Geneva expressed to us the opinion that a surgical operation to remove the goitre would be useless, and probably fatal. I believe it is never attempted.

snowy mountains. A bright morning sun, reflected from their brilliant surfaces, presented a glorious spectacle, and formed a strong contrast with the fields of wheat and grass in the valley. The husbandman of Sion, while he cultivates the soil, is surrounded even now, in the second week of July, by the ice and snow of the higher atmosphere; and one is equally surprised that he has the courage to labor, and is favored to enjoy its fruits. In the streets, we saw the appearance of comfort in the habitations and shops, furnished with the most useful commodities.

CASCADE.—Among such high and snowy mountains we should, of course, expect to find cascades. We saw a grand and beautiful cataract fifteen or twenty miles below Brigg. It fell at the remote end of a deep natural amphitheatre in the side of the mountain, formed by high walls of rock. There, a mountain river plunged abruptly over the barrier, and fell 100 feet, being about forty feet wide, and ten to twelve feet deep.

Here also was abundance of alabaster, lying about in masses, and thus indicating both its birthplace and its abundance in the neighboring mountain. It was of a snowy whiteness, so pure, and of a texture so fine, that it was well adapted to form beautiful and delicate objects of art.

At Salence also, about forty miles below Brigg, a splendid cascade rushes from the side of a mountain, just below the road. Although it is not quite as large as the cataract of Tourtemagne, it is, if possible, more beautiful, as its entire fall exceeds 220 feet, and the vertical chute is over 120. It is well known in America by prints, and usually bears a coarse local name; but I prefer to call it the *Cascade of Salence*, after the place where it is found. A bright sunshiny day gave additional beauty and lustre to the irised spray, and to the brilliant white column of falling water.

DELUGE OF MARTIGNY.—We arrived at Martigny in time to see something of the effects of the tremendous deluge which occurred here in 1818.

At the head of the valley through which flows the river

Drance, which, at a high elevation, runs parallel to the Rhone, a lake had been formed by the melting of the ice and snow, and the water, almost at the summit of the mountains, was sustained by a glacier which had slid down from its place. This very narrow and profound valley is divided from that of the Rhone by a mountain barrier; a similar barrier runs parallel on the other side, and between them is the deep and narrow gorge. Eight leagues above Martigny was the terrific lake, with its treacherous barrier of ice, liable to be melted by the rains that had dissolved the mountain snows, and formed this dangerous collection of water, which was 7000 feet long. The barrier of ice that sustained it was 600 feet wide, 400 feet high, and rested on a base of 3000 feet.

The tradition had come down to the present generation of the dreadful catastrophe which occurred in these mountains in 1595, in consequence of the bursting of a barrier of ice; and the catastrophe was preceded by a diminution of the usual quantity\* of water in the Drance, a fact which was observed also in 1818.

On this occasion (1818), Mr. Vernetz, a distinguished engineer of the Vallois, with the aid of a party of intrepid men, undertook the dangerous service of draining the lake, by making a canal in the barrier of ice. The water was 60 feet below the barrier when they began their work on the 30th of May, and on the 13th of June the water began to flow.

In 32 hours the lake sank 10 feet, and during the following 24 hours 20 feet more, and had it continued to subside at this rate, the lake would, in a few days more, have been drained; but the falling water weakened the foundations of the dam, so that, on the 16th of June, the barrier burst, and in half an hour the lake was emptied. The water reached Martigny, a distance of eight leagues, in an hour and a half; the flood, in the upper part of its course, flowed four or five times faster than the most

\* The flow of water being arrested by the ice barrier, and being retained to swell the lake, deprived the river of its usual supply.

rapid river known. Four hundred cottages were swept away, and 34 persons lost their lives; the destruction of property was estimated at a million of Swiss livres.\* Trees, houses, cattle, and all movable things were swept away by this frightful deluge, which even destroyed several houses in lower Martigny. There are two villages, the upper near the mouth of the gorge, and the lower a mile distant, on the plain, and near the Rhone into which the Drance flows at Martigny. Three of us—leaving the ladies and the rest of the party at the lower village, took a little carriage of the country, called a *char-à-banc*, drawn by one horse, and were driven two miles to the opening of the valley of the Drance, that we might see the gorge—the great natural defile, through which the deluge discharged its waters. It was indeed a narrow canal for so mighty a flood. It appeared not to be more than 100 yards wide, if measured across at the elevation corresponding with the top of the flood, supposing the torrent to have been 30 or 40 feet deep, and through this narrow channel, which became still narrower near its termination, the water must have rushed with the rapidity of a mill race. Although the event was thirty-three years before the time of our visit, there are still visible many proofs of great devastation. Both at and below the outlet of the valley there are large loose rocks, that were doubtless brought down by the mountain flood. On a house in lower Martigny there is a distinct water line still visible, which proves the torrent to have been there eight feet deep, and it should be observed that this is a mile below the outlet. The gorge is succeeded by an extended plain on which lower Martigny stands, and over this champagne the deluge was at liberty to spread; but still the depth of the water was full two feet above the head of a tall man standing on the ground; as it came on in a violent rush, it must have swept all movable things, and animals, and men before it; and, as might have been expected, it was a fatal deluge.

\* The Swiss livre is a little more than twenty-five cents American coin.

The devastation along the course of the torrent in the higher parts of the valley was signal, and has been made use of in geological discussions on the force of mighty rushing floods. A similar event happened three years later in Vermont,\* United States. In an attempt to deepen the channel of an upper lake, the waters cut their way through the hard earth, rushed down into a lower lake, and the waters of both were precipitated through Barton river, a distance of 24 miles—the exact distance that the swollen Drance flowed—and were discharged into Lake Memphremagog. The devastation along the course of the torrent was almost as signal as that of the Alpine flood, and the records of both remain to this day inscribed upon the lacerated barriers, and marked by transported rocks.

Martigny is the usual place of departure, by a mule path, for the valley of Chamouny and Mont Blanc, which can, from this point, be reached over the Col de Balme in one day. But several reasons decided us to take the longer journey by Geneva. This decision enabled those of the party who were geologically inclined, to cross the Rhone, and make an

### Excursion to the Salt Mines of Bex.

We sent our friends forward to St. Gingulph, a village near the head of the Lake of Geneva, while four of us took the other carriage to convey us to the mines.

The distance from Martigny was five miles, and we passed through the village of Bex, which contains 3000 inhabitants; as it has sulphureous springs, it is resorted to as a watering-place. M. Charpentier, long known as a distinguished geologist, has the charge of the mines of Bex. Although without an introduction, we were courteously received by him, and he promptly furnished us with a ticket of introduction to the mines.

\* American Journal, Vol. xi. p. 39. Description by the Rev. S. E. Dwight of the eruption of Long Lake and Mud Lake into Barton river and Lake Memphremagog.



We walked more than half a mile up a hill, and finding a head miner, we were arrayed by him in brown frock coats, with a capot instead of our hats and caps. Excepting the navigation mine\* in Derbyshire, England, where we go in by a boat in a submontane canal, I have never seen any place of the kind so conveniently accessible as the mine of Bex.

We walked upright a mile in a gallery excavated in the mountain; the roof and sides were planked, and a plank walk covered the mud and water, so that, with the aid of our lights, it was quite a comfortable tour.

When we were advanced between four and five thousand feet, we descended about 20 feet, by ladders, to the chamber where the miners were at work.

We had, previously, heard the cannon-like reports from the blasting, and when we saw the extent of the chambers, we were not surprised that the reverberations were those of subterranean thunder. The cavity in which we were, appeared to have an area of an acre. The floor was level, the roof flat, and except a central block of the natural strata left as a pillar, it was almost entirely unsupported.

We could not but feel some apprehension, lest the roof, shattered by the frequent explosions, might collapse and crush the miners, or imprison them to starve in a salt dungeon. The miners were engaged in picking off the salt with tools; they work naked to the waist, and pass eight hours a day at their toil, which, by relays of men, is continued night and day.

M. Charpentier informed us, that the saline rock at Bex is lias, the lower member of the oolite, and that it is mixed with much gypsum, was evident from our own observation. From foreign mixtures it is freed by solution, in another chamber, which also we visited. There are, moreover, brine springs in the mountain, and the brine, after due concentration, is evaporated by heat until it will crystallize. The weaker brine is made to fall upon piles of fagots in a building, open at the

\* See Journal of Travels in England, &c., 1805-6.

sides, and thus the water evaporates and the gypsum crystallizes upon the sticks; this is repeated two or three times until the brine is sufficiently strong. The produce of the mines was, a few years since, twenty to thirty thousand quintals annually.

In that chamber in the mine which contains the saline solution, there are most astonishing echoes, with many repetitions; although they are very distinct, they are too numerous and rapid to be counted, and they die away by insensible gradations. Those of the party who had been there, remarked that the echoes are very similar to those of the Mammoth Cave in Kentucky, and that there, too, they take place over water. We had now seen one of the mines of Bex; but there are fifty of these large chambers in different parts of the mountain.

Our young men obtained of a dealer beautiful specimens of crystallized rock salt and gypsum, and other minerals of this region. It is here that the anhydrous gypsum is found, which is regarded with great interest by mineralogists. M. Charpentier warmly offered us the hospitality of his beautiful mansion, situated in the midst of rural attractions—fine meadows, gardens, trees, shrubs and flowers. Among other scientific gentlemen at M. Charpentier's, we were introduced to M. Vernetz, the engineer, by whose skill and intrepidity the glacier barrier in the Valley of the Drance was sluiced. M. Charpentier has added another instance of the courtesy and kindness experienced by us in Europe among men of science, without any personal claims. At his house we saw several refined and elegant ladies, with beautiful complexions, of whom there are doubtless large numbers in Switzerland, as well as in Italy, but they are not usually seen by the passing stranger. In Italy, especially, they seclude themselves more than is the custom with us.

## St. Gingulph to Geneva.

July 14, 1851.

RIDE TO ST. GINGULPH.—We were again in our carriage before sun-setting, and rode through a most charming country, verdant and beautiful, like the meadows on the Connecticut river. Night soon came upon us and veiled the country from our view; but we retained most agreeable impressions of our visit to Bex, and of its distinguished geologist. Our point of departure for Bex was from the Bridge of St. Maurice, a place celebrated both in geology and history; but we had no time to look for glacier groovings upon the cliffs, nor for the places renowned in ancient warfare, particularly where the Christian soldiers in the Roman army underwent martyrdom.

We arrived at St. Gingulph at eleven at night. Our friends were already seeking their repose, in a hotel, so secluded and quiet, by the peaceful lake, that they might well dream they were at home. After a light repast, we too sought our pillows, and found the refreshment so grateful to active travellers, and so auspicious for the next day's work. Morning found our party again united, and being once more in our carriages, we went forward on our journey.

The distance to Geneva is 35 miles, and the road passes along the shore of this beautiful inland water. An Alpine chain attended us on our left, the placid Lemane\* was on our right, and, in the more distant northwest, rose the Jura Mountains, dividing Switzerland from France.

\* The upper end of Lake Lemane is shallow, and the water muddy from the detritus brought by the Rhone from the Alpine torrents. A level plain of meadow land connects its head waters with Martigny, and is clearly due to the gradual shoaling and filling in of this part of the lake. Gradually the waters become clear as the sediment is deposited in this great quiet reservoir, until, at the other end, by Geneva, we see the

“Blue rushing of the arrowy Rhone.”

The country was in full rural splendor and beauty; it was rich in crops, and the wheat harvest, as elsewhere, was falling before the sickle, which, in one field, was wielded by six girls in one group. Trees were numerous, and many of them were of good size. Limestone was quarried in the mountains, at the foot of which we passed, and there were numerous pits to convert it into lime.

At Meilleré, a projecting cliff, which interfered with the road, was blasted away by the order of Napoleon, to make room for the Simplon road. It was at this point that Lord Byron was in danger of shipwreck in a storm. We passed through the town of Evian, with 1670 inhabitants, and Thouon, a much larger place. Near it are the ruins of the Castle of Amadeus VIII, anciently Duke of Savoy, who had been Pope, but abdicated the tiara and assumed the cowl.

### Geneva.

As we approached Geneva, the shores of the lake became exceedingly beautiful, and the villas were very numerous. We entered the city at 4 o'clock, *p. m.*, and found all the houses decorated with flags, in honor of a public anniversary of the Cantons of Switzerland, which was then being celebrated here. The houses in the principal streets were adorned by the flag of Geneva, which is a square with crimson ground and a white or yellow central cross.

When we were on the Alps, we were informed by our courier that a great festival was being kept in Geneva, and that without a previous engagement we might not find a comfortable home in the city. Accordingly François wrote on, in time to engage our rooms.

OUR HOTEL.—On our arrival we drove to the *Hôtel de le Ecu*—Hotel of the Crown. As we were expected, every thing was in readiness. We were warmly greeted (and there

seems in such a reception something more noble than a merely mercenary feeling); we were ushered into a princely parlor; our dinner-table was set; our bedrooms were ready, and we, at once, felt quite at home in a delightful house, neat and orderly as England, and elegant and tasteful as France and Italy. Our parlor is in the second story, and has an open balcony looking out upon the lake. The house is situated upon an open square, near where the Rhone, having traversed the lake in a course of 40 miles, issues again in a powerful current, and passes beneath an elegant bridge, hastening on to mingle its waters with those of the Mediterranean.

We left it, as it flowed from its native valley, and entered the lake near Martigny, a turbid torrent, charged with the spoils of the Alps; we welcomed it again, purified by washing in the crystal waters of the Lemán. It has been thought by geologists that its sediment contributes to elevate the bottom of the lake; but the eminent Prof. Favre, of Geneva, expressed to us the opinion, that it went rather to increase the extent of the land near the mouth of the river, and, of course, year by year, to diminish the area of water. Even if, in the course of ages, the land should supplant the lake, the powerful Rhone, sustained by Alpine snows, would maintain its channel and force its way onward to the sea. But it would then be turbid, like the Arve, which unites with the Rhone about a mile below the city.

One day, we drove down to see this junction. Geneva stands upon the Rhone, and this river in fact flows through the city, which is now extended on both sides of it, although anciently it was confined within the walls, which are still standing. In order to obtain a good view of the junction from a high bank, we were conducted through a beautiful private domain, with a country-house on the grounds, as if it had been an English park. I have mentioned the purity of the Rhone after its passage through the lake. The Arve is a furious torrent flowing from the snows and glaciers of the

Alps, and, like the Rhone in its own valley, is all turbid with mud and sand and floating wreck.

When, at a very acute angle, the rivers come into contact, the pellucid blue Rhone seems to struggle to avoid being blended with its foul invader. The water of the Arve, coming from almost polar regions, is very cold; persons who wish a tonic effect, bathe in it with all its impurities. The two rivers flow on, side by side, for several miles, before they become united, and after that, the stream is turbid quite to the Mediterranean.

I saw, in May, 1844, a similar exhibition on a vastly greater scale, at the junction of the clear and tranquil Mississippi with the muddy and violent Missouri; both rivers being then in the spring flood of high water. The Missouri prevails, and before they reach St. Louis, 14 miles below, the Mississippi flows on, a muddy torrent quite to the Gulf of Mexico.

I was early attracted from our hotel by the splendid scenery around the lake, and walked over the bridge that spans the river; a most beautiful sight is there presented of this noble city and its unrivalled environs. The Rhone issues from the lake in an impetuous current, and, as if impatient even of the partial impediment of the piers, seems to exult in having recovered its liberty after a temporary arrest.

In sympathy with the river, we also exulted in having passed from under the iron rule of despotism into a land of freedom. The busy population that were walking the streets and passing the bridge, exhibited in their open countenances, and evinced by their erect and manly movement, that they were conscious of possessing liberty and security.

SCENE FROM THE WINDOWS OF THE HOTEL.—With such sentiments and feelings, it was natural that we should sympathize with the scene passing under our eyes. Near to evening, we were called from the dinner table to our balcony by the booming of cannon, echoed back from the lake and its responsive shores. It was raining, and a whole field of umbrellas covered an interested multitude, which was pressing up to the

barrier near the harbor, to watch the movements of a fine steamer, the pride of Geneva, which was just rounding to, evidently with expected guests, who had come, like others, already arrived from the different states of the confederacy, to unite in a national festival, which is held annually in the principal cities of the twenty-four cantons, and this year is the turn for Geneva.\* This festival was the *Tiré Fédéral*, or great shooting-match of riflemen from the several cantons. This year, as for several past years, it is quite as much a political mass meeting as a trial of skill in marksmanship.

The delegates landed, and were received by the soldiers of liberty, marching with banners, and martial music from a fine band.

It was becoming somewhat dark, with commencing twilight, and a cloudy sky, when the "lightning flash" from the cannon's mouth gave time to mark a second and a half before the "thunder stroke," and then the flashes and reports came in such rapid succession that one was almost blended with another. The guests were conducted by the guard of honor to their lodgings, and the following evening and night were signalized, like our Fourth of July, with music and mirth, and marching, and singing, and shouting. Awakened from sleep, I rose and looked from my window, beneath which a dark cloud of young men was passing, evidently under excitement, greater than that of liberty alone.

The morning came, when, roused again by martial music, I beheld from the balcony, not the slaves of Austrian despotism, so painfully familiar to us in Italy, but a corps of the volunteer citizen soldiers of a free republic, marching to the stirring harmony of a band of musicians, with brass instruments of dazzling brightness. It was not an imperial, or ducal, or priestly pageant, but a corps of citizens in civil attire, with their rifles cased in leather, and slung over their backs, while a promis-

\* A principal citizen of Geneva said that it was held here nineteen years ago; another said that it had never been celebrated here before.

cuous and excited crowd followed with loud applause. The citizens with rifles appeared as if they might have been men of William Tell or Bunker Hill pressing forward to fight for liberty.

The Genevose were marching to the field, not for battle, but to prepare for it, by target-shooting with rifles. By a competition between the men of different cantons, a friendly rivalry is excited and sustained, which evidently springs from the old Swiss spirit of liberty, and is a proof of their determination to maintain it against the despotism that surrounds them. Were it not for their mountains and defiles, their hardy frames, their skill in the use of weapons, and their national love of liberty, their subjugation would not be a remote event.

TARGET-SHOOTING.—The next day we visited the scene of target-shooting. An admission fee of thirty francs is paid by the prize shooters; and after a certain number of shots, something more must be paid for each additional chance.

On a large area of ground, the exercise is carried on very systematically. The target is a large circular white board, having a small black spot in the centre, and a still smaller circle in the centre of that, the hitting of which implies consummate skill. The marksmen are allowed, if they wish, to rest their heavy rifles when they aim at the target, which is placed at the distance of 200 yards; and sufficient barriers of timber are erected beyond to prevent accidents. A long line of targets, containing perhaps fifty, extends across the field; beneath, sentinels are placed, who, as soon as a target is struck by a ball, pull it down, and another target is run up in its place. Signals are established also to convey to those who keep the records a correct report of the result of the trials of skill. A clerk is stationed for each gallery. The shooting ground is divided into a large number of narrow galleries or walks, by evergreens planted between them, and at the end of each are the targets. The wall to receive the bullets is of planks, strong enough not to be perforated. The marksmen stand in a large shed, with openings corresponding to each gallery, and in the rear necessary accommodations for loading and the convenience of assistants. The



rifles have frequently telescopes to direct the sight; and one man will sometimes have a large number of guns, which are handed to him by attendants as fast as he can shoot, while others reload, cleanse, and take from him the discharged pieces. One celebrated marksman was pointed out to us, who had been put up on a wager by the Genevese against the other cantons. He was on the ground at as early an hour as the target could be seen, and continued all day, and until evening, cracking away the whole time, and this for eight days in succession! As he was very skilful, and the highest number of successful shots wins, he was in a fair way to come off with the prize. No shot is registered which falls outside the narrow black ring, and into the white ground.

The prizes are distributed from a splendid temple in the rear of the scene of action. There are also on the ground extensive restaurants, temporary erections, for refreshment. Thousands of highly excited people of both sexes were constantly in attendance, from the city and country—from Savoy and from France; and the excitement did not entirely subside during the night. All day, political harangues were delivered from speaking-stands, around which crowds clustered, in proportion to the reputation and the vehemence of the speaker. This feature of the fête was, in fact, its most important aspect.

In the evening after our visit to the ground, there was an illumination; and our ladies, with two ladies of Geneva, walked the streets with us to see the imposing sight, and to observe the spirit of the people, with whom all was hilarity and joy.

The evening was serene, with fine weather, and the population, strangers and citizens, were all abroad and in motion. After the description which I have given of the illumination at Pisa, it would be superfluous to enter into particulars on this occasion, which was very far inferior to the Italian spectacle. The city was in a blaze of light, with many beautiful devices and emblems, figured by the position of the lamps. People readily recognized and kindly saluted their friends, and there

was not the slightest disorder. The only symptom of dissatisfaction exhibited on the occasion, was by the negative fact, that some people of the higher class—and there is an ancient and elevated aristocracy here—omitted to illuminate their windows. In most cases of popular movements of this nature, the windows would have paid the forfeit; and it is some proof of moderation in the democracy, who are now in the ascendant here, that not a window was broken. The democratic spirit has been dominant in Geneva since the revolution of 1848, by which the aristocracy are virtually proscribed from office. Some of them have spoken to us of the change with great regret, as they think it has been decidedly injurious.

This military fête is a popular movement; and hence the great excitement, which we were very fortunate in having an opportunity to witness, as we have nowhere else in Europe seen such a spectacle.

The population showed their admiration of their countryman, J. J. Rousseau, not only by decorating his bronze statue, which stands on the island in the Rhone; but his house was distinguished by brighter lights, and by an inscription to the "immortal author."

On the triumphal arches spanning the streets above, was this inscription:

"Un pour tous; tous pour un."

Before dismissing the subject of this national fête, I will add that the delegates from the different cantons bore along in their processions, some emblem or symbol of a local character or history of the people whom they represented.

The sharpshooters, when their day's work was over, returned to the city as they went out, marching in close phalanx, with their rifles slung on their backs, shooting-tickets in their hats, and the band performing some stirring national air.

Hearing their approach one evening, I stepped out of my chamber window, and stood uncovered and alone on the projecting iron balustrade; and what should I descry in the ranks,

but two bears—the great brown bear and the still greater white Arctic bear, marching, side by side, quite erect upon their hind legs, while their fore legs were pendent like human arms. As I was looking intently at them, I know not whether most amused or amazed, both feelings were increased when the Arctic bear, gazing at me through his little elevated eyes, turned in the ranks with a momentary pause, and made to me a graceful Greenland bow, which, not wishing that Bruin should surpass me in politeness, I of course returned. It is almost superfluous to add, that the bear skins, in very perfect preservation, with teeth and claws, on jaws and paws, contained within them each a living Bernese\* man.

This fête continued about ten days, and I may say ten nights also, until the graver citizens became quite satiated with the incessant crack of the rifle by day, and with the joyous orgies of the night. Few of the present generation in Geneva will see this celebration again, as it comes in rotation to the twenty-four cantons.

THE SOCIETY in Geneva is of an elevated and refined character. Geneva has always been foremost in learning, and in all the arts of cultivated and polite society. Our stay was quite too brief to permit us to see as much of its scientific society as we could have wished; but we have received a great deal of kind attention, and have become acquainted with those who will ever retain our cordial esteem.

Dr. Mounoir, son of the distinguished oculist of Geneva, and himself a man of reputation in his profession, is married to an American lady, whose family and friends we had known in Connecticut. By their kindness we were permitted to see somewhat of the domestic life of Geneva, and from them we received much valuable assistance in many ways.

Rev. Dr. MERLE D'AUBIGNY is so well known in the United States, by his History of the Reformation, that he is an object of great interest as a public man.

On sending him an introductory card, he appointed an early

\* Berne is named from the bear.

hour for an interview at his own house, where we met a very kind reception, and with great satisfaction passed an hour in his society. His person is tall and commanding, his head large and of the finest moral and intellectual form; his countenance handsome, his features being strongly marked both in symmetry and in intelligence; his eyes are deep seated, with arching dark eyebrows and eyelashes, but with a delightful expression of benevolence playing on his noble face, as he discourses, in excellent English, and with great power and copiousness, upon religion as it now exists in Geneva—upon its political and social condition, topics to which we led him, or upon whatever other topic was suggested in conversation. He is one of the few great men, who are equally attractive as great; a magnificent tree, under whose shade we are refreshed but not chilled, and whose branches droop with ripe fruit.

We had to regret that we could not hear him preach, as it was vacation and his church was closed. He had been recently in England, and preached in a church of the establishment, which gave great offence in certain high quarters. He had another volume of his admirable church history then almost ready.\* Dr. Merle d'Aubigny belongs to one of the old families of Geneva, and lives in the house in which he was born.

It stands on the border of the lake in a beautiful domain, shaded by large and venerable elms and sycamores. When we inquired for the grave of Calvin, he said it was unknown, and therefore no confidence can be reposed in a spot in the public cemetery, where there is a small monument to his memory. When I spoke of Calvin as an *iron* man who was needed in that *iron* age, he replied that he was a great man, a *very* great man, and that he did not want for tenderness, as appeared by his letters written on the occasion of the death of his wife. He said that there were many other letters of his extant, that a gentleman was deputed from Paris during the reign of Louis Philippe, to prepare for publication those that were not religious, and that such a collection of his correspondence would

\* It has recently appeared.

probably soon appear. I asked him if he did not think of visiting America, where many thousands had read his writings, and all would give him a warm welcome. He replied, that such a voyage would be undertaken by him only from a prospect of promoting the cause of religion, and at present he saw no indication of that nature.

I do not know his age, but he is evidently passing into the early shades of the evening of life, when its lustre is softened but not obscured; may it be long before his sun shall go down!

PROFESSOR MARIGNIAC AND THE UNIVERSITY.—This distinguished chemist opened the public rooms for our inspection. There is in the university a small, but well-furnished laboratory, and an extensive and well-arranged cabinet of minerals. Haller's herbarium and Pictet's philosophical apparatus are here, with fossil plants of MM. Brongniart and Decandolle, and the collections of M. Necker.

The object of the greatest interest to us, was the original collection of rocks and minerals made by De Saussure, and labelled by his own hand.

There also is his mountain staff, the *Alpenstock* with which he ascended Mont Blanc; it is a pole about eight feet long, and pointed with iron in the manner of a pike.

Among the Swiss savans Professor Marigniac enjoys the highest reputation as a chemist. His researches have been directed particularly to the more accurate determination of the equivalent weights of various elementary substances, and his results have stood the test of the severest revision. We saw, of his preparation, in his laboratory large quantities of some of the rarest substances. Here also we had the pleasure of meeting Professor Milne Edwards, now on his return from Italy; he was accompanied this morning by Professors Pictet and De la Rive.

PROFESSOR AUGUSTE DE LA RIVE.—This gentleman's name is honorably regarded wherever science is cultivated. The family of De la Rive is one of the most ancient in Switzerland, and the father of the present Professor was distinguished

in the same line of science as the son. For many years, the "Bibliothèque Universelle," of Geneva, has been intimately connected with M. De la Rive as one of the editors. Our acquaintance with its present distinguished rédacteur was long ago commenced through the American Journal of Science and Arts.

We had been invited to visit M. De la Rive's country residence, and my son and myself drove out to it—five miles from town. The house is situated in the midst of an ancient family domain, an area of 500 acres, resembling an English park in the richest verdure, with grand trees and serpentine walks. From a balcony there were splendid views of the surrounding scenery.

It was near the middle of July, and ripe cherries of delicious flavor added their attractions to the hospitable overtures of the kind proprietor; by invitation we stood under the trees and freely picked the fruit. A month or six weeks before, we had been regaled with cherries equally fine, plucked from the trees near the gate of the ancient city of Cumæ, on the Bay of Baïæ, near to Naples.

The domestic premises of the country establishment of M. De la Rive are ample, and the apartments are decorated with many works of art.

On another day, he was so kind as to open his town residence for our inspection; it is temporarily closed during the summer, when the proprietor occupies his villa. The town house is a palace. It has numerous and splendid apartments, adorned with very beautiful paintings. Among them are several very large and magnificent landscapes by Callam, and other modern Swiss artists, not surpassed in excellence by any thing we had seen in Italy.

For our gratification, Professor De la Rive opened for our inspection the cases containing his fine apparatus in the department of physique, in which he has been very much distinguished, especially in electro-magnetism. He inquired particularly respecting the volatilization of charcoal in Yale College, by the galvanic deflagrator of Dr. Hare, in 1823. He decidedly

admitted the claim, and the truth and accuracy of the statements which had been originally published in the *American Journal of Science and Arts*; the originality of the experiments had, he farther remarked, been recently recognized in Paris by Mr. Despretz, after being controverted at home and neglected in Europe. At that time (1823) there were no galvanic deflagrators in Europe, and the ordinary batteries were not sufficiently powerful to volatilize the carbon from one galvanic pole and transfer it to the opposite pole, there to appear in the form of a protruding cone, exhibiting the curves and glossy lustre of a fused substance,\* while a cavity was made in the charcoal point from which the carbon had been volatilized. Still less were the European instruments, then in use, competent to transfer the carbon back again on exchanging the position of the poles, when the protruding cone would disappear from the charcoal point on which it had been raised; it would pass back in vapor to the other pole, there fill up the crater-shaped cavity from which it had been drawn, and the cone would rise on that pole while the corresponding cavity appeared on the opposite pole.

It was particularly grateful to have these results, obtained almost 30 years before, recognized and reaffirmed by such authority.

PROFESSORS PICTET AND FAVRE.—Professor Pictet is of the department of zoology and comparative anatomy; Professor Favre is the geologist. These gentlemen, who are among the most eminent and enlightened citizens of Geneva, kindly attended the geologists of our party on an excursion near the city. The Salève mountains and their granite boulders, were our immediate object.

Within three or four miles of Geneva, on the east, rises a ridge of naked mountain rock, 3000 feet higher than the lake and 4000 above the sea. It is in two divisions, called the greater and the lesser Salève. The mountains themselves are composed of limestone, belonging to the era of the chalk, and Oolite and Jura limestone.

\* The elongating pole is —, the concave one +.

In the direction towards the city the sides of the Salève are perpendicular except the talus of ruins. Our excursion was highly satisfactory. We found numerous boulders of unquestionable protogine granite, lying upon the top ridge of the mountain and upon the eastern and southern slope, looking towards the Mont Blanc range. There were masses of granite of all dimensions; some were 20, 25 and 30 feet in diameter. Their position was evidently due to accident, and they rested wherever they were stranded. Some are on the very apex of the mountain, some perched upon prominent cliffs, others on a poise, as if just ready to fall.

Many of the boulders had been split and wrought into the walls of houses and fences, and thus their number is, from year to year, diminishing; as was remarked by one of the gentlemen, who said that they were sensibly less numerous than at his last visit a few years before. These boulders are derived from Mont Blanc, 50 miles off, and have come over all the intervening valleys. There is no granite nearer, and no known physical cause could transport them, except ice in the form of glaciers, or floating icebergs freighted with rocks. I will not repeat the remarks which I made on this subject at the meeting of the Geological Society of London, nor anticipate those that may be elicited by scenes with which we hope soon to become familiar. Some of them were before our eyes. The splendid lake in full view extended in a grand sheet of tranquil water, the beautiful city of Geneva was at our feet, and beyond, in the distance, were the Jura Mountains. The great valley of Switzerland lay as a natural gulf between us and the Alpine ranges—its surface being elegantly varied by hill and dale, and rich in cultivation, while Mont Blanc limited our distant horizon with its snowy barriers.

We had ascended on the eastern slope of the Salève, both for facility of movement and to observe the boulders there. We now descended by the *Pas de l'Echelle*, a steep and winding path on the front next to the city, where the naked mountain



side, denuded by time, discloses a distinct stratification visible from the town.

My son and myself accepted Professor Favre's invitation to visit him at his country seat on the only evening at our disposal. A protracted call from some of our countrymen, brought us to 8 o'clock, the hour of our appointment, before we left the hotel, in a hard rain. By a blunder of the coachman, we were set down at the house of Professor Favre's brother on the eastern side of the lake, so that before we could drive back to the city and three miles farther on the other side it was already 9 o'clock. Our friends had almost despaired of our arrival; but we soon forgot the vexation of our delay in a most delightful visit. The professors at Geneva are many of them men of wealth, belonging to old aristocratic families, and they live in a style of elegant affluence, which renders their hospitality peculiarly attractive; and it was graced in this instance by refined and accomplished ladies.

In this city we have received nothing but kindness; and we have become acquainted with those who will ever retain our cordial esteem and good will. Among such Dr. and Madame Mounoir deserve a distinguished place. Dr. M., as already remarked, is an eminent physician, and a polished gentleman. He speaks the English very well. Madame M. is an American lady, with whose father I had been well acquainted from his youth.

We were indulged with domestic familiarity at Dr. M's; and Madame M. was the guide of our ladies among the tempting shops of Geneva, replete with watches, jewelry, and all the elegant productions of Swiss genius and skill. Not a few commissions for friends at home were to be fulfilled, as well as for ourselves.

It is universally known that Geneva is famous for its watches. Many of the villages of Switzerland, near and remote, and even upon the Jura Mountains, on the confines of France, are employed mainly in constructing the moving parts of watches. The watches of London, except perhaps the best chronometers, are often, as regards the internal machinery, made in Geneva, and fitted up and cased in London.

### Memorable Places in Geneva.

CALVIN'S CHURCH.—We have been to the old cathedral, where Calvin preached. It is a grand and memorable building, originally Catholic; but at the Reformation it was divested of all the embellishments usual in Catholic churches, and now remains in perfect preservation, in simple dignity. It is constructed of a brown or gray sandstone. Its columns are jointed in many pieces; and it is, on the whole, a fine and imposing edifice. The pulpit is not Calvin's, but the sounding-board above is the same that reverberated to the sound of his voice. This cathedral is the only thing of a personal nature remaining in Geneva that can be certainly identified with Calvin, his manuscripts excepted: great numbers of his letters and sermons are preserved in the library.

We did not open again the painful subject of the burning of Servetus. The great Reformer partook of the faults of the age, and there can be no adequate justification of this barbarous act, although the magistrates who were associated with him participated in the guilt.

THE BOTANIC GARDEN, the scene of the labors of the celebrated Decandolle, we could only see from a platform overlooking the garden just below, as a copious rain prevented us from walking, as we intended, among its trees and plants.

"In 1815, when Decandolle wished for a botanic garden, the laboring classes of Geneva offered, voluntarily, to build a hot-house, and glaze it, and all at their own expense;" such has been the spirit in Geneva for the promotion of knowledge.

We gazed at this area with painful interest, as it was the scene of the bloody revolutionary butcheries of 1794. The diabolical madness which had made Paris a slaughter-house extended to Geneva.

HOUSE OF DE SAUSSURE.—We visited the *Maison de Saussure*, where the celebrated Alpine traveller, Horace Benedict de Saussure, lived, and where, six years ago, his son, Theodore de

Saussure, eminent in chemical science, died. We were accompanied by Professor De la Rive, and visited the house chiefly to see the fine collection of the works of living Swiss artists now on exhibition there. Switzerland may well boast of her landscape painters, whose works compare favorably with the best days of art. Callam has no equal as a painter in landscape in our day; and we had the pleasure of seeing several of his best works here, as well as at the house of Professor De la Rive, and afterwards in Neufchatel. The portraits in this collection appeared very fine.

We had just a peep also at the *MUSÉE RATH*, established by the reversion of the estate of General Rath, its founder. It contains a good collection of works of art, and especially of models of celebrated pieces of sculpture.

GRAVE OF SIR HUMPHREY DAVY.—This eminent man finished his mortal career in this city. I visited his grave, in the public cemetery, and copied the following inscription from his tomb:

Hic Jacet  
HUMPHREY DAVY  
Equæ, Magnæ Britanniæ Baronelus,  
Olim Regiæ Soc. Londin. Præses.  
Summus Arcanorum Naturæ Indagator  
Natus Penzantiæ Cornubiensium  
XVII. Decemb. MDCLXXVIII.  
Obiit Genævæ Helvetiorum  
XXIX. Mai MDCCCXXIX.

In September, 1805, I was at Penzance, in Cornwall, his native town, almost at the Land's End, whence issued the humble apothecary's boy for Bristol, but in a few years to become the distinguished philosopher of London, and president of the Royal Society. I had an interesting interview with him in the Royal Institution in London, in November, 1805, and now passed a short time in musing over his grave, his monument having been raised among strangers, in a foreign land. Near the grave of Davy is that of the great Swiss botanist, Decandolle.

There is here still another monument, the story upon which must touch every human heart: "To the memory of the Rev. Mr. Bracked, M. A., of Queen's College, Oxford, and his brother-in-law, Aug. Campbell, Esq., of New Brunswick, who perished in a snow-storm, with their guide, on their way to the Great St. Bernard, 13 December, 1830, aged respectively 30 and 20. Their remains (buried in the snow, and discovered by dogs) were brought into Geneva for interment."

GENERAL REMARKS ON GENEVA.—This city contains about 32,000 inhabitants; and its small territory of 137 square miles has about twice that number.

Geneva is very well built, with lofty houses of stone; and the streets are generally wide and clean. The rapid passage of the magnificent Rhone beneath its beautiful bridges gives great vivacity to the city. The impetuous river contrasts beautifully with the quiet bosom of its nursing lake.

I have already mentioned the bridges as a thoroughfare—a favorite promenade of the citizens, and of strangers, who all go over to visit the bronze statue of J. J. Rousseau, situated on a small island. It is, however, not much esteemed as a work of art.

The lake of Geneva is over forty-one miles long, and its greatest breadth is eight and a half miles. Its greatest depth is 900 feet. It does not freeze entirely over in winter, although it lies 1126 feet above the sea. The lake contains many granitic boulders, brought down from the high Alps. Near Geneva, two of them project above the water, and are called *Pierres de Nilon*, from a tradition that the Romans made use of them as altars in the worship of Neptune.

Geneva is still surrounded by ramparts, erected in the middle of the eighteenth century by the aristocratic magistracy of that period. The form of the ground gives rise to the distinction of an upper and lower town; and the classes of society correspond with this language—the opulent people, and grand houses, being generally in the upper town.

Much wealth is brought to Geneva by travellers, of whom

the number that pass through the town annually is said to be about equal to that of its regular inhabitants.

Geneva was formerly subject to the dukes of Savoy, but asserted its independence of them in 1524 ; and nine years after, having become Protestant, it expelled the bishops also. Many attempts were made by the dukes to recover their authority ; and the last attack was in 1602, when a nocturnal escalade was attempted, which was signally defeated by the bravery of the citizens, although surprised in their slumbers, and rising from their beds to fight without the aid of any other weapons than those just at hand.

THEODORE BEZA, although an octogenarian, preached the next day from the 124th Psalm, which has been ever since sung on the return of the anniversary.

*Ferney*, Voltaire's residence, five miles north of Geneva, is much less visited than formerly, as the fame of the brilliant bad man has waned.

Of the 32,000 inhabitants of Geneva, or 36,592 including its suburbs, 7300 are Catholics. The French captured Geneva by surprise in 1798, and it was annexed to the Republic of France, under the name of the Department of the Lemane; but, in 1813, when the fortunes of France declined, it was restored to independence, which it has since retained.

### Excursion to Mont Blanc.

July, 1851.

Leaving our baggage behind, we departed from Geneva at an early hour, with our old veturino Paulo. With his carriage and four we expected to accomplish the ride to the valley in a single day. As François preferred to remain in Geneva, we accepted in his stead an old man, said to be familiar with the road, and who had passed it the last time within a month. We drove out to Bonneville, eighteen miles, and after our *déjeuner*, proceeded, as we supposed, on our way ; but our doxy conductor, on crossing the bridge at Bonneville, allowed the

coachman to take the right instead of the left hand, and we had travelled twenty miles before the blunder was discovered, then not however by him, but by Paulo, who ascertained from a farmer that we must return to Bonneville; and thus, like Gilpin, we came back safe to the place whence we had set out, having travelled forty miles to no purpose, and lost a day.

The next morning we pursued our journey through a magnificent country: verdant dales and rushing torrents appeared in strong contrast with lofty mountains, and snowy peaks and ridges. These contrasts recurred every mile, and afforded the most admirable blending of the sublime and the beautiful. We travelled between ranges of very high mountains, that were nearly parallel and much nearer to the barrier on our right than to the opposite side, our course being S. E., while the river Arve flowed on our left, dashing forward impetuously over its stony channel. No considerable place occurred until we arrived at Cluses, six miles from Bonneville. Having been destroyed a few years since by fire, the town has been rebuilt with handsome stone houses, and with wide streets. As in most of the villages near to Geneva, the people are occupied chiefly with watch-making, or with arts connected with that manufacture.

**GEOLOGICAL FEATURES.**—At Cluses, we entered into a narrow defile between the lofty mountain ranges, whose immense walls rose vertically from this deep gulf to a giddy height, or impended with menacing aspect over our heads. In this natural defile there is no more room than for a narrow road and for the current of the Arve. On our left, two copious fountains rose abruptly out of the earth, springing from their concealed sources beneath the mountain. The water was lively with gas, whose nature we were not in a condition to ascertain. Saussure, with strong probability, attributed these fountains to an elevated mountain lake.

**CATARACT.**—As we advanced along this deep and narrow defile, our eyes were arrested by a most beautiful cataract, that of Arpenaz, near to Maglan. It rushed over the edge of a cliff 800 feet high. The column was unbroken in

its fall, except in one place, and there only for the breadth of a few yards. The spray dashing all around, maintained a lively verdure in the sloping grass-plots. This brilliant cascade was decorated, by the sun's beams, with rainbow hues, and floating pearls, while the spray, rivalling snow driven by the wind, was a delightful object to the traveller's eye.

The beds of stratified limestone, which had attended us all the way from Geneva, were here bent in a very striking manner. The strata, which in the general structure of the mountains were horizontal, or nearly so, had here been doubled over in the form of the capital letter U, laid down on one of its sides, thus,  $\cup$ . In this manner it happens that the stratum which is below at a certain place, takes a position above after the curvature, and as the bend exists on a vast scale, in horizontal extent, and on a front of 1000 feet in perpendicular elevation, a perfect vertical section is thus exposed to view. All the strata of that place being curved in the same manner, it presents a most interesting geological phenomenon on a vast scale. The strata on both sides of this great chasm in the limestone exhibit decisive proofs of violent upheaval and down-sinking; being curved, distorted, and broken in many forms, proving the exertion of great power. In one place we observed the limestone rock all shattered, and broken up into small fragments, sharp and angular; but they remained in place, adapted to each other by their salient and reëntering angles, having been evidently subjected to a violent crushing pressure.

VILLAGE OF ST. MARTIN'S AND VIEW OF MONT BLANC.—St. Martin's is about ten miles beyond Cluses, and our carriage was not permitted to proceed any farther. The government, doubtless from regard to the safety of the passengers, do not allow heavy carriages with four horses to travel up the mountain road, which is much more safely passed in the light carriages of the country, drawn by two horses, and managed by men who are perfectly acquainted with this Alpine region. In three of these carriages, after our morning repast, we proceeded on our way.

Before we went forward, I walked a short distance to the bridge of St. Martin's, from which a magnificent view of Mount Blanc is obtained. There is no intervening object to break the prospect; the entire group is seen at a glance, quite down to the base, and although the distance in a right line is probably ten or twelve miles, the mountains seem just at hand, as if you could, by a short walk, arrive at their base. It is difficult to imagine a more sublime spectacle; there they stand in serene majesty, seeming to belong more to heaven than to earth; they have been covered by snow and ice ever since the first vapor was condensed and congealed upon their awful cliffs, and their gelid robe of purest white they will never put off while the earth and its physical laws remain. The distance from St. Martin's to the valley of Chamouni is 18 miles by the road.

The greater part of it is on the ascent up the mountain. At half-past four o'clock, P. M., we arrived at Servoz, which is half way from St. Martin's. Here there is a comfortable house in which to rest, and they offer for sale various curious things, the productions of the mountains.

Through all our journey from St. Martin's to Chamouni, we were embosomed in wild and grand mountain scenery. It is comparable for sublimity to that along the Simplon road. Many of the beetling cliffs and mountain walls, in naked ruins, stood out in strong relief against the azure sky, and at such a great elevation, cracked as they were and often overhanging fearfully, that we were not disposed to linger long in contemplation, and felt relieved when our slow upward progress had carried us safely by them. As we ascend, the road grows more and more steep and rude, and the mountain forests, as we wind along, give the appearance of retiring farther and farther from civilization. At last, the Vale of Chamouni opens gradually upon the traveller, while the glaciers begin to appear, like rivers descending to the valleys and congealed in their course. First and nearest we see the Glacier of Tacony, then the Glacier des Boissons, and, last of all, the Glacier des Bois, the termination of the Mer de Glace, ends the first view.



The eye runs along up the fearful heights from which the glaciers descend, and rests upon the magnificent dome of Mont Blanc, 15,744 feet, nearly three miles vertical, above the level of the sea. The village of Chamouni is 3425 feet above the sea, and the summit of Mont Blanc is still 12,319 feet, or two miles and one-third above the village.

THE FIRST IMPRESSION OF THE VALLEY is decidedly agreeable. You have been winding through the gorges of dreary, savage-looking mountains, and all at once, the mild beauty of a long-extended and cultivated valley bursts upon you. It is strongly contrasted with the grandeur of vast mountain barriers on both sides, and ere you are fully aware of the approaching change, you are driven in among comfortable dwellings, where a cluster of hotels, with high-sounding titles, invites you to partake of their welcome comforts. At the Hôtel de Londres et de Angleterre, we had a nice parlor, clean beds and lodging-rooms, and a good table. Although this mountain valley is far removed from the more frequented haunts of men, so many strangers and tourists are attracted to it every season, by its unrivalled scenery, that it abounds with comforts and even with luxuries.

VIEW OF MONT BLANC.—When it is remembered, that this group of mountains is not seen with the advantage of a perfectly clear sky, more than sixty times in a year, or a little more than once in a week, many visitors must, of course, be disappointed, as indeed appears from the records of the books in the hotels. Sometimes a sojourn of several days ends at last in discomfiture, and not every traveller can submit without leaving in the album some proof of a vexed temper. Were the hills now, as in ancient days, believed to be ruled by their own local genii, many an imprecation would be recorded against the evil spirit of the mountains. We were favored with the finest weather possible.

The bridge in St. Martin's is the only place, as already remarked, where the entire group of Mont Blanc can be seen in one view; and, when we were there, so clear was the atmo-

phere, and so gigantic the monarch mountain, that distance seemed annihilated. Were the traveller even then to turn back and see no more of Mont Blanc, he would have been well rewarded for his journey.

MONT BLANC BY MOONLIGHT AND BY THE RISING SUN.—From the windows and balcony of our hotel, which looked towards the mountain, we enjoyed a view still more glorious than that from the bridge.

The full moon, rising in a cloudless sky, as she attained the proper altitude, poured down her silver light upon the cold icy dome, while the deep shadows set off the glittering summit in beautiful contrast.

Never did we behold such a moonlight scene; it was a tempered and softened grandeur, pensive and sublime.

In the morning of the next day, the same brilliant azure pervaded the heavens, and the sun, full orbed, shone gloriously upon the pure white throne of ever-during winter—an arctic winter, which even the fervid solar beams of July and August have no power to dissolve.

Two such magnificent views, first of the moon and then of the sun, throwing their floods of light upon the crystal throne of Europe—that throne which, on earth, represents the great white throne in the heavens!

ASCENT OF THE MOUNTAIN.—The first successful ascent was made by Dr. Pacard, with James Balmat for a guide, August 8, 1786; the second, by the celebrated Horace Benedict de Saussure, August 3, 1787.

Thirty-two ascents are recorded for 64 years, averaging one ascent in every two years. One of them was made by Dr. Howard of Baltimore, and Dr. Jeremiah Van Rensselaer of New-York, June 19, 1819.\* Dr. Grant, of Hartford, also ascended as far as the Grand Mulets.†

I believe that two ascents have been made since the period

\* See American Journal of Science and Arts, Vol. II, p. 1.

† American Journal.

of our visit. The journey usually occupies two or three days and two nights. They ascend first to the Grand Mulets, where they sleep; the next morning they reach the summit, and descend to the Grand Mulets again to sleep, and the second or third day they reach the valley. This adventure is not now worth the fatigue, danger, and suffering which are encountered. Every fact relating to science has been ascertained, and beside the scenery and the general prospect, nothing remains, but the self-gratulation which attends success in the enterprise. As to fame, that can hardly be an inducement, as so many persons have performed the journey.

David Coutet (one of our guides, and a man of great intelligence) showed us his hand crippled by the loss of several of his fingers by cold, during an expedition up Mont Blanc. On another occasion, three of his assistants were swept away and destroyed by an avalanche. We became acquainted with another guide, one of whose hands had suffered in the same manner in this severe service. The guides say that the entire journey, out and back, requires 52 miles of travelling. They have no method of estimating the distance except by the time occupied, and Prof. Forbes, of Edinburgh, says that the distance is exaggerated by the guides: this is quite natural, since they encounter so much danger and fatigue. These intrepid men are represented by all who have intrusted themselves to their care, as being regardless of danger in protecting travellers, and that they will encounter any hazard for their sake.

MONTAGNE VERT AND THE MER DE GLACE.—In reference to this ascent, we secured the two guides esteemed the best in Chamouni—Auguste Balmat and David Coutet—the same that have been already alluded to. We were early on our saddles, upon strong mules, but not with decrepit horse furniture, as in some former mountain journeys; all was now so strong and good as to command our confidence. The guides went on foot. The ladies were furnished with fortified sad-

dles to guard against falling off, and they had each an extra attendant walking by the side of the mule.

This mountain is very steep, and rocky; it is exceedingly encumbered with its own immense ruins, which, in the course of ages, have rolled down from its summit and lodged either at its base or on its flanks. There are piles on piles of rocks, and some of them are of great dimensions; among which, to clear even a mule path has evidently been a work of great labor and difficulty. The zigzag ascent winds around turns, which are very abrupt and frequent. They often pass along the edge of fearful precipices, where a false step would send the mule and the rider to destruction. It often seems as if the apparently perverse, but really skilful little animal, was about to walk deliberately off, as, in order that his feet may find their proper position, his head and neck are projected beyond the road, and overhang the precipice. But do not interfere with the nice balancing of your mule; he knows better than you can instruct him how to proceed, and has not the least inclination to roll down the mountain, although the wrong pulling up of a rein, or the sudden change of position of a heavy man on the saddle, may force him and yourself to that result. Trust a good Providence, and the mule, as the instrument, and you will pass safely along the mountain steeps.

The ascent occupied two hours and a half, when we arrived at the hotel near the top of the mountain, which falls but a few hundred feet short of being as high as Mount Washington in New Hampshire. We found that several strangers had already arrived, like us, to see the glacier; our position enabled us to look down upon the Mer de Glace, and, being furnished each with an alpenstock, we cautiously descended the bank of the mountain, which inclines with a gentle slope down to the sea of ice.

THE MER DE GLACE.—We were again favored by fine weather, and the sun shone bright. In a rain, it would be dangerous to walk on the slippery ice, and in a fog or snow-storm

(for on the high Alps snow-storms occur in all the months of the year) in such circumstances the adventurer would be in constant danger of falling into the yawning crevasses.

Arrived upon its immense and cold bosom, we looked eagerly around, and saw that it was indeed a sea of ice; or rather, it is like a great river suddenly congealed in the midst of a tempest. By a little practice with our poles pointed with iron, we acquired confidence, and made excursions in various directions. This glacier is, indeed, a wonder. From the mountain top it descends more than 20 miles, and has an extent, as our guides assured us, of more than 50, if all the ramifications are included; it reaches quite down into the valley of Chamouni. The breadth of this glacier, in that portion which was under our immediate inspection, is from half a mile to a mile. It is, at present, much divided by cross fissures or crevasses, which grow more numerous as the season advances. The glacier, by moving downward, at the rate of more than a foot in a day, is impeded by the rocky bottom, and as the ice, thus hooked and grappled by the pointed rocks, hangs there in opposition to gravity, which is constantly urging the mass downward, it cracks, forming those open fissures which the French call *crevasses*. An intelligible description of a glacier is not an easy thing. It is not, as one might suppose, a smooth glassy surface, like that on a quiet, congealed lake; possibly in the very elevated regions it may have that appearance, but in these lower regions it is a continuous series of masses connected, indeed, below, but so separated above by the fissures, that the portions appear like vast white rocks—white originally, but the fine fragments and dust of the granite and other rocks, disintegrated by the weather on the exposed cliffs, and blown down upon the surface of the glaciers, gives them that soiled and dingy aspect which they present. It has often been remarked by those who have examined the glaciers, that rocks and stones, falling upon them, are buried in the falling snows of the higher regions, and by the melting and freezing of the snow, they become eventually buried in solid ice. In the progress of years,

and in the succession of summers, as the glacier advances downward, bearing along these rocks and stones, they are disclosed by the melting of their covering, and thus they come into view as if they had actually risen. Sometimes they so effectually cover and protect the ice on which they lie, that it does not sensibly melt beneath them, while the general surface all around is lowered by the melting, and thus it happens that a rock may stand on a pedestal of ice sometimes several feet or yards above the general level—and many such rocks may be in view at once; but eventually the pedestals give way, and the elevated rocks fall to the common level.

The fissures and crevasses are so numerous and deep, and their edges are so slippery, that great care is requisite at all times to avoid falling into them; when they are concealed by snow, arched over them, the danger becomes imminent, and in such cases the cautious guides try the soundness of the footing by applying the iron-pointed alpenstock. The sides of the crevasses are of a splendid blue-green color, and the ice often contains pools of pellucid water; the more superficial cavities are little lakes, accessible without danger, and the water, from its purity and coldness, is very refreshing to the traveller. Rills of water, coursing over the surface, plunge into the crevasses and are lost, all but the musical murmur of their fall.

Even the masses, which externally are soiled and dirty, on being broken exhibit pure and transparent ice, looking like the most perfect rock crystal. Every morning the hotels are supplied by resorting to the lower end of the glaciers. They need wish for nothing purer; and thus they have an unfailing supply from these great natural ice-houses—sources which are perennial and inexhaustible.

The first appearance of the glaciers is like that of a fearfully agitated ocean, tossed by violent, and conflicting, and eddying winds, congealed ere the billows have had time to subside, and thus preserving all its high ridges, its peaks, and deep hollows. Still, there is a degree of regularity in the confusion: the tumult has observed a law which has opened the fissures, &c.

curves, parallel, and nearly at right angles to the rocky banks, the convexity being downwards from its source.

MORAINES.—This is the name given of old to the piles of rocks, and stones, and ruins which are crowded along the sides of the glaciers, forming *lateral moraines*; and the name includes also those still more considerable piles that are both borne along by the glacier and pushed before it in its descending course, forming *terminal moraines*. From our present point of view, we could see only the lateral moraines of the Mer de Glace; the terminal we reserved for another occasion. The lateral accumulations are here very great; they form a high and rough border of granite rocks, which are, in some instances, very large; and as they often lie high above the glacier, forming a train along the naked rocky sides, they prove that the glacier has been anciently much thicker, and has descended at a higher elevation.

ROCKS BORNE ALONG on the surface of the glacier are very numerous, and like those arranged along the sides, they are granite, often in enormous blocks. They either lie upon the glacier, or repose in its crevasses, or are frozen into it in mass; and as they move downward, with a progress slow indeed, but sure, they will eventually find their place in the lower country, or they will be piled up along the sides in lateral moraines.

The theory of glaciers cannot be adequately discussed in these rapid popular remarks; but the writings of Agassiz, Charpentier, Forbes of Edinburgh, Guyot, and other eminent Alpine travellers and writers, afford ample information. The transportation of rocks by glaciers to great distances is a fact fully established. The rocks have fallen from the higher cliffs, and have been borne along downward. The masses of rocks and stones that are pressed beneath the glacier during the season of its motion, in the summer, or between it and the lateral walls, produce those furrows, scratches, and grooves, and those polished surfaces, which are observed in all the countries where glaciers exist, and often also where they are not found at the

present day. The erratic rocks, called boulders, have often the same origin as those on the back of the great and little Salève, near Geneva. Floating icebergs have also been efficient in the transportation of the erratics. This necessarily implies submergence of the countries over which the bergs have passed; just as they are, in fact, floated in the present era from the polar regions of both hemispheres; and, therefore, we must admit the existence of elevated ice-bound cliffs to form the icebergs, and to afford masses of rock.

Currents and deluges of water, especially when favored by gravity, may have been, to a certain extent, auxiliary to the movement of rocks; but they are not of themselves competent to place the boulders where we often find them, perched high on mountain tops, or reclining on their declivities; and often the boulders, as we have recently seen on the Salève, are not only of an entirely different nature from the mountain on which they lie, but they offer no proof of friction, their sharp and angular outline being still well defined.

"A glacier," says Professor Forbes, "is an endless scroll—a stream of time, upon whose stainless ground is engraven the succession of events, whose dates far transcend the memory of living man.

"At the usual rate of descent, a rock which fell upon a high glacier 200 years ago, may only just now have reached its final resting-place in the lower country; and a block larger than the largest of Egyptian obelisks may occupy the time of six generations of men in its descent, before it is laid low in the common grave of its predecessors."

The glaciers often terminate so abruptly that corn has been seen to grow next to the glacier, and the inhabitants have gathered ripe cherries, while standing with one foot on the tree and the other on the glacier.

THE SCENERY AROUND THE MER DE GLACE.—The aspect of the mountains here is very sublime.\* Far, very far above the observer, the snowy ridges, peaks and domes rise in solemn

\* See the annexed illustration.



grandeur, mantled with ever-during ice. Before and around the observer are the naked Aiguilles, needle-shaped mountains, composed of rocks whose sides are so steep that snow will not lie upon them. They are rude, acute cones, sometimes solitary and again grouped, rising many thousand feet above the Mer de Glace, and so very precipitous that they cannot be climbed. Only birds of the most powerful wing can scale their walls, or gain their summit. The Aiguille de Dru is the most remarkable. It rose before us to-day in solitary grandeur. It is exceedingly acute, is very high, perhaps 6000 feet, above the glacier, and is garnished with many subordinate bristling points, which appear like delicate Gothic turrets, or minarets of Saracenic architecture.

One of our party remarked, that the Val del Bove was here repeated, although on a greatly diminished scale; instead, however, of an amphitheatre of lava it was an amphitheatre of ice, but piled up in the same wild confusion. The immense mountains of snow above, the rocky walls of the yawning gulf, and the groups of Aiguilles, included an amphitheatrical area, depressed thousands of feet, like the volcanic floor of the Val del Bove, and, like that, having a still lower outlet of communication with the nether world.

THE DESCENT FROM THE MER DE GLACE.—In our repeated excursions among the Italian and Alpine mountains, whether on the backs of horses, donkeys, or mules, we have found the descent much more fatiguing than the ascent. The long-continued pressure on the knees, the feet, and the muscles of the limbs, is very annoying; I therefore left my mule with the conductor, and descended on foot. The time occupied by me was about two hours, half an hour less than the ascent. In descending alone, I often crossed the triangles by leaving the path, and cutting short the circuit by passing crosswise from one zig-zag path to another; but the descent was usually so precipitous as to require great care against falling, and to that end to avail myself of the support of the shrubs, trees, and rocks. The guides reckon the distance by time, and call it seven miles up

the mountain and six miles down. As it was a warm day in July, I found even the descent sufficiently fatiguing, in addition to walking a mile and a half to the hotel after leaving the foot of the Mer de Glace.

**PATHS OF THE AVALANCHES.**—The paths of the avalanches are very numerous on the sides of the mountains, and in descending I had leisure to observe them. Picture to yourself a double barrier of lofty mountains, parallel, and bounding the Vale of Chamouni on both sides. The breadth of the valley does not exceed two miles in the widest part; it is often much narrower, and its bounding ridges rise from 6000 to 8000 feet above the base. The sides are very steep; and as you pass along the valley, you are thoroughly impressed with the number of grooved paths or channels which run down the sides of the mountains, frequently from the very summits to the bottom.

You may take them, as we did at first, for wood-slides, or for the channels of torrents; but we were assured by our guides that they are paths of avalanches, which, in the winter, are of almost daily occurrence. Those from the glaciers are ice, while those from the mountains, without glaciers, are snow; but both are tremendous agents of destruction. They sweep every thing before them: the forests are levelled, and deep and wide channels are grooved into the sides of the mountains, which may then become the beds of occasional torrents. Some of these glacier paths are ancient, being overgrown by grass or shrubs, but very many appear quite fresh.

**SOURCE OF THE ARVEIRON RIVER.**—The glaciers are natural and perennial magazines of ice. The gradual melting by the rains, and by the warmth of summer, irrigates all the vicinal countries, and affords ample supplies of water to feed the streams of central and southern Europe, as well as to the Danube and other rivers that flow into the Black Sea. This beautiful equilibrium of causes and effects is nowhere more strikingly exhibited than in these Alpine regions. Evaporation over the whole earth supplies aqueous vapor, which being condensed by the cold mountains, descends in snow, forming a thick mantle,

which reposes, from age to age, upon those hoary summits. Being partially melted by the summer sun and the rains, and congealed again by the cold of winter, it extends downward, year by year, and thus gradually fills the high mountain valleys with glaciers, which in time descend to the regions below. All along the declivities, and especially at the terminus in the valley, living streams gush out, and unite to form rivulets and rivers.

The lower end of the Mer de Glace is called the Glacier de Bois. We made an excursion from our hotel up the valley to inspect the arch formed in the glacier, and to observe the violent eruption of water at the foot of this immense mass of ice, which is here from 70 to 100 feet thick, and stands out vertically quite above the ground. This is merely the lower end of the glacier, which has pushed before it vast accumulations, composed of sand, gravel, stones, and large rocks, forming high mounds, and called the terminal moraine. At present, the moraine is about forty feet in advance of the glacier, and records the fact, that formerly (tradition says thirty-two or thirty-three years ago) it had advanced thus far, and that it has since receded. Now, however, it is again advancing at the rate of a foot a day. It is expected that in the course of a few weeks, or months, it will recover its former position, and not improbably advance still farther.

The small hamlet, de Bois, which gives name to this glacier, is very near to the ice; but the inhabitants of its humble dwellings appear to give themselves no more concern about the matter than do those who occupy the site of the overwhelmed villages,\* and have rebuilt their houses over the graves of their friends. I was advancing close to the glacier, to observe the source of the Arveiron, when the guide, David Coutet, came and earnestly called me back; he then pointed out a source of danger which I had not before observed. High up on the edge of the glacier lay numerous stones and rocks, some of them of large size; which might, at any moment, fall with imminent danger to those below. I, of course, withdrew to a place of safety,

\* Over the ruins of one of which we rode.

where I could at my ease view the birth of the river. Above it is an elegant crystal arch, which, when we saw it, was about twenty feet high; but in August this vault will be thirty or forty feet, or more, above the stream. It can then be entered, but not without serious danger, as the long and huge icicles and other masses frequently fall. Some years since, two young Englishmen who had entered the cavern had the extreme temerity to fire a pistol there. The concussion, as might have been expected, brought down so much ice that one of them was killed, and the other severely wounded. The Arveiron, even at its exit from under the glacier, is a large and vigorous stream, turbid with the pulverized granite from the bed of the glacier. It rushes onward with great power. A little way below, its waters become mingled with those of the Arve, which arrives from the other side of the plain, and is derived from the glaciers of the Col de Balme, a few miles above. The united streams, as they flow on, are still further augmented by other rivulets, which, three miles below, issue from the Glaciers de Boissons and Taconey, and all united form the impetuous and turbid Arve, whose union with the Rhone we saw below Geneva.

THE GLACIER DE BOISSONS.—We next resorted to the Glacier de Boissons, two or three miles farther down the valley; this, like the Glacier de Bois, reaches the lower country in the valley. In order to obtain a good view, we passed beyond and around it, ascending by a circuit of a mile and a half, in order to approach the side of the glacier at some distance from its termination.

This magnificent glacier—the immediate representative of the monarch mountain, since it descends directly from its icy dome—is hardly inferior in magnitude and length to that of the Mer de Glace, and has one very interesting peculiarity.

The inclined plane on which it descends, is steeper than that of the Glacier de Bois, and it has in the lower part of its course no lateral barrier of rock to obstruct the view. This immense congealed river of ice therefore stands out boldly, and shows its enormous bulk in full relief. We approached it

within one hundred yards; but no human foot can, with safety, be placed upon its surface. The fissures and crevasses, such as were described in connection with the Mer de Glace, have here done their work perfectly.

The icy masses are so dissevered that they appear like an immense group of white marble columns, or ruins standing in near proximity, but still separated from each other, so that they rise up in distinct individuality, or are only blended at the bottom of the glacier.

Some of these masses are 100 feet high; occasionally they attain double that height, and as the array of this cold army, in the portion where the lateral view is unobstructed, extends a mile and a half, and in breadth half that distance, the spectacle is beyond conception grand; especially as these towering masses frequently fall over with the crash of an avalanche. While we were looking on at the close of a very warm day, one of these lofty pinnacles, losing its foothold, toppled over with a terrific concussion.

When it is considered that a multitude of glaciers and of other enormous masses of ice and snow, which abound all over the Alps, unite to offer their contributions to all the countries lying in a lower position around them, it will be evident that their operation is most salutary, and the circle of phenomena illustrates beautifully the natural law of atmospheric and aqueous equilibrium. The ice of these glaciers has great purity, and is not soiled by dust as on the Mer de Glace.

THE VALE OF CHAMOUNI.—This intermontane valley is a most beautiful region; it is from one mile to two miles wide; is highly cultivated, and rich in the various crops appropriate to the climate.

The people appear kind and respectful; many of them raise their hats and caps to a stranger, and if you wish them *bon jour*, it is always promptly returned with smiling features. They are zealous in your service without being importunate for reward. They live in the midst of the most sublime scenery, during their short summer they have constant intercourse

with intelligent strangers, which produces an obvious effect on their manners, as well as on their resources.

They have a long and rigorous winter, and still appear to have the comforts of life in sufficient abundance; but strangers and tourists see them literally in the summer of their prosperity, and when, for many months, winter shuts them in and excludes the travellers, if this region, so smiling in the stranger's eye, remains a happy valley, it must be from resources in the people themselves and not from external nature.

**MINERALS.**—To our surprise we found in the humble house upon the Montagne Vert, a collection of minerals and other beautiful things, and in the village there were several cabinets for the sale of the natural productions of the region. The most beautiful are the smoky quartz and pellucid crystals—sold, not only in their natural state, but cut and polished into letter stamps and other ornamental or useful forms. The cutting and polishing are done at Oberstein in Germany; from that repository also, so famous through the world, they bring to the mountains the most beautiful polished agates and other elegant things: thus their collections are made very attractive.

Objects of natural history from the organic kingdoms, derived from these Alpine mountains, are offered—fossil plants obtained from those Alps that are of secondary formation, polished horns of the chamois, soon to be extirpated by the hunters, and also horns and heads of other mountain animals. Their prices are in general high. For a large crystal of octohedral fluor spar 500 francs were demanded—it might possibly be worth 200 francs.

### Return to Geneva.

July 15.

We were in our mountain carriages at six o'clock, A. M., and drove rapidly down the road. The morning being dark, with clouds and rain, Mont Blanc was invisible, a most unwelcome eclipse to the numerous visitors who are constantly arriving.

We were deprived of a last look at this prince of mountains, but the bright glaciers remained long in view; the swollen Arve rolled furiously along, and the mountains were hung with the sombre drapery of black rolling clouds.

Arrived at St. Martin's, 18 miles, we found the horses and coachmen rested and fresh for the journey. After the morning repast, we made good speed over an excellent road, took our mid-day rest at Bonneville, and at six in the evening we again entered the beautiful city of Geneva.

### Geneva to Lausanne.

July 17.

We had, a day after our return from the mountains, to take leave of the friends who had been so kind to us in Geneva. We left that charming city with no small regret; it had taken stronger hold of our better feelings than any place on the continent.

Our two young friends, Mr. Brush and Mr. Church, having determined to proceed to Paris direct, we left them in Geneva to proceed on the morrow by the diligence. Our number being thus reduced, we occupied but one carriage, and set out on our journey along the S. W. side of the Lake of Geneva, with our Neapolitan Paulo and his equipage, which had carried us so many hundreds of miles.

At Coppet, 10 miles from Geneva, the horses were rested for a short time, while we walked up a retired street to see the residence of Madame de Staël, the celebrated daughter of Necker, the distinguished and unfortunate minister of Louis XVI. The house was built by Necker. All who formerly resided here are now dead, and the stately mansion, a quadrangle of stone, on which is the inscription 1766, in the style of the French chateaus, of the ante-revolutionary age, stands a melancholy monument of departed glory. As we walked up to the strong iron gate, which protects the interior square, a large and fierce dog rushed up to the barrier; when pointed at,

he flew at the bars in the greatest rage, and reminded us of the *cave canem* at Pompeii.

We had not access to the interior of the house. The grounds are adorned by shady walks, and a clump of trees overshadows a mausoleum in which Necker and his daughter are buried.

At the handsome town of Rolle, 20 miles from Geneva, we took our mid-day rest; the town is built chiefly upon one street, which appeared clean and neat.

ENVIRONS OF GENEVA—VILLAS.—The environs of Geneva are, on this side, exceedingly beautiful; certainly not less so here than on the opposite side of the lake. The distant view of the Alps is very grand, and the snowy head of Mont Blanc rises above all the rest. The villas along the lake are on a large scale, both of territory and buildings; they are very numerous, and the grounds are kept in fine order. The whole region from Geneva to Lausanne is eminently beautiful, and abounds with most desirable residences. Travelling towards Lausanne, the Jura mountains, at the distance of a few leagues, bound the view on the left, and the land on the other side of the lake slopes toward the water. The people of this region appear universally comfortable in their circumstances. After leaving Savoy, where beggars abound, we never met with a mendicant either in Geneva or between that city and Lausanne, a distance of 35 miles, nor indeed at Neufchatel, nor in the intermediate country. Such appear to us to be the results of freedom, civil and religious, so strongly contrasted with the misery of Italy!

FARM-HOUSES.—As we passed beyond the region which is rendered so beautiful by the villas of Geneva, we saw both in the country and in the agricultural villages, farm-houses of very ample dimensions, with shingled roofs, painted red; the barn was usually under the same roof with the house, and so were the stables—people, horses, and cattle were housed alike. In the road in front of the barn, and sometimes in front of the house, the manure heap was piled; a liberal mound of compost, far more important, it would seem, to the fertility of the land,



than agreeable to the tenants of the family mansion. Habit doubtless makes them little sensible of what we should esteem a great annoyance.

### Lausanne.

**HÔTEL GIBBON.**—Arrived before evening at Lausanne, we found a clean and comfortable house, which occupies the site of the mansion of Edward Gibbon. His house was demolished to make room for the hotel, which bears his name, but his terrace and walk in the garden are preserved. There, on the 27th of June, 1787, between eleven and twelve at night, he wrote the last line of the last page of his rich and gorgeous work on the rise and fall of the Roman Empire.

The name of the hotel is all that remains to Gibbon in Lausanne, unless perchance he still lives in the memory of some of the Swiss octogenarians, sixty-four years after his great work was completed.

**FAMILY OF PROFESSOR AGASSIZ.**—The distinguished Swiss naturalist, now adopted among us in the United States, whose American home is in Cambridge, New England, formerly lived at Lausanne, where we found his sister and his mother, who resides with her son. Introduced by Agassiz, we soon made our way to the house of M. Françillon, the brother-in-law of Agassiz. We were conducted by a valet to a parlor in the third story, and soon Madame Françillon appeared, with a smiling face and brilliant black eyes, the softened features of her brother; she gave us a hearty welcome, which was promptly repeated by her husband, who soon came in. He is M. Françillon *Agassiz*, according to a custom which prevails here; while the wife, as with us, takes the name of her husband; if the lady be of high standing in society, she adds her own name to her husband's.

It was near the hour of the evening repast, and we soon perceived a movement of hospitality. A centre table was, in a few minutes, garnished with the requisite furniture, and we were

drawn around the hospitable board as if it were a matter of course, and needed no formal invitation. Excellent bread and butter,\* and the best of raspberries, now in full season here, with the luxury of cream in our finely flavored tea, gave us, exactly as in New England, a most refreshing repast; especially to me, to whom tea is a cordial. They have a lovely flock of children, a beautiful group, seven in number; the youngest, a plump, joyous little fellow, full of physical happiness, with a promise of mental enjoyment as his higher powers unfold.

MOTHER OF AGASSIZ.—Although it was raining, our new friends took us a considerable distance to the residence of this venerable lady in the family of her son. She soon made her appearance, and although nearly fourscore, her healthful person was erect, tall, and dignified, while her animated and warm address placed us instantly at ease. Madame Françillon had sent before us her brother's introductory note by her little son, a lad of ten years; grandma had mislaid her spectacles and could not read the note; she said, however, that her young grandson was a faithful commissionaire, and told her that two American gentlemen and a lady were coming, in a few minutes, to see her, and she felt at once convinced that they were friends of her son Louis. As soon as we explained to her our intimacy with him—that he had been often a guest in our families—that we had the pleasure of knowing his interesting American wife—and when we added a friendly notice of her son's domestic happiness, and of his high standing and success in his adopted country, her strong frame was agitated, her voice trembled with emotion, and the flowing tears told the story of a mother's heart, not yet chilled by age.

A beautiful group of lovely grandchildren was gathered around to see and hear the strangers from a far-distant land, beyond the great ocean. When we inquired of Mad. Agassiz her entire number of grandchildren, she replied 15; and when she was informed that my whole number exceeded hers, she was both amused and surprised, and smiles of sympathy suc-

\* To which we had been strangers in Italy.

ceeded to tears; for she had considered me—from my being still an active traveller—a younger man than I am. She is the widow of a Protestant clergyman, who was the father of Agassiz. She has a vigorous mind, speaks with great spirit, and is a mother worthy of such a son. She was grieved when she heard that our stay was to be very brief, and would hardly be denied that we should become guests at her house; or, at least, that the senior of the party should accept her hospitality.

The next morning she came, walking alone, a long distance in the rain, to bid us farewell, and parted, evidently with deep emotion, and not concealed, for we had brought the image of her favorite son near to her mental vision again. She brought for Mrs. S. a little bouquet of pansies, and bid us tell her son her *pensées* were all for him.

Such scenes come near to every benevolent heart, and prove that human sympathies have a moral magnetism whose attraction is universal. I value highly the art of statuary, but I prize more highly still such a family scene as this; a scene away here in Switzerland, four thousand miles from my home, on the borders of the beautiful Lake Lemán; and I would not exchange such living exhibitions of the human heart for all the mute marble men and women in the Vatican, although they have a high value as exhibitions of talent, and still more as representations of human character and feeling.

Agassiz, and many others of the excellent people in these countries bordering on France, are descendants of French Huguenots who fled from persecution, and, like the Puritans of New England, they retain strong traits of the Protestant character—for they were the Puritans of France.

THE ANCIENT CATHEDRAL.—Under the guidance of Mr. and Mad. Frañillon, we visited the old cathedral of Lausanne; it is of the same era and style as that of Geneva. It dates originally from the year 1000, and the present edifice from A. D. 1275. Its interior, supported and adorned by grand and rich columns of various size and singular combination, is regarded as a very beautiful and magnificent specimen of the ar-

chitecture of that early age, and as the finest building of the kind in Switzerland. This cathedral contains tombs of bishops and of other eminent individuals. Among them is that of Victor Amadeus VIII., "who was Duke of Savoy, Bishop of Geneva, and Pope," but dropped all these dignities to end his days as a monk in a convent of Ripaille on the opposite shore of the lake. I mentioned him when we were passing there, on our way from Martigny to Geneva. Bernard de Menthou, the founder of the Hospice of St. Bernard, is interred here, and the hospice was named after him. There are here several monuments of English people who have died in Lausanne. Among them there is an expensive cenotaph to the lady of Sir Stratford Canning. This cathedral was of course originally Catholic, and was doubtless once filled with pictures and images. But the Reformation stripped it of its ornament, and like the noble building at Geneva, although plain, it retains a grave, severe, and simple beauty which will ever command admiration.

CABINET OF NATURAL HISTORY.—We made an early visit, before breakfast, to this collection, which was the more interesting to us, as Agassiz had been active in its formation. It is extensive, but unequal in its departments. In the collection of minerals, there is a superb specimen of idocrase (vesuvian), the largest that we had ever seen; and the crystals of selenite from Bex, deposited by G. M. Charpentier, are unequalled in beauty of figure and in perfect transparency. There are two Egyptian mummies in a glass case; one of them a female, was decorated with a string of glass beads of various colors, and there they hung—poor mimicry of life—upon her now black and shrivelled neck!

As illustrative, however, rather of civil than natural history, they have here preserved some suits of the equestrian equipage of Napoleon. These things were presented to Lausanne by his son, the Duke of Reichstadt, because, as we were informed, he received a part of his education in this place. There are here, protected by a glass case, three splendid saddles covered

scarlet velvet, embroidered with a wide yellow border. The stirrups are large and strong, and richly plated with silver; and the bridles and trappings are in correspondent style. One of the saddles he rode in his early Italian campaigns; another in that of Austerlitz; and the third at Waterloo. In the same case, also, are several elegant guns and accoutrements for the chase. I was not before aware that Napoleon was ever engaged in so mild a warfare. There is lodged also in this case the key of the house in Longwood, in which Napoleon lived when a prisoner in St. Helena. A more interesting relic still, is the original map on which he traced with his own hands the outline of his Italian campaigns. Napoleon has left so deep an impress on the age in which he lived, that throughout Europe every personal relic of him is carefully preserved.

Lausanne contains 15,000 inhabitants, and belongs to the Canton Vaud. The town, being built on the slope of a mountain, is very irregular in the form of the ground; it is in ridges and ravines, which makes some of the streets very steep as they cross the ridges and run parallel to the lake. A high viaduct, on a double set of arches, crosses one of the valleys, and from it you may look down into the chimneys of the houses in the lower street. The irregular form of the ground in Lausanne gives it some resemblance to the old town of Edinburgh; like that place, it is very picturesque, and abounds with commanding views. The prospect from the platform of the cathedral and from the tower, is very fine; nearly the whole lake is visible from these places. The view is still more extensive from the heights back of the town.

Lausanne is intimately associated with some interesting reminiscences of my earlier years. The large and rich cabinet of minerals brought out to the United States by the late Col. George Gibbs, was composed mainly of two principal divisions—one of which, that of the late Count Gigot D'Orey, was purchased in Paris, he having perished under the axe of the guillotine. The other principal division was obtained in Lausanne. To this place Mr. Gibbs, then a young man, had

been sent from Paris by his physician, for the recovery of his health. While here he studied mineralogy under the celebrated Prof. Struve, and thus acquired his skill in and love for the science. Count Razamouski, a Russian nobleman, had been living here in retirement, and had with him a large collection of minerals. As he was about returning to Russia, Col. Gibbs bought his collection, rich especially in Russian minerals; this collection he added to that of D'Orey, and brought both home to Newport, Rhode Island. They found their final resting-place in Yale College. I had the pleasure, forty years ago, to unroll the specimens, and place them on the shelves of the cabinet where they now are, where hundreds have studied them with advantage, and thousands have gazed upon them with pleasure.

### Lausanne to Yverdun.

July 13.

There was little in this ride that was peculiar. The country became more hilly, and the cultivation was less refined than near to Geneva, but the crops were very similar. Proceeding north, the wheat harvest, as might have been expected, was less advanced than in Italy, and the grain immature; much of it was unfit for the sickle. We were ascending nearly three-fourths of the way; but we at last reached the summit of the hill that bounds the valley of the Lake of Neufchatel, and thence we rolled gently down to the town of Yverdun, which stands at the southern extremity of the lake, and has 3461 inhabitants. There is an ancient castle, with four towers, standing in the middle of the town. In this castle the celebrated Pestalozzi held, from 1805 to 1825, his experimental school. At Yverdun our little party was for a short time divided. Français, with our younger members, proceeded up the lake to Neufchatel, while the older members went on a little excursion over the Jura Mountains.

VISIT TO CÔTE AUX FÉE ON THE JURA.—A few years ago, an accidental discovery that my family name existed in Switzer-

erland, led to inquiry, and to a correspondence with the Rev. FRANCIS JULIUS SILLIMAN, a Protestant clergyman residing at a village on the Jura Mountains named Côte aux Fée. This correspondence, arranged by an excellent gentleman, Mr. Voltz, whom we afterwards met at Berne, led us to conclude that the Swiss family and my own were descended from a common ancestor. That individual, to avoid persecution, emigrated from Lucca to Geneva about the time of the Reformation; and from him are derived the Sillimans of Switzerland. One of the family, Daniel Silliman, emigrated to America about the time of the Puritan emigration from England, and from him, there is the strongest reason to believe, that the Sillimans of America are descended. This is not the occasion to enter into the details that were developed in a long and interesting correspondence with the Rev. Francis Julius Silliman. He was personally known to Professors Agassiz and Guiot as an early friend at the University, and they held him in high esteem. We, of course, wished to pay our respects to him, and to form his personal acquaintance.

At Yverdon, in accordance with his advice, we took a carriage of the country for this little journey.

We travelled fifteen miles by a grand road, cut into the solid limestone rock of the Jura Mountains, an immense chain which runs north and west of Neuchâtel.

BOULDERS.—In our ascent, we saw great numbers of the granite boulders derived from the Mont Blanc range, and now reposing here upon the limestone of the Jura Mountains. Some of them were large rocks; many had been split and laid up in the walls, and many more had been wrought into posts to fortify the road.

In ascending these mountains, which are 4000 feet high, we enjoyed many splendid views. We arrived first at St. Croix, on the summit of the Jura, where there is a village and a post-office. Here we met the Rev. Mr. Silliman, who had walked five miles over from his village to meet us. Our previous correspondence made us at once familiar, and mutual greetings placed

us on the footing of friends. We received him into the carriage, and proceeded but slowly in the rain, the road being rough, and deep with mud.

The country grew more and more dreary, and was clad in gloomy forests of lofty pines. We had now arrived in the remote recesses of the Jura Mountains, and less and less of cultivation and improvement appeared. It was nearly nine o'clock, and dark, when we arrived at the house of the Rev. *pasteur* in the small *châlet* of Côte aux Fée. We were hospitably received by his lady, whose gentle manners we found to be in harmony with a good and refined mind. The house is a parsonage, and the church is very near; both are plain and small, and in correspondence with the condition of Swiss Protestants 200 years ago.

In the morning, the ladies walked into the neighboring houses of small farmers and watchmakers, and the gentlemen, in a bright and warm day, rambled two miles over the high, and grassy, and wooded hills, to visit a cavern in the limestone rocks. It is called the Côte aux Fée, or Seat of the Fairies; whence the name of the village. It is on a deep and narrow gorge in the mountains—a precipitous valley, which appeared to be 800 to 1000 feet deep. Down one of its almost perpendicular sides we descended, with no small difficulty, about 200 feet, holding on, as best we could, by pointed rocks, and by roots and shrubs, until we arrived at the opening of the cavern in the side of the mountain. The entrance was so low that it was necessary to lie down flat upon the face, and to advance simply by the use of the toes and elbows. Having in earlier years seen enough of that kind of exploration, I declined entering, and remained at the mouth of the cavern, while the two other gentlemen made good their entrance, with an old man for a guide. Soon the roof rose so much that they walked erect to the other end of the subterranean gallery. It was a *cul de sac*; it was open to the daylight at the termination, and they looked down into a deep abyss—one of those tremendous gulfs with which these mountains abound. It looks, inaccessible as



it is—as if it might be better adapted to become a den for robbers than a palace for fairies. On our return to the parsonage an ample dinner was in readiness.

Mr. Silliman, like the pasteur Oberlin, whose residence was but a few miles off, appears to devote himself from principle to the care of souls, among an humble but intelligent and religious people; and we doubt not that a pure worship ascends an acceptable offering from his small and plain church of unpainted wood. This benevolent gentleman, a man of letters and manners, and his amiable lady, both of whom would adorn a polished society in a city, will, I trust, find their reward in a better world. Our impressions of them were of the most favorable kind. We parted affectionately and religiously, and leaving keepsakes for the three children, we hastened the arrangements for our departure.

RIDE TO NEUFCHATEL.—Our purpose had been to return to Yverdon, and then to pass by a steamer to Neufchatel; but we found this circuitous tour to be unnecessary, as there is a direct road of only twenty-three miles to our object. Taking a *char-a-bancs*, we enjoyed a rapid ride, almost entirely down hill, or on level ground. It was the counterpart of our ascent the day before from Lausanne towards Yverdon. Our road was the finest possible—perfectly smooth and hard; and through the entire journey of twenty-three miles it ran in a profound valley, between high ranges of mountains of limestone, which is often distinctly stratified, and presents walls of great altitude. They afford a perfect section with the edges of the strata distinctly marked, as in a geological diagram. The strata are often curved, or arched, or waving; and sometimes they were broken, the fracture evidently resulting from the violent action of geological forces.

As we travelled, the valley became wider; it was from one mile to two miles broad, and contained a series of beautiful towns, with large and expensive houses; these towns, whose names I did not preserve, had wide streets, indicating both

opulence and taste; they are in harmony with this splendid country, which unites extreme grandeur with intense beauty, while its people enjoy the fruits of freedom and security which are evinced in the prosperity which is so apparent. Before evening we arrived in Neuchâtel, and found our younger friends safe, and apartments engaged for us in an excellent hotel—THE ALPS.

### Neuchâtel.

Having been almost four months in Catholic countries, we were glad to enjoy a quiet Sabbath in a Protestant town, and several of the party attended church, the service being in French. The Rev. Mr. Silliman introduced us to his two sisters at Neuchâtel. One of them is the lady of M. Matthieu. This family, including two lovely young ladies, received us with warm cordiality, and we were made at once to feel that we were not strangers, and all possible kindness was proffered to us.

Neuchâtel is a handsome town, with about 7000 inhabitants. It is well built, and has wide streets, which are kept in good order. It lies beautifully on the slope of Mount Chaumont, a branch of the Jura, and the houses are arranged also all along the shore of the Lake of Neuchâtel, a beautiful sheet of water, which is 27 miles long and six or eight broad.

The town has many fine houses and public buildings, among which the Academy is conspicuous; it is established in a very large and handsome edifice constructed of limestone, hewn and dressed.

This institution\* has about 600 students, who were absent, it being vacation. Mr. Louis Coulon, a gentleman of large means, has bestowed them liberally, and his personal exertions also, upon this institution. He is not a professor, but is a director, and has made it his pleasure to contribute to the col-

\* It is regarded as a gymnasium or public school, rather than a university.

lections in natural history, which he was so kind as to open for our inspection. There is an excellent museum of natural history, a large library, and a picture gallery containing some fine things. The department of ornithology is splendid; those of quadrupedal zoology and of entomology are also very good. The mineral department is more limited; but the ichthyology is excellent.

Professor Agassiz's hand is found on many of the labels; he was of course active in establishing the museum, and Neufchatel has cause to be proud of him as one of its citizens, as he has probably no living superior as a successful investigator in zoology and physiology. The travels of M. Tschudi in Peru and South America generally, so well known in the United States, were undertaken to provide specimens in zoology for this museum.

THE PIERRE À BOT AND OTHER BOULDERS.—We made an excursion of two miles during our residence here, upon the mountain Chaumont, attended by M. Chattain, architect, and young M. Matthieu.

Our object was to see the boulder stones, erratics of Mont Blanc; which, in great numbers, are deposited on this mountain, and are described in the works of all writers on the glacial phenomena.

We looked with delight and astonishment on the vast Pierre à Bot, or toad stone, which has been so called from its form and position slightly resembling that little odious animal; a name more appropriate should surely have been found for so grand an object.

The dimensions of this enormous block of granite are 62 feet by 48, with cubical contents of 48,000 feet;\* it would fill a large house or a church of medium size. In beholding it, we were astonished to see it here, perhaps 30 leagues from its parent mountain, and 800 feet above the surface of the lake. There are several other large boulders lying very near to this

\* 40,000 feet, De la Beche's Observer. He quotes the opinion of Necker, that it travelled 22 leagues from the crest of the Follatères on the north of Martigny.

gigantic block, and they are found in great numbers, and sometimes in crowded groups, upon many parts of these mountains. It is obvious that they have travelled across the great valley of Switzerland, and over the places where the peaceful lakes now repose, for there is no granite nearer than the Alpine range, the Jura Mountains themselves being limestone. The granite, too, is the peculiar variety called *protogine*, and is characteristic of the Alpine heights.

Ice has unquestionably been the efficient agent that has wrought this seeming physical miracle. According to Agassiz, glaciers have effected the transportation, and if floating icebergs be excluded, we know of no other cause.

It was my impression, in common, I believe, with that of most geologists, that Mont Blanc must anciently have been much higher than at present, in order to afford the requisite descent for glaciers to transport rocks across the great valley of Switzerland. This impression has, however, been corrected by the eminent Professor Guyot, whose extensive instrumental surveys of the Alpine mountains, have enabled him to ascertain that there is actually a sufficient descent from Mont Blanc with its present elevation to transport the boulders, and place them where we now find them on the Jura chain.

VIEW OF THE BERNESE ALPS, OR OBERLAND.—Our familiarity with the family of Matthieu gave us access to their country house, situated on the heights in the upper town. The house is on the very summit of the hill, on the declivity of which the town is built. It was near evening, and the declining sun was shining in full strength in a cloudless sky; when, from an overhanging balcony projecting from the house, we enjoyed a glorious view of the Bernese Alps.

An immense ridge, a serrated barrier of mountains, covered with snow and ice, extends for 100 miles or more, in the form of a bow; upon this magnificent rampart, forming the eastern boundary of our horizon, the evening sun threw his full radiance, the brilliant lustre of burnished silver was reflected back to our eyes, while, in a perfectly clear atmosphere, we could distin-

guish the principal members of the range. Mont Blanc, in all his solemn grandeur, was on the extreme right as we stood looking east and south; his aspect was wonderfully sublime and brilliant in the highest degree; the dimensions of the mountain, although 80 or 90 miles from us, appeared colossal.

In the centre, is the splendid icy mountain, the Blumlis Alp, and more on the left are the three icy walls, of which the Jungfrau is the right. They appear quite white, with some stripes of naked dark rock in the lower masses.

We were more than ever amazed that Agassiz should have attempted to scale the Jungfrau, which is 13,000 feet high. No man of science had ever attempted it before. I believe that, to this day, no other geologist has ever mounted its frozen summit.\* When Agassiz arrived at the foot of the steepest part, his guides recoiled and refused to go any farther; but, undismayed by the icy precipice, he himself cut steps with a hatchet, and thus, with imminent danger, mounted to the crest of the Jungfrau. With a telescope these mountains were brought so near that it seemed as if we might, from the balcony where we stood, step out upon them.

I could not have imagined any vision of mountains at once so venerable and so grand; grand, because of their vast extent and their great elevation of many thousands of feet—a rampart apparently impenetrable and insuperable, and sweeping along in dazzling whiteness, through a large portion of the horizon; venerable, because these mountains tell us of a period, when, after their elevation into the region of ever-during frost, the first watery vapor which had ascended to that upper region was crystallized into snow, and began to fall on the mountain top, and wrapped the cold peaks and ridges in the white mantle which they have ever since worn; although year after year and age after age have passed away, no summer's sun has been able to dissolve the frozen mass; and we are certain that it will never cease to cover these mountains as long as

\* I am told, that eight peasants effected the ascent in the year preceding the adventure of Agassiz.

they maintain their perfect altitude, and the globe and its physical laws shall endure.

SECOND SUNSET.—From the balcony of M. Matthieu's house we enjoyed again a glorious view of the whole range of the lofty Alps, from Mont Blanc on the right to the extremest spur of the Bernese Alps on the left, a distance of at least 100 miles. Lake Neufchatel lay for twenty-seven miles in quiet repose at our feet. The atmosphere was most unusually clear, even for Switzerland; and our friends assured us that not twenty occasions in the year offered so unclouded and brilliant a panorama as we enjoyed of the high Alps, which formed the sunny background. As we watched these snow-peaks, the evening red began to illuminate them, and one after another of the whole group blushed deeply at the parting glance of the god of day. Jungfrau, first on the left, showed her own pure white complexion; and gradually each successive peak and valley, even to the "bald, awful front" of Mont Blanc himself, lost the rosy hue, which Callam has so well preserved in his sublime portraits of Swiss scenery.

With a pensive feeling of regret, we saw the dull gray of evening creeping over the scene, when suddenly, to our surprise, the auroral red reappeared upon the summit of Mont Blanc, and soon, one by one, each successive peak resumed the same lovely tint of rose. Charmed with the magic of this natural diorama, we waited with deep interest to witness the *Second Sunset*, and to puzzle our ingenuity for a satisfactory explanation of this remarkable phenomenon.

DOMESTIC SCENES.—The hospitality of our friends drew us into their agreeable family; and their interest in us was evidently increased not only by a feeling of kindred, but by the discovery that persons born and educated on a distant continent, with a broad ocean between, should be so assimilated to themselves in manners and feelings that an active and interested sympathy pervaded all the members of the circle.

It was a warm evening in July, when a long table, furnished with ample supplies, and garnished with the *fruits* and

flowers of the season, was arranged out of doors, in the garden, beneath a verdant bower, and we were seated with the family to partake of their hospitality.

The head of the house did honor to its hospitality, and was most cordially sustained by the ladies of the family, in every effort of kindness and friendly courtesy to those who came as strangers, but were now accepted as friends. The evening was made delightful by the fine performance of the young ladies upon the piano, who, in perfect concert, played on the same instrument.

PROMENADE.—All along the borders of the lake there are pleasant shaded walks, which have been redeemed from the water. The ground is levelled and made hard, and it is dressed with rows of hewn limestone, wide enough for a walk. The sloping banks are paved quite down to the lake, where shoals of sporting fishes are always to be seen. They are easily caught, and we found the native pike excellent. There are also groves with thick foliage near the lake: they form a small boulevard, and are furnished with seats. There is a beautiful mound near one of the groves, giving a pleasant variety. The people resort to them for society and recreation—a good habit, which ought to be more encouraged in our too busy country, in whose cities, and towns, and villages, squares and parks, made attractive and beautiful, ought to be more extensively provided. In the Protestant as well as Catholic countries of continental Europe, walking out on the Sabbath is regarded as an allowable liberty; and these promenades of Neufchatel are much resorted to after the Sunday service of the afternoon. Squadrons of citizen-soldiers also, under arms, were out in full uniform, and were reviewed by their officers.

THE OLD CASTLE.—This was the residence of the French princes of Neufchatel, of the house of Chalons, who claimed a nominal sovereignty over the small states, really republican, but retaining some feudal tenures. In 1707, the French house of Chalons became extinct, and the king of Prussia, being descended, in the female line, from the extinct family, was chosen

sovereign or stadtholder. Napoleon broke up this connection, and made one of his generals, Marshal Berthier, prince of Neufchatel; but at the general restoration in 1815, the king of Prussia resumed his sway, by appointing a governor, who may be a foreigner. At present, however, Neufchatel is entirely disconnected from Prussia, and as an independent state is a member of the Swiss confederation.

HOSPITALS.—David Pury, a citizen of Neufchatel, who from a poor boy became a millionaire, left the sum of 166,000 pounds to found a hospital and poor-house, and for other benevolent purposes connected with his native town. Another hospital (POURTALIS) bears the name of its benevolent founder, one of a noble family in Neufchatel, and is accessible to all, without distinction of religion or country.

The house in which Professor Agassiz resided was, of course, an object of attention. It is retired from the main street, and we approached it by a narrow avenue. It is a very large house, of three stories, from the upper windows of which is obtained a fine view of the Bernese Alps. There many of his capital researches were made. We saw also the houses of the Pourtalis family, of which the young Count, who came to the United States with Agassiz, and is now an officer of the coast survey, was a member. In one row there are the houses of his grandfather, father, and two uncles.

The manufacture of watches forms the great employment of the city and canton of Neufchatel; and almost every family is more or less occupied with it. The work is distributed from house to house over the rural districts; and the habit of assembling large numbers of operatives in one densely crowded locality is almost unknown.



### Neufchatel to Berne, thirty Miles.

We took the diligence at four and a half o'clock P. M., and in six hours arrived at Berne.

The intermediate country is most beautiful, and filled with the results of skilful cultivation. We saw immense fields of wheat—a crop which has every where astonished us by its vast abundance, and the extent of the territory which it covers. There are also some fields of rye, and many more of oats, potatoes, beans, and barley, and the finest grass in all its varieties. In general, there are no fences: field joins immediately upon field, and therefore, weedy and unfruitful borders are excluded. There are no animals wandering at large, and, of course, there is no invasion of crops by them. For the first twenty miles, the greater part of the country was an extensive plain, level, as if formed in the bed of a lake. As far as we have seen Switzerland, there has been much less interference with agriculture by mountain chains than we had expected to find. The great extent of fertile valleys and plains has surprised us.

THE AAR.—About half way on our evening ride, we crossed another rushing, turbulent river, the Aar. It flows from the Bernese Alps, and, like the Rhone and the Arve, it sweeps down vast quantities of debris from the mountains, and sometimes by flowing, covers the land with sterile ruins. The very considerable town of Arberg stands on its banks.

SWISS RURAL ARCHITECTURE.—The peculiarities of Swiss architecture and arrangements, which we had begun to observe near Yverdon, became now more and more conspicuous. The house and barn are usually included under the same roof. The roof is very steep and high, and the eaves project downwards many feet or yards beyond the walls of the house. The roofs are sometimes shingled, but more frequently thatched. The thatch was often covered by grass, and kept in place by boards, on which large stones are laid. Numerous and large piles of

manure were placed in the road, and in front of the houses, without reference to effluvia. The houses were generally very clumsy and unarchitectural, and when ornament was attempted, it was most ungracefully conceived and unskilfully executed.

German became now the spoken language, and German pipes, with a recurved tube and upright bowl, were frequently seen. Women were every where\* in the fields, employed in sturdy labor; and generally we saw more women than men. Women were the reapers, with sickle in hand; but the population in the fields was not in proportion to the labor to be done; the harvest was great, and the laborers comparatively few.

### Berne.

We drove into this ancient city at ten o'clock, P. M., and the diligence stopped in a very narrow street. Our party occupied the *interieur*, and we did not realize until we descended, how many more people there were with us, and what a vast pile of luggage lay on top of the carriage. In our rough roads in America such a lofty loading would have turned the carriage topsy-turvy; but the roads, both here and in almost every part of Europe that we have seen, are, as often observed before, so perfect as to put ours to shame in the comparison. Our own baggage being selected, we followed it and François, passing under the ponderous and low arches, which, on both sides of the streets, sustain the houses. By the usual care and forecast of François, we found our apartments in the Faucon Hotel all in readiness. A comfortable tea-table, in New England style, refreshed us at eleven at night, before retiring to our beds, and a home feeling, produced by the quiet, order and courtesy of all the people in attendance, made this good Swiss hotel appear a desirable substitute for our own habitations.

\* Once only did we see a group of men in considerable numbers working without women; this was in Sardinia, where ten men in one company were engaged in mowing.

It is not possible to do justice to this venerable and celebrated city, by the hasty observations of a single day, but some traits are so striking that they are seen at once.

**SITUATION.**—Berne is built on a lofty promontory of sandstone, formed by the winding course of the river Aar, which nearly surrounds the city, flowing at the bottom of a deep channel, with steep, and in some places precipitous, sides. It is compactly built, and has 24,000 inhabitants. Formerly, it was surrounded by a high wall, and the parts that still remain form one of the favorite promenades of the citizens.

A connection has been formed with the town by a lofty bridge of granite, constructed from erratic blocks, lying on the blue limestone of the Kircht hill. The bridge is 900 feet long; the central arch over the river 150 feet wide, and 93 feet high. I went below, where the appearance is very imposing; the two side arches are erected over dry land, in the manner of a viaduct.

Upon the hills and suburbs near the town are splendid parks, with drives through long avenues of well-grown forest-trees, embracing hundreds of acres; they are so laid out as to give the most enchanting views of the snowy Alpine peaks, and the winding Aar hastening on to the Rhine, and laving the walls of the picturesque old town.

The terrace on the northeast part of the city is beautiful. Divided from the river by a high wall, which bounds the terrace on that side, we stand by the wall and look down 108 feet upon the river, which flows over an artificial dam, built obliquely across the stream. From this place six of the peaks of the snowy mountains are distinctly seen. While looking on them I found two of my countrymen engaged in the same manner: they were intelligent gentlemen whom I have known at home, and our accidental meeting was to me a pleasant incident.

On the parapet-wall there is an inscription as follows: "A young student, mounted on a spirited horse, which had been frightened by some children, and leaped the precipice, reached the bottom with no other hurt than a few broken ribs. The

horse was killed on the spot. The rider became a minister of Kerzers, and lived to a good old age." When we looked from this precipice, it seemed impossible, in such a leap, to escape death.

**HOUSES AND STREETS.**—The houses built of stone are generally high; most of them have projecting and overhanging roofs. In the principal streets they are built upon arcades, such as have been already mentioned, and similar to those which we saw in Chester, Bologna, Padua, and other old towns. They form a convenient retreat from the sun and the rain, and give, in effect, additional width to the streets; but they impart a sombre aspect to the shops, which are still further within the buildings, and the air, being impeded in its circulation, is not always agreeable, especially when unsavory commodities (like the famed Bernese cheese) are exposed there for sale.

**ANCIENT CLOCK TOWER.**—On the clock tower, which was one of the ancient defences of the town, there are some automatic figures, which frequently attract a crowd of gazers. A figure, club in hand, strikes the hour, while another figure, seemingly a monarch of time, moves a sceptre at every stroke of the bell, and, opening his mouth at each note of passing time, appears to report the hour. At the moment before the clock strikes, a wooden cock appears, crows twice, and flaps his wings, when a procession of bears moves around in a circular form, through a hole in the tower. The figures are small, like children's toys, and the whole exhibition is puerile; but both old and young go to watch the hour, and being no wiser than a multitude of other people whom we saw there to-day, we were punctually present at noon, when the automaton strikes twelve times. The automaton, however, did not afford as much pleasure as an accidental meeting at the clock tower with Mr. C. of Boston, and the ladies of his party, one of whom we had left sick at Florence.

**THE BEARS.**—But why a procession of bears at the tower of the town clock? The city of Berne was founded in 1191

by Berchtold V., of Zaringen, on which occasion, when they were laying out the fortifications, Bruin happened to appear in the ditch, and paid the forfeit of his life for his curiosity, being killed on the spot; but the city made him some amends in posthumous fame by assuming his cognomen, and hence it has been called Berne, which, in English, is bear. The bear, therefore, figures in their armorial bearings, as well as on many of their monuments and public edifices. At the principal gate of the city, the Morat gate, two colossal bears are stationed aloft as sentinels, one on each side.

A noble statue has been erected in the City Park to Berchtold, the founder, with a bear in attendance. We also visited the den, where living bears have been maintained for many centuries at the public expense. Just by the ancient city barrier, there are two deep pits, walled up high with hewn stones, and paved with the same; they have the appearance of large and deep cellars open to the day. A lofty dead tree, with leafless limbs, stands in the midst, as in a gymnasium, for the gambols of Bruin; a copious fountain supplies him with water, and sleeping apartments are annexed, opening into the ample play-ground. Here, at present, are two bears; one the common black bear of Europe, the other the brown bear. They are well supplied with cakes and apples by the spectators who resort constantly to Bruin's court. We were much amused at the supplicating posture of one of them, sitting erect and looking up imploringly, while his pendent paws were ready to catch the cakes as they fell. If it would be irreverent to call Bruin the patron saint of the city, he certainly appears to be regarded as its good genius. It is said that a young lady of Berne, some centuries ago, left an annuity for the support of the bears; the annual expense of which is six or seven hundred francs.

When, in 1798, the French captured Berne, they removed the bears to Paris, and the celebrated Martin, the great bear of the city, was exhibited in the Garden of Plants, where he became a favorite spectacle for the visitors.

MUSEUM.—On entering the Museum of Berne, we were almost saluted by the largest bear that I have any where seen; he stands erect, with sparkling eyes, open mouth, and extended arms, and seems eager to embrace the visitor. I believe this specimen is the skin of Martin, the celebrated bear just named, restored to Berne after the battle of Waterloo. They have added several cubs as companions for the great bear.

Although this museum is not very extensive, it is still a very beautiful establishment. I have nowhere seen animals, whether quadrupeds, birds, reptiles, or fishes, more admirably fitted up, or preserved more perfectly, in their peculiar forms, and with natural attitudes and accompaniments. As the native animals of the Alps are disappearing before the hunter, it is very desirable to preserve their relics here; they have in this museum the Alpine lynx, the steinbock, and the chamois. The noble dog of St Bernard—Barry, which, in the course of his life, saved fifteen human beings, has here all the perpetuity which can belong to posthumous canine fame. His skin is preserved in full form and natural attitude, which is that of walking carefully over the snow, with a look of attention, his head and eyes inclined downward, as if to observe any marks of the lost ones whom he is seeking. An engraved picture of this almost benevolent animal, whose race has more sympathy than any other with man, is sold at the museum; it is a perfect likeness, his main color is gray, with a white corset, and limbs and face of the same color, and his size very large. The inscription beneath is—"Qui a sauvé la vie à beaucoup de malheureux voyageurs sur le grand St. Bernard."\*

The white arctic bear, the zebra, the wild boar, and the giraffe or camelopard, are particularly fine in this collection. They have also here the condor and the vulture.

The collection of Alpine minerals and fossils is very interesting. There are beautiful crystals of the selenite of Bex, and large rock crystals of great transparency and beauty; they ap-

\* Who has saved the lives of many unfortunate travellers upon the Great St. Bernard

peared to be 8 inches in diameter, and 15 to 18 inches long. Two of the professors in the University were so good as to show us the geology and the mineralogy of the collection. We had letters from Agassiz for several of the Swiss savants, and among others for Professor Struve of Berne, whom we found a most obliging and accomplished man. His *Manual on Swiss Geology* was just then published.

In the museum are the portraits of many eminent men, divines, statesmen, warriors, and others; they exhibit noble faces, and their forms are clothed in the costume of other days.

THE LIBRARY, which does honor to Berne, contains many portraits, also the picture and bust of the illustrious Haller.

It is a city institution, and numbers 60,000 volumes in fine condition; a large proportion are quartos and folios. Both the library and the museum are accessible without a fee. The librarian, Mr. Charles Louis de Steyger, speaks English well, and was very attentive to us. He kindly opened to us a MS. book of heraldry of Swiss families, compiled by M. Gatschet, in which my family name was pointed out, with a coat-of-arms\* annexed. The book contains only the names of persons belonging to Switzerland.

THE CATHEDRAL OR MINSTER is a grand building, having the same severe simplicity which we observed in Geneva and Lausanne. It was begun in 1421 and finished in 1457. The choir is adorned by splendidly painted glass windows. The church is decorated with the coats-of-arms of the aristocratic burghers of Berne. Among the monuments, the most interesting are those that commemorate the death of 18 officers and 683 soldiers, all citizens of Berne, who were slain in fighting against the French, during their unprovoked and cruel invasion of Switzerland in 1798. I well remember the assault by professed republicans, upon a country more truly republican than any other in Europe. That invasion by the French Directory was as odious in the view of mankind, at that time,

\* A fact of no importance, except to show that the family had become naturalized in Switzerland.

as now is the invasion of Rome half a century later by Napoleon III.

FOREIGN MINISTERS.—The city of Berne is the residence of most of the foreign ministers, and is alternately, with Zurich and Lucerne, the seat of the Swiss diet. Berne is the largest of the Swiss cantons; the city is situated 1700 feet above the sea.

During our brief stay in this picturesque and antiquated city, we were indebted to the great kindness of Mr. Frederic Louis Volz, an old citizen of Berne. Previous correspondence through his son, a resident in the United States, had made us acquainted, and through him and the good clergyman of Cote aux Fée, the preceding chapter of our family history had been developed. Mr. Volz gave us all his time while we were in Berne.

In our last evening there a fortuitous coincidence brought together a New Haven party of nine persons in the parlor of our hotel, all old acquaintances.

MARKET DAY.—We have had, on this occasion, an opportunity of seeing the common people. Their dress is grotesque and peculiar. One of our ladies collected pictures of their costume, which convey at once a correct impression of their appearance. In general, the females appear in short clothes, with broad brimmed hats and surmounted by conical peaks; both sexes are fond of bright metallic ornaments. The women wear shining steel or silver chains, reaching, in double lines, from the neck collar behind, down the back, and around in front to the collar at the chin. Many hundreds of people from the country have filled the streets to-day, and there is a great display of native productions. Their cleanliness is proverbial, and the white wooden milk-pails give an additional attraction to the pictorial costume of the Bernese. The most prominent article in the market is cheese. Every where on the continent where we had met with cheese, it has been so strong as to be offensive, and to-day it was particularly so. Some of the cheeses were very large, and when they were



accumulated in very great quantities, as they were under some of the arcades, the odor was intolerable, and drove us away.

### Berne to Soleure, eighteen miles.

July 22.

On a bright and beautiful morning we left Berne in two carriages, with two horses attached to each, as the diligence was not arranged to meet our convenience.

The beauty and fertility of the country were delightful, and the roads were, for excellence, a perfect model. We crossed the Aar on a firm stone bridge of admirable construction. On a tract of low and wet ground, the road was raised, and all along the way piles of broken stones, or pebbles, are kept at hand to provide for repairs. The farm-houses, with the same structure that I have already described, were substantial and comfortable dwellings, and gave little or no appearance of poverty. In one field we saw sixteen women in one group, all stooping to their work, while only two men were in attendance. All through the continent the flower of the young men is in the armies. In time of peace, they are, in a great measure, idle, and women perform the field labor.

As we receded from Berne, we gazed with admiration upon its beautiful environs, and on the grand mountains, seen in the distance, covered with ice and snow almost down to the fields; these snowy mountains formed the background of the retiring picture. We felt great regret at leaving behind so much Alpine scenery unvisited, but the stern necessity of limited time compelled us to proceed.

### Soleure.

At one o'clock, A. M., we entered the portal of Soleure, and here we dined, and our horses had their long rest. Although this town does not now contain 5000 inhabitants, it has evi-

dently been regarded as an important place. To enable it to command the passage of the Aar, sixty years were spent in fortifying it with powerful towers and walls of hewn stone, which are thick and high. The river Aar forms a natural defence on one side. The fortifications have, however, been converted into a promenade, adorned with trees, as at Lucca. Soleure is well built, with stone houses, which are in general lofty, and both in the town and its environs, there are establishments indicating wealth and distinction. I am not aware that there is now any thing to distinguish Soleure, except its antiquities, its beautiful position, and the rich treasures of fossils in its vicinity, many of which we saw in—

THE MUSEUM.—With some difficulty we found the museum, in a remote part of the town, on the opposite side of the Aar, and we had time only to glance at the fossils of the Jura formation, and of the tertiary, in which it abounds.

The collection appears to be neglected, ill-arranged, and in some disorder. It is rich in fossils, especially those in this vicinity. There are thirty specimens of the fossil turtle, and many of the saurians. The palatal bones, the natural pavement of the mouths of fishes, are here numerous, and in fine preservation. This collection was formed principally by the labors of Prof. Struve, and with proper leisure would afford an interesting object of study.

There are equestrian and other monuments in various parts of the town, commemorative of distinguished persons.

THE CATHEDRAL was finished in 1773. Its architecture is Roman, with a light, rich, and graceful interior. We walked through it with the more pleasure after visiting

THE ARSENAL AND ANCIENT ARMORY.—The collection of ancient armor in this arsenal is more extensive than in any other place in Switzerland. A very large apartment is filled with it, and there are said to be 800 suites. A considerable number of figures are dressed in full armor, with appropriate underdresses, and their countenances and manners are those of life. There are automatic sentinels at their posts of *day, and*

one of them, as you enter the room, presents arms, with the usual military salute. Next you see a council of military sages, who are addressed by a robed figure standing in the midst of the circle. He is apparently intended for Peter the Hermit, pleading the cause of the crusades, while one of the warriors holds up the banner of the cross. On the outside of the circle of warriors several ladies, in the costume of that period, are looking encouragement. These automatic figures, although they cannot boast of much dignity, still answer some valuable purpose, by exhibiting the manner in which the armor was worn. It must have very much encumbered the brave knights, and would be quite inconsistent with modern warfare. Indeed, but a very small portion of it is now retained in actual service. The cuirassiers wear a breastplate and helmet of steel or brass, and I believe also a defence for the back, and chains sometimes depend from the helmet, to protect the neck from the stroke of a sword. Amazons seem not to have been entirely fabulous, for there is in this collection a complete suit of armor adapted to the female form, and it is not a solitary instance among the collections which we have seen. Several of the ancient wall pieces are preserved here. The wall piece was a very large and long musket, mounted upon a stand like a swivel, so as to turn every way. It must have been a very formidable weapon, as from its great length, and the precision with which it could be aimed, it was capable of doing execution at a great distance.

There also is a diabolical machine, furnished with a multitude of barrels, to discharge a shower of balls by firing a train of powder. It turns on an axis, so as to bring into play several of these batteries, and there was, moreover, a long central tube for distant objects. This apparatus was, in fact, a gigantic revolver, almost exactly the type of its modern representatives.

How much ingenuity has been lavished upon inventions for the destruction of human life!

There is an ancient clock tower here, which claims to be  
man. It is even asserted that its date is 500 years before

Christ, but this is not credited, and it is with more probability of truth attributed to the Burgundian kings.

Soleure is, however, a very ancient city. Swiss recruits were formerly enlisted here for the service of France, Spain, the Pope, and the king of Naples. We saw them in the service of the Pope, and the king of Naples has a contract for Swiss blood which expires in 1855.

During the revolution, Soleure was a place of great resort for distinguished French emigrants. The celebrated Thaddeus Kosciusko, who fought both for American independence and for that of his own country, passed the latter years of his life in Soleure, and died in this city. It is still visited by many invalids for the sake of the air, and for the benefit of goat's milk.

### Soleure to Waldenbourg Thours.

Not many miles beyond Soleure we left the rich and beautiful plains of Switzerland, and entered a narrow mountainous valley, bounded on both sides by high precipices of limestone.

By degrees, the magnificent scenery of the snowy mountains, which, since we entered the northern parts of Lombardy, had not been often out of view, faded away, and we enjoyed a parting glimpse of the snow-white tops and sides, as we advanced into the narrow valley. The final view was taken just at the moment when the light, reflected from the declining sun, rendered the vision peculiarly brilliant and impressive. It was like parting with old friends.

ANCIENT CASTLES.—We passed two ancient castles, situated, the one on the left, the other on the right, of whose history many legends remain.

Perched upon lofty and almost inaccessible precipices of rocks, they are very conspicuous and grand in their desolation. In the dark ages, they must have been very formidable. It is said that from one of them, that of *Falkenstein*, black-mail was levied by its lords, and this was done with the rocks

facility as the only pass for two confluent roads was at its foot. Rudolph Van Wart, who, at one time, possessed this castle, was broken on the wheel for conniving at the death of the Emperor Albert.

We now ascended a long mountain road, of very gentle acclivity. Thunder-clouds hung over our heads, and the rain descended in torrents while we drove rapidly down the opposite declivity. We were in the midst of the grand mountain scenery of the Jura, whose horizontal strata, projecting in well-defined lines along the deep chasms, appeared distinct, as in a diagram, and were strongly contrasted with the high and abrupt precipices. The most beautiful verdure adorned the steep slope of the mountains, the intense green being exalted by the rain, while a mellow light from the sun, just sunk beneath the horizon, shed a golden hue around.

As the coachmen quickened their speed, we made a sudden turn by another old castle, and drove rapidly into the village, lying on one crowded street, in a narrow valley. Here we were received into a very plain but comfortable inn, where, after our evening repast, our books and our pens gave a quick transit to the hours which brought us to the time of repose. The German language was now every where spoken around us; how different in sound from the musical cadence of the Italian, and the graceful flexions of the French! If, however, this rich and copious language was dissonant to our American ears, we were charmed with a sudden outpouring of vocal music in the streets, from a number of persons walking, and singing hymns in a sacred harmony.

### Ride to Basle.

This journey of eighteen miles presented no new features. We passed through the considerable town of Lesthal, and arrived at Basle at ten A. M.

**PUBLIC OBJECTS IN BASLE.**—After our morning refresh-

ment, we visited a very large and handsome building, erected by the city, which contains several important establishments.

THE LIBRARY has 50,000 volumes, and is rich in manuscripts. There are here autographs of Luther, Melancthon, Erasmus,\* and Zuinglius; and there are also the acts of the Council of Basle in three volumes.

THE PICTURE GALLERY contains paintings and sketches by the younger Holbein, and numerous original drawings and designs by the same artist; also an excellent portrait of Erasmus, as well as of Bernouilli and Euler, both of whom were natives of Basle. There are many other pictures here. In a distinct room there is a large collection of portraits, all of one size; among them are representations of the principal men of Basle, and also a picture of Ecolampadius.

THE COLLECTION OF NATURAL HISTORY in the great building already named is very considerable, and in the different departments, it is highly respectable; but there was nothing very peculiar beyond what we have seen in other cities.

We had the pleasure of an interview with the celebrated Professor Schoenbein, the well-known discoverer of gun cotton and of ozone. In person and manners he is a perfect German, but he speaks the English language very well. He was so kind as to unfold to us, at our request, some very interesting observations. He showed us also some instructive experiments, and their results, in regard to ozone—a subject on which much obscurity has rested, and which appears to be now assuming a more intelligible form. Friendly relations for the future were established with this gentleman, who is frank and kind in his manners, and full of information.

THE CATHEDRAL OR MINSTER is a solemn old building of great interest. It is constructed of red sandstone, like the cathedral of Chester, in England. It is not a common architectural material on the continent; the effect, however, is not bad. This cathedral is more than 800 years old, counting from the

\*The seal and hanger of Erasmus are preserved here.

time of its foundation. The cloisters are in high preservation, and are exceedingly venerable. It was very interesting to walk under those arches, that have heard the voice of gone-by centuries, and beneath which Erasmus, Ecolampadius, and many other eminent men, have moved and meditated, in holy retirement. We lingered over their tombs with a deep feeling of reverence. We gazed also on the numerous memorials of the dead in the profound crypt into which we descended; and surrounded every where by the impressive proofs of man's brief concern in the affairs of this world. Here, and in many other temples and mausoleums, have we seen the very marble effigies on the floor, so worn by the friction of human feet, that almost every vestige of the features of the dead, and even the inscriptions, that were intended to transmit their names and fame to a distant posterity, are almost totally effaced. It gave us additional pain to see in this cathedral many monuments mutilated by wanton violence, especially by knocking off the features of the face, while the form of the person remains. I have before censured this unholy warfare against monuments, which, under every change of religious and political opinion, and amidst the most strenuous efforts of *reform*, should be held sacred as memorials of the dead.

Among the mutilated monuments was one of the Empress Anne, "wife of Rudolph of Hapsburg, and mother of the line of Austrian princes."

We entered the *Concilium Saal*, in which were held some of the meetings of the Council of Basle, and of its committees. The room remains as it was in that era (1436 to 1444), during which years the Council—in the age when the great Reformation was dawning, although it was not fully disclosed until the next century—deposed one Pope, and put up another.

THE HOTEL DE VILLE.—The city hall was visited by our ladies, who found in it many interesting antiquities. Its exterior is imposing from its magnitude and many-colored surface.

In a rapid survey of the city in a carriage, we observed its permanent massy architecture, its extensive hospital, its ancient

walls, high, and surrounded by a wide and deep fosse, furnished also with lofty towers, and strong portals, and loop-holes for musketry or archery, now rendered vain and nugatory by the terrible power of bombardment. We saw also beautiful promenades, shaded by fine trees, and cheered by gushing fountains, those delightful sources of health, cleanliness and recreation—a bountiful provision, and a rich blessing, as rare in our American cities as common in Europe.

COMPARATIVE REMARKS.—If I were to name any leading physical improvements, in which almost all Europe is superior to us in the United States, I would mention their roads, bridges and fountains, and, in general, their excellent agriculture. We may add also their numerous institutions for the promotion of science and the arts, which are found in cities not larger in population than New Haven; for example, Padua, Berne, Basle, the Saxon Freyberg, and even Genoa, are all comparatively small places. In these cities, and others that might be named, many institutions have been created, with expensive buildings, well-furnished libraries, cabinets of natural history, and apparatus and lecture rooms for instruction. Even the small city of Neuchatel, with a population not exceeding 7000, less than one-third that of New Haven, is greatly beyond us in the munificent endowment of an institution for popular education,\* which is, in fact, a great University in almost every thing except the name. But I trust that in due time we shall follow out such noble examples more fully than we have hitherto done. It must not be forgotten, however, that the wealth of our smaller cities is not great, and that many objects of benevolence make heavy demands upon American resources, far more than is known in any portion of continental Europe. In general, these objects are met in the United States with great liberality. Considering the comparative youth of our country, much has been done; and we may hope that long before we have enjoyed, like Eu-

\* Yale College has a different, and, in some respects, a higher destination.



rope, a thousand years of civilization, we shall not be behind the nations of the old world in noble institutions. We have even now not a few, and they are, year by year, coming into existence.

We regretted having only a few hours to devote to Basle, which, although containing now only 24,000 inhabitants, has been a place of considerable celebrity, and has been distinguished, particularly in the history of the Reformation. We crossed the bridge over the rapid and powerful Rhine, which flows impetuously along, a cold, glacial flood, having received the Aar, and many more tributary streams, now freed from their sedimentary impurities, and presenting a torrent of deep green. The only imperfect and ill-conditioned bridge over a stream of magnitude which we have seen in any part of Europe, we found here, in the structure which spans the magnificent Rhine.

Basle is the residence of many opulent families; and its position, just below where the river becomes navigable, and in an angle on the frontiers of France, Germany, and Switzerland, gives it additional importance. It was anciently a part of Swabia, and did not join the Swiss confederation until 1501. It still retains many of the characteristics of an Imperial Free Town.

Who can pass the Rhine any where, and especially in these higher countries, without feeling that he is crossing a stream more often than any other in Europe reddened by human carnage; the banks of this grand river, which flows through the fairest portions of Europe, are fertilized by human blood, shed in innumerable campaigns, from the era of Roman power to our own times. With few exceptions, the wars have not been waged in the cause of freedom, but have been produced by the quarrels of cabinets, often under the influence of wicked ministers, and courtesans, or of weak and depraved monarchs. Blucher justly remarked, that if those who make wars were obliged to march in the van, exposed to the showers of lead and tempests of iron, to the cuts of charging squadrons of cavalry, and the thrust of the bayonet, we should have very few wars.

### Basle to Freyburg, in Breschau.

An omnibus carried us four miles, through the territory of Basle, on the right bank of the Rhine, and five miles more brought us to the station-house of the railroad, where we were addressed in German by the military guards of the Duke of Baden, in whose territories we had now arrived. Our English and French were as unintelligible to them as their German was to us; but they were good-natured, gentlemanly men, and laughed heartily with us at our mutual perplexities.

After some time, however, they discovered our courier, who was busily engaged in assorting our baggage. By opening the trunks promptly, and offering to show every thing, he disarmed suspicion, and we were soon released, after they had weighed our packages; for in Germany all luggage is an extra charge. In this case, however, we could not complain, as we had to pay only eight francs for the baggage of six persons for forty miles, three-quarters of a cent per mile.

We took a second-class car, which we found to be perfectly comfortable, with good cushions, ample space for feet and limbs, and inferior to the first class only in decorations.

The railway was good, and the weather fine, although towards evening it became necessary to put on our outer garments and to close the windows of our carriage. The country was generally level; there were, however, ledges of limestone, which are regarded by geologists as coeval with the coral rag of England. We passed through three tunnels in the course of as many miles; one of them was three-fourths of a mile in length. The fields appeared less fertile than in Switzerland, nor were they as well cultivated; but there was a desirable change in the architecture and domestic arrangements. Those disagreeable associations of the house with the barn, and with heaps of compost, had disappeared. We no longer saw vast thatched roofs, verdant with grass and green moss, and projecting almost to the ground; or the domicil of the family covered

with scalloped and painted shingles. In place of such ingubrious buildings, we found neat and tasteful dwellings on the farms, and many of them decorated the road-side; they were neatly embellished by light, tasteful ornaments. The same crops were observed as in Switzerland, and, as in that country, the vine adorned many of the fields as well as the hill-sides.

The beautiful Rhine was fully in view during the greater part of our ride, while the mountains of the Jura chain were on our left, and those of the Black Forest on our right. All along, beginning with the first station on the railroad, and upon all other houses, public and private, flags were flying—flags with three broad bands of colors, red, white and yellow; they were raised in honor of the Duke of Baden, who, the day before, had passed towards Basle. At commencing twilight, we descried the city of Freyburg reposing on its low-lying plain, and our eyes were arrested by a fine station-house splendidly decorated like the rest. Here we took an omnibus, and entered the town beneath a triumphal arch, erected in honor of the Duke, and gay with flags and evergreens. Driving to the principal hotel, we found it full—the only instance of the kind which we have met with in Europe. We were not, however, losers by the refusal, for in a wide and quiet street we found another hotel, with ample apartments, good beds, an excellent table, and the most prompt and courteous attention.

THE CATHEDRAL at Freyburg is in some respects one of the most interesting in Germany. It is completely finished, and has escaped destruction during the various wars which have laid waste other parts of Germany. It is very large, well proportioned, and tastefully decorated. Its material is red sandstone. The principal tower is 380 feet high, an octagon on a square base, terminating in a delicate needle of the most beautiful open work tracery, all in stone. The stained glass is splendid. The church was begun in 1152 by Conrad III., and the choir in 1513. High mass was about being celebrated as we entered, and we remained in our seats during the worship, which was fully attended by people of the upper classes.

Among 15,000 inhabitants of Freyburg there are 1500 Protestants, who have a handsome church of their own.

THE UNIVERSITY was founded in 1456, and has 400 students. We were without introduction; but we found here, as has been the fact every where, the greatest courtesy and kindness. We sent in our cards to Prof. Fromberg, the geologist, and to Prof. Von Babo, the chemist, who promptly appeared, and attentively showed us the Museum and Laboratory. We did not presume that we were known, but we counted upon the comity of men who cultivate liberal knowledge, and we have never found this confidence misplaced.

In this University the collections in science are extensive and valuable in all the principal departments of natural history, and the specimens are arranged and put up with skill and taste. There is here the most gigantic camel which I have seen in any collection; the brown shaggy hair hangs in large and thick tufts from the chin and limbs, and lies flat upon the back. There are here also excellent fossil fresh-water fishes, and capital saurians of the *tenui-rostris* family, from Wirtemberg. The laboratory is a well finished place, and well used.

This small city is very well built, with wide, clean and handsome streets. It is on the outskirts of the Black Forest, at the mouth of the Hollenthal (Valley of Hell), upon the Triesam, which supplies the town with water. It has a fine promenade within the town, and the verdant mountains of moderate height, and avenues of trees are gracefully grouped around, somewhat in the manner of New Haven, in Connecticut. Freyburg is a beautiful little city, and well worth the devotion of a day.

### Freyburg to Strasburg.

This journey, of about 75 miles, was performed between 2 and 6 P. M., a rapid transit compared with our slow progress in the vetturines of Italy. We passed along the banks of the

Rhine, through a fertile region almost entirely level, highly cultivated, and as beautiful as any flat country can be. Being entirely without fences, it was a vast sea of wheat and grass, and the various crops which we have seen elsewhere were abundant here, forming a very rich prospect. The people were busy in reaping the wheat and gathering in the hay, but a heavy shower interfered with their labors, while it gave freshness to the verdure and the landscape. The country over which we travelled was evidently formed by the Rhine, whose alluvial deposits have produced a rich soil.

Arrived at the Rhine, opposite Strasburg, we found Prussian troops occupying the shore, and our passport was civilly inspected and promptly returned by one of the officers.

The river, with an impetuous current, was flowing by in grandeur; but we passed it with perfect convenience on a bridge of boats, which are both numerous and very strong; being perfectly secured from moving out of their position, while they are at liberty to rise and fall with the varying flood; the entire structure is so firm, that an army, with cavalry and artillery, might pass without causing the slightest disturbance among the boats.

A branch of the Rhine has formed an island, on which is the custom-house; but, as we intended to return, we left our baggage at Kehl, a town on the opposite shore, and we therefore took only a few light articles, which occasioned little delay and much amused the French \* soldiers on guard, who laughed heartily at our knick-knacks, destined for our little friends at home, and allowed us to pass freely on towards the city.

A conspicuous monument to the memory of General Desaix stands alone in a meadow on this island; it is surrounded by willows. He was killed, in June, 1800, in the desperate battle of Marengo, almost in the moment of victory; having contributed much to restore the battle after it had been apparently lost.

\* One side of the river is occupied by French troops, and the other by Prussian.

Strasburg lies low, like the towns in Holland; and although a city of 80,000 inhabitants, it makes no great figure at a distance.

**FORTIFICATIONS.**—As we approached the town, its numerous fortifications became conspicuous. It is most thoroughly begirt with walls on every side, and the approach to them is guarded by ditches and by many outworks. The river flows through the city, and is so connected with the works, that the fosse can be filled and the country laid under water, on the approach of an invading army. Strasburg was a free imperial city, until Louis XIV., in time of profound peace, seized upon it as his prey. The French have now held it as a frontier fortress for 150 years. It being regarded as a key to Germany, it has an arsenal containing 155,000 stand of arms, and 952 pieces of cannon, 412 of which are required for the defence of the town and citadel. Application was made on our behalf that we might have permission to see the arsenal, but it was not accessible on the day that we were there.

The general appearance of Strasburg is that of an ancient German town, and such in fact it is, for it has been very little changed since its annexation to France. The inhabitants wear their own national costume, and speak both French and German. The town is well built of stone; in a large proportion of the houses the roofs are very steep and high, with two or more rows of dormer windows, answering to as many divisions by floors in the attic. In Strasburg there are not many objects of particular interest.

Among the most conspicuous is a colossal bronze statue in a public square, erected in honor of John Guttemberg, who, in this city, first practised the art of printing, and completed the invention at Mayence. The pedestal of the statue is surrounded by groups of allegorical figures, representing the triumphs of the art and what it has achieved for mankind.

In another square, is a large bronze monument, also of colossal dimensions, to commemorate General Kleber, who, as well as Dessaix, was a native of Strasburg. He was left by

Napoleon as commander-in-chief of the army of Egypt, when the former suddenly departed for France in a French corvette, that had been secretly dispatched from Europe for the purpose of recalling him to crush the imbecile government of the Directory, a work which he so well performed.

Kleber was a man of gigantic frame and strength, and could, in open fight, have foiled a platoon of soldiers; but a single Arab stealthily assassinated him in his tent, June 14, 1800. In addition to the inscription, there are bas-reliefs representing two of his battles in Egypt, in which he triumphed over the Turks and Egyptians.

**MARSHAL SAXE.**—In the Lutheran church of St. Thomas we saw the interesting and beautiful monument of Marshal Saxe. It is composed of a group of figures, and the effect is very solemn and impressive.

There is an open tomb, an actual marble sarcophagus of large dimensions; the lid is lifted, and tilted a little obliquely backward, as if in preparation for an interment. At one end of the tomb, is a skeleton figure representing Death—Death is slightly veiled by a robe thrown loosely over him, while he reclines his head upon the sarcophagus, and Hercules, with sorrowful expression, stoops and leans upon the other end of the tomb. On the right, a bending female figure, personifying France, beautiful, but in deep sorrow, raises her hand to prevent the voluntary descent of Marshal Saxe to the grave, and at the same time to arrest the advance of Death; the Marshal stands erect, of fine form and features, and with a calm mien, but has one foot advanced, as if he were about to seek his last resting-place. On his right, are allegorical figures, representing the nations over whose armies he had been victorious.

Marshal Saxe was a natural son of Frederick II., Elector of Saxony and King of Poland; his mother was a Swedish lady, the Countess of Konismar, of great beauty and accomplishments. He sustained a high reputation as a military commander, first under Marlborough, in the wars of Queen Ann, and afterwards in the service of France. He died on the 30th November,

1750, aged 54; his body was embalmed, and his heart, inclosed in a silver gilt box, was deposited in the church of St. Thomas.

The monument cost its artist, Pigalle, 25 years of labor, and is justly regarded as one of the finest productions of the chisel. During the revolution, the church was used as a repository for straw, and a citizen of Strasburg, named Mangelschott, covered the monument so effectually with bundles of hay and straw, that it was saved from the Vandalism of that period.

Marshal Saxe was a strenuous Protestant of the Lutheran faith, but was notoriously licentious, and an early marriage with the Countess of Loben, a lady of wealth and beauty, was broken up in a few years, as his habits were inconsistent with that relation and with his religious profession.

COUNT OF NASSAU.—Twilight was beginning, but it was sufficient for the inspection of two human bodies in a state of preservation. They are reported to be the remains of the Count of Nassau Saarwerden, about 50 years old, and of his daughter of 14. The bodies were embalmed more than a century ago, but were rediscovered only a few years since, and have been brought up and placed in a small room, where, being screened by glass, they may be inspected. The light was still sufficient to enable us to see that the daughter was disfigured, but a sparkling gem was visible in the ring upon her finger. The face of the father was not so much changed, and was not particularly revolting; it was of a light color, and not blackened as the Egyptian mummies are by bitumen. Such exhibitions of the human form, after death has done his work, must always be revolting.

THE CATHEDRAL.—The Cathedral of Strasburg is famous all over the world. I shall therefore not attempt an elaborate description, but endeavor only to convey some general impression of the effect which it produced on us. The spire rises 474 feet above the pavement; it is 70 feet higher than St. Paul's, and is 24 feet above the great pyramid of Egypt.\* Still, owing

\* The accumulation of sand around the base of the pyramids has much diminished their original height.



to the large dimensions of the entire building, and the light and graceful structure of the spire, it does not impress the observer as being of this extraordinary altitude. The nave of the church is 230 feet high, and the round window at the end is 48 feet in diameter. This wonderful structure was begun nearly 800 years ago. The material is red sandstone, obtained in the vicinity; it has proved very enduring; the church has therefore suffered very little from time, and the chiselled and carved material, after so many centuries of exposure to the weather, retains the sharpness of outline which it had when first finished.

The Cathedral of Strasburg was intended to have two towers, like those of the cathedrals York and Westminster in England; but, as the expense is enormous, it is probable that the existing tower will remain solitary. This deficiency gives the cathedral a disfigured appearance, especially as the unfinished tower, which is square, rises but half way.

Externally, Strasburg Cathedral is distinguished by a light and airy gracefulness both of structure and material; the sandstone is cut and carved into a thousand forms, some of them, especially in the finished tower, extremely delicate and beautiful. Even the statues and images, which are very numerous, are chiselled out of sandstone, which has an agreeable color of reddish gray. I believe there is not an image of marble upon the whole building. The number of images that cluster around the portal and adhering to its walls is very great; they form a host of little beings, in addition to the statues of full size. Indeed the profusion of these decorations appears to be extravagant both in point of taste and economy, and some are quite out of place. In a temple, a building devoted to religion, it is not easy to understand the propriety of mounting men on horseback high up in the towers; for such aerial equestrians are to be seen here, sentinel-like, in positions where saints and angels would seem more appropriate ornaments. In the interior of this cathedral there is a simple dignity and grandeur—a holy majesty that is almost overpowering.

The magnificent rows of columns of gigantic dimensions and altitude seen in long perspective, exceed in effect any thing that I had elsewhere seen. The extreme richness of the windows, filled, on both sides, with stained glass, commemorating, both historically and allegorically, the events of the Bible, and the characters and catastrophes of saints and martyrs, fills both the eye and the mind with delight; and when we turn from gazing to the right and the left along the extended line of lateral windows, and look upon the vast circle of gorgeous light which streams down from the great picture luminary at the end—a circular window 48 feet in diameter, and presenting, in radiating lines, more than the colors of the rainbow, we are ready to exclaim that art has not fallen short of nature in beauty, while she excels her in the permanency of her hues, which have not here been dimmed by the lapse of centuries; and if no violence is committed on this temple, they will be equally brilliant after a thousand years more shall have passed away.

THE CLOCK.—There is in this cathedral a wonderful clock, which has been substituted for an older one that has been removed. The present clock was constructed by a man who is still living; it appears to be about 50 feet high and more than half that width; it was mute for 50 years, but is now again a living chronometer.

Among its many performances are the following. It tells the hours, half hours, and quarter hours, and the bells which make the report of the flight of time are struck by automaton figures. A youth strikes the quarter, a mature man the half hour, and an old man, as the figure of Time, the full hour. This clock tells also the times and seasons of ecclesiastical events, as far as they are associated with astronomical phenomena, and it gives the phases of the moon and the equation of time.

At noon, a cock, mounted on a pillar, crows thrice, when a procession of the apostles comes out, and passes in view of the Saviour; among them is Peter, who, shrinking from the eye of his Lord, shows, by his embarrassed demeanor, that he has heard the crowing of the cock, and has fully understood its

meaning. Among the movements of the automatons which we saw, I must not omit to mention, that a beautiful youth turns an hour-glass every 15 minutes. There is also a celestial circle or orrery that shows the motions of the heavenly bodies.

**VIEW FROM THE HIGH TOWER.**—I ascended one of the towers of the cathedral to an elevation sufficient to afford a correct idea of the city and of its position. It is of a form nearly circular, and being entirely shut in by walls and outworks, which are maintained in a perfect condition, it occupies far less space than a town of the same population would do in America. Being in a flat country, and inclosed all around by its fortifications, with water in the fosse, extending as far as I could see, the impression was not altogether agreeable.

**DEPARTURE FROM STRASBURG.** *July 26.*—We left Strasburg in the morning, after a parting visit to the cathedral, to obtain a strong impression of this magnificent temple. We returned to the river as we came, and passed one mile and a half to the Rhine, and again crossed the stream on the bridge of boats. At the town of Keil on the German, now Prussian, side of the river, we took up our baggage which we had left behind, but did not linger in this place, which was formerly fortified to resist the invasion of the French, by whom the fortifications were destroyed, and not a vestige of them did we see.

### Strasburg to Heidelberg.

Again we traversed, by railroad (100 miles in four hours), a flat and fertile country, and the fields were extremely rich in crops, such as have been often already mentioned. This region is a part of the fruitful alluvion of the Rhine and its confluent rivers, which having, from remote time, borne along the spoils of the Alps, have spread them, century after century, over the plains of level Germany, which they have thus rendered fertile.

We passed many towns at a distance, and through a few the train flitted so rapidly that they hardly produced a picture in

the eye or the mind—there was scarcely time to inquire their names. We ran very near to Carlsruhe, the residence of the Grand Duke of Baden, and could only observe that it is a large town, and that its environs are in a high state of improvement.

As we approached Heidelberg, the country began to rise into beautiful and fruitful hills cultivated in fields of wheat, grass, and other crops adorning their gentle slopes. The graceful ornament of trees and forests was not wanting. In the southern portions of Italy we had seen few trees; they were more frequent in Tuscany, still more so in Lombardy, and since crossing the Alps they have been comparatively numerous. Geneva and the borders of its lake, Neufchatel and its lake, and the country between and the Jura Mountains are not deficient in this fine garniture of the earth; here, in Germany, forests are common, and there is no deficiency of wood either for fuel or for building.

Floors of stone and brick, and stairs of stone are frequently replaced by wood; and there is all the agreeable diversity of landscape which, in the most beautiful parts of our own country, is so often seen in the association of cultivated fields, with groves, and forests, and clumps, and avenues of trees.

It is also a great relief to have emerged from lands swarming with beggars. Since leaving Geneva we have seen very few; in Switzerland and Germany none, except now and then a little vagrant, who importunes the passing traveller for a few coppers.

APPROACH TO HEIDELBERG.—As we drew near to this ancient and renowned city, now diminished to 15,000 inhabitants, its splendid scenery arrested our attention. Our eyes lingered no longer on boundless plains, but high hills, almost mountains, crowd here close to the Neckar, which is a branch of the Rhine, leaving along both banks only a narrow margin of land.

Heidelberg stands chiefly on the left bank. Its long streets run parallel to the river, and are intersected by others at right angles. The city is clean and handsome. It has a large proportion of houses with high and steep roofs, in the old

German style; but it has been so often ravaged and burned in different wars, that the number of very ancient buildings is not so great as in many other German towns.

**PROTESTANT WORSHIP.**—We were very happy to find ourselves once more in a city where we could attend worship in a Protestant church, hear a sermon in English, and unite in prayers and praises expressed in our own language. Here, as in several other continental cities, we found a small English Episcopal chapel. It was an humble building, not capable of containing over 150 persons. Not more than 100 were present; but they appeared devout listeners to a plain, practical sermon, which was preached by an English clergyman of very respectable appearance.

This city is divided nearly equally between Catholics and Protestants, the latter having, however, a small majority. It was blessed with the early labors of Luther, and of other eminent reformers. The seed which they sowed has vegetated, and the fruit is still apparent. It was pleasant to us to learn that a friendly understanding prevails between the Protestants and Catholics; and this state of feeling is evinced by an arrangement which we have not met with any where else. They have made an amicable division of the great cathedral of Heidelberg between the two denominations. On our way on the Sabbath to the Protestant Episcopal Church, we entered the cathedral, and found that a wall of friendly partition, as literal as brick and mortar could make it, had been constructed from floor to ceiling. The Protestants have about three-fifths of the area, and the Catholics the remainder. In the Catholic portion a full assembly of plain-looking people were earnestly engaged in singing. All were standing, and all appeared to unite with great zeal in the worship; indeed, I have often been struck with the contrast too often seen in our Protestant churches, which might well stand reprov'd by the devotional aspect of a group of humble Catholics. In the Protestant division of the church, the congregation were not yet assembled. From what we have been able to learn, we infer,

that the Protestants are not only in the ascendant here in numbers, but that the principal people are of that persuasion.

PROFESSORS LEONHARD AND BRONN.—A correspondence having heretofore existed between us and these two eminent professors of the University of Heidelberg, we sent them our cards, and received kind overtures in return. Professor Bronn being ill, I did not see him; but my son called on him, and had an agreeable interview at his house. Professor Bronn has a collection of minerals and fossils, about 1200 in number.

With Professor Leonhard we exchanged calls, and the favorable impressions made by early correspondence were more than confirmed by personal communications. Although this distinguished geologist has passed seventy years of age, he possesses the fire and energy of youth, with a delightful cheerfulness and warmth of address, which at once placed us at ease in his society. Richly stored with knowledge, his mind acts with intense vigor, and his thoughts are conveyed in concise and well-selected language. Many of the most interesting of the geological specimens which he showed to us have been collected by himself and his son, who is engaged in the same pursuits. While explaining them with great animation, he often exclaimed, "*voici!*" at the same time grasping the arm of his hearer, looking intently in his face, to observe whether he was understood, and adding occasionally, "Do you understand?" According to the custom of his country, he smokes, using a long pendent tube, with a porcelain pipe-bowl. The Germans indulge in much luxury in the choice of their pipes, and many of them are highly adorned.

We had not time to see any others among the 40 professors in the University, which numbers about 600 students. Professor Leonhard is the author of numerous original works and memoirs on geology and mineralogy, and has for a long period of time edited, in connection with Professor Bronn, a monthly journal devoted to these subjects. His house is full of specimens of rocks, and minerals. His private collection contains nearly 20,000 specimens. His lecture-room had but small accommo-

dations for a class, indicating that the attendance was not large.

Americans resort in considerable numbers to the German Universities. Mr. D——, a gentleman from Boston, in New England, whose family we had well known, called upon us. He had been here two years as a student of law, and three years in Europe.

Heidelberg claims eminent names among the professors. Gmelin had been ill with apoplexy when we were there. Professor Tiedemann is much distinguished in physiology. His private collection contains 11,000 exquisite preparations.

The University has sustained many vicissitudes. The library was plundered of its most valuable manuscripts by the ferocious Austrian General Tilly, in 1622, when all the Protestant professors were dismissed, and were supplanted by Catholics. Near the close of the eighteenth century, after a period of decline, the University was again restored by Charles Frederick. The number of printed volumes in the library is 150,000. The reformer Melancthon was trained in this University.

THE BRIDGE.—There is at Heidelberg a beautiful permanent bridge of stone over the Neckar, and it conducts the pedestrian to a winding path called the Philosopher's Walk. It leads up one of the lofty hills opposite to the town, and from it there is a very extensive prospect. It is a favorite promenade.

### Heidelberg Castle.

By far the most interesting object in the environs of Heidelberg is its ancient castle, whose extensive and imposing ruins rise on a very high hill just back of the town, which they entirely overlook. Except the Coliseum at Rome, and the other amphitheatres, the Parthenon, and some of the mausoleums, I have seen no spectacle of ancient architecture so imposing. Enough of the castle remains nearly entire to enable one to

understand the whole plan; and the portion in ruins is so extensive as to produce a highly picturesque effect. Previous to the cruel thirty years' war, which began in 1612 and ended in 1648, Heidelberg was a splendid city. It has been five times bombarded, twice laid in ashes, and thrice taken by assault, and delivered over to pillage. Tilly, the savage Austrian commander, in 1622, stormed and took the town. He gave it over for three days to be sacked; and the castle, sharing the fate of the city, was obliged to surrender. In 1674 a French army desolated the country with fire and sword; and in 1688, another French army exceeded its predecessors in cruelty.

In 1693, Heidelberg was again attacked by the French, and the castle was ruined. Its towers were blown up, and a large portion of the wall of one of them was precipitated in a body into the ditch, where we saw it lying in one mass as it fell. The castle has been thrice burnt, and has "ten times experienced the horrors of war." It has been repeatedly restored, not only as a fortress but as a splendid palace; but in 1764 it was set on fire by lightning, which was the second catastrophe from that cause; for in the sixteenth century it was burned in the same manner, and since the destruction of 1764 it has never been rebuilt.

The material of the castle is red sandstone, quarried from the hill on which it stands, and as in Strasburg Cathedral, the carved ornaments and images are little injured by long exposure to the weather.

The castle was not merely one building, but a vast pile, consisting of many parts, of which entire walls remain, and exhibit, impressively, the beautiful features of its former dignity. Some portions of the structure are roofed in to exclude the weather, and to admit of being applied to use. This is the case with the central front, which appears not to have been materially injured by the fire. It is now occupied as a museum of pictures, and of relics of antiquity, most of which probably belonged to the castle and the town. They are very



interesting and instructive, and a keeper of the collection exhibits it to the numerous visitors who resort to the castle, from which the splendid scenery of the valley of the Neckar is viewed to great advantage, as the castle stands upon so lofty a hill. A good carriage road, which we followed, conducts the traveller to the castle by a circuit of two miles, but a much shorter way up a steep ascent brings the pedestrian to the same point.

The hospitality of this palace appears to have been promoted by great stores of wine, which were brought in by the tenants of the estate belonging to the Duke of Baden. Those large tuns, which all the world has heard of, are still preserved in the cellar. The largest is 36 feet long and 24 high; it can hold 800 hogsheads, or 283,200 bottles. Although it is the largest wine cask in the world, it is much inferior to some of the porter vats in London. In 1805, I saw one in the brewery of Meux & Co. which contained 20,000 barrels; and a single iron hoop weighed three tons. There is another very large wine cask in the cellar of this castle, but its capacity is not equal to that of the one first named.

FISH PONDS.—In the ascent of the castle hill, at its remote end, the traveller is interested in viewing some fish ponds, which contain very large salmon trout. There is a lower pool where the young fish are kept until they will weigh each a pound, when they are transferred to a higher pool, of which there are two. In these the larger fishes are seen sporting with great activity. When small fishes are thrown in as food, they dart at them with amazing quickness, instantly seizing the little fishes and carrying them down. These salmon trout are raised as a luxury. They have much of the flavor and color of the salmon of our waters in America, and afford an excellent repast, as we experienced at our hotel.

### Heidelberg to Frankfort.

A ride of three hours, on an excellent railroad, carried us over the alluvial plain of the Rhine, which presented the same scenes of unbounded fertility and intense beauty that have been already described. We saw many towns at a distance, and dashed along the borders of others, or occasionally the train was brought for a few moments to a stand still at a station-house in the vicinity of some place whose name we did not learn. On our right there was a continued series of beautiful, rounded hills, which were generally cultivated. They formed the boundary of the great plain upon one side, and many of them presented to our view ruins of ancient castles. Even when seen from the railroad, at the distance of two or three miles, their appearance was imposing and grand. They told us of a past heroic age of war, rude hospitality, and knightly revelry. But they record, also, an age of rapine and robbery, when the predatory lords, secure in their stone castles upon the high hills, sallied forth into the plains and valleys to rob the passing traveller, by taking his goods, or imposing upon him the odious black-mail. As ruins, these castles excite a romantic spirit of admiration, but we may well rejoice that their age has gone by never to return.

### Excursion to Geissen.

July 23, 1851.

We were hardly settled in our fine hotel in the beautiful city of Frankfort, before we decided to make an excursion to Geissen, and accordingly the next morning we were in the cars at half-past six o'clock, and arrived at Geissen at ten, the distance being, I suppose, about sixty miles. The rural district through which we passed is rich in towns and villages, and in the most exuberant productions of the field. Geissen is the

which many persons are engaged. The number of working pupils in this department of the laboratory was from 20 to 30. It being the hour of dinner (at one o'clock, as in New England), there were only a few young men present, and they appeared to be employed as private pupils; but Prof. Liebig told us that there were 40 young men at work in another department, under an assistant teacher. We were conducted, last of all, into a private room, where delicate balances and other nice articles of apparatus are kept.

Professor Liebig is a very pleasing man. In his person he is tall and genteel, and apparently about 40, or not much beyond that age. He is very affable and courteous; and as he speaks the English language perfectly, with only a slight German accent, our interview was particularly interesting and agreeable. He showed us some new chemical products, among which was *cordein*, which, in prosecution of his researches on the flesh fluids, has been extracted from the heart of the ox. Cordein crystallizes and appears to be similar to sugar, having a sweet taste. Nitrogen does not enter into its composition, which is the more remarkable, especially for a principle extracted from muscle. Professor Liebig also called our attention to the result of a process for obtaining barberine from the bark or alburnum of the barberry; it is a yellow crystallized substance.

The expression in the published print of Professor Liebig, is very different from that of his speaking face. The print is true to the form of the features, but it does not give the impression of suavity and mildness which he wears in conversation. It is, however, a common misfortune to men whose minds have been much exercised with thought, that the artists often catch the settled fixed expression in which intensity is easily mistaken for severity.

Professor Liebig expressed much regret, which we of course felt still more, that our interview must be so brief; but he was going to London, and we exchanged addresses, hoping to meet again in that city.

To our earnest invitation that he would visit the United States and lecture in our institutions, he gave no encouragement, expressing great reluctance to speak in a foreign language, and when we named Professor Agassiz as an example of great success in the United States, he added that he had a peculiar facility in acquiring a foreign language.

As this was the day of the great eclipse of the sun, we were not surprised to see crowds of persons, at the proper hour in the afternoon, gazing upward to see this remarkable phenomenon. It was far from being total in this part of Europe, but the obscuration was sufficient to enable us to look at the sun with unprotected eyes.

The German gentlemen and ladies appear to have a great dread of crossing the Atlantic, and seem much astonished that Americans make so light of a voyage, which to them appears so formidable.

Since the commencement of the present year, Professor Liebig has removed to Munich, and Geissen has henceforth lost its principal attraction.

At evening we were safe back at Frankfort, and rejoined our little party.

### Excursion to Hesse Darmstadt.

July 29.

On our journey from Heidelberg, we passed Hesse Darmstadt, when it was not possible to stop, and we returned to it to-day, at 3 p. m., to look at its museum of paleontology, under the direction of Professor Kaup. The city contains 30,000 inhabitants. Its appearance is grand and beautiful. It has wide and clean streets, adorned by palaces, and many other large and splendid buildings. As it is the capital of Hesse Darmstadt, it has a court of its own. The very quiet of the place—a state of repose almost like that of a village,—the ample space around its buildings, and its beautiful grounds and groves, im-

part to it a peculiar dignity beyond what we have seen in any other German town.

The most conspicuous monument in Darmstadt, is a fluted column of red sandstone, erected to the memory of Louis I., the late grand-duke, whose statue stands upon the top. It has an inscription, which we did not attempt to read. There is a public library here of 200,000 volumes as reported, but we did not see it. Geissen is the university of Hesse Darmstadt. The population are principally Protestant; of the entire population of 781,000 inhabitants reported in 1831, 563,000 were Protestants, and of these 393,000 were Lutherans, and 70,000 were Calvinists. There were also 120,000 Catholics, and 16,000 Jews.

**THE PALACE.**—We drove immediately to the old palace, and after some time, obtained admittance. The building is interesting on account of the collections which it contains.

**THE PICTURE GALLERY.**—The rooms of the picture gallery were first opened for our inspection. This gallery was not our principal object, but while waiting for the eminent professors of paleontology, to whom we had sent our cards, there was time to walk rapidly several times through a long series of apartments, which seemed to me a quarter of a mile in length. On all sides, the walls were covered with pictures, great and small, and many of them are very fine. We had no time to study particular pictures, or even to look at a catalogue of this very splendid collection.

**DR. KAUP AND HIS MUSEUM.**—The main object of our excursion was at length obtained; we had the good fortune to meet Dr. Kaup, and we passed with him a most interesting hour. With suitable dignity, he combines great affability, and it seemed a pleasure to him to impart to us the information which we desired.

By him the very remarkable fossil bones of Eppelsheim and the valley of the Rhine were discovered. The fossils most interesting to us were those of the dinotherium; and especially the bones of the head, containing the teeth and the tusks, the

latter pointing downward. It was quite satisfactory to me to be assured by inspection of the originals, that the drawings we possess of this animal are perfectly correct, both in form and dimensions. Dr. Kaup has the lower jaw, and his friend Dr. Klipstein the upper, of the *dinotherium*. The bones of other huge animals, found in similar circumstances and in great abundance, are also here. Those of the primeval elephant, and of the mastodon, are particularly interesting; they are numerous and very large. Those of the mastodon, especially, exceed in size the bones of the same animal found in America. A femur which we saw, is a foot longer than the corresponding limb of the largest American animal. Dr. Kaup estimates the height of the living animal at 18 feet, and his length at 20; the tusks will add 10 more, making nearly 30 feet, allowance being made for the curvature of the tusks. This enormous animal must have been equal in size to the *dinotherium*, which has been regarded as the largest terrestrial animal that has ever lived. In this collection we saw also large skulls of the cavern bear. Here are likewise remains of *paleotheria*, similar to those of the Paris basin, and there are some that are peculiar; for example, a very large jaw of an animal nearly allied to the horse.

From the very great number of the fossil bones of the gigantic animals, it is obvious that they existed in this country in immense numbers; and it is certain, that we are in no danger of exaggeration, for where one skeleton has been brought to light, hundreds, perhaps thousands, may lie entombed below the reach of human eye.

We saw also here the original sandstone slabs of *Heidelberghaussen*, containing the fossil copies of the feet of the *cheirotheria*; I remarked at Liverpool, that the impressions made by the animal when walking, on the then plastic and yielding material of what was afterwards consolidated into sandstone, were so similar to those made by the human hand upon clay, that the unknown animal received a name, which, in the Greek, means an animal with a hand.

From parts of the skeleton which have been discovered, &c.

is now believed that the animal was a colossal batracian, or, in plain language, a gigantic frog—an animal as large as an ox. Similar impressions of cheirotherial feet have been found in England, Scotland, and other countries. I pass by in silence the specimens of the natural history of modern animals, of which there are many in this museum.

I must not, however, forget to mention the fossil rhinoceros in this collection, of which animal there are numerous teeth and crania. Here, also, are the remains of the *sus antiquus*, the ancient fossil hog.

### Frankfort-on-the-Maine.

This town, which is so named to distinguish it from Frankfort upon the Oder, stands upon the river Maine. It is a very handsome town, and its principal features are very obvious and intelligible. It contains 62,000 inhabitants, of whom 6000 are Jews. The population is principally Protestant. The streets are wide and clean, and are beautified by elegant houses of stone, which is almost white. It is a quiet city, and has an air of dignity, refinement, and comfort. The appearance of the domestic establishments, and the manners of the people make a very agreeable impression. Some of the handsomest houses are upon the river; but the old town is much less agreeable.

THE CATHEDRAL.—We visited this ancient building; but its principal interest is derived from its sepulchral monuments, which are numerous. In this cathedral the German emperors were crowned.

THE TOWN HOUSE is a large modern building, in which we saw the full-length portraits of the German emperors for 900 years. They are generally men of a noble appearance. After making due allowance for the flattery of artists, for the effect of imperial costume upon the eye, and of imperial dignity upon the mind of the observer, I still think that I have never seen a

collection of men, either on the canvas or in actual life, of more commanding appearance. In the hall where these portraits are arranged, the imperial banquet was formerly held after the crowning of an emperor.

THE PICTURE GALLERY was established by the bounty of an individual of the name of Stedd. He gave to the city his collection of paintings, drawings, and engravings, with the addition of 83,000 pounds for building and maintaining a public gallery and school of arts. The institution has an income of 800 guineas annually for the purchase of pictures. The collection is very splendid, and contains some very beautiful things. Among those which gave me the most satisfaction, was Lessing's Huss before the Council of Constance. The three cardinals, with their red caps shading their attentive faces, seemed ready to step up and confute the spiritual and intellectual being before them. The animal faces of the bishops are in strong contrast with the face of Huss. A family assembled around the dead body of a father killed by lightning in the harvest field, and a picture of Daniel in the lions' den, have also made an indelible impression.

THE SENKENBERG MUSEUM AND DR. RUEPPEL, ITS CURATOR, afforded us much satisfaction. It occupies a large and convenient building, which was erected, and is sustained, by private contributions. Although it is of only thirty years' standing, it has one of the best museums of natural history that we have any where seen. It is very much indebted to Dr. Rüppel for many of the best specimens, especially of the zoology of Africa. It was our good fortune to find him, and he was so kind as to attend us through the museum, where his attention to us was equally acceptable and useful. Dr. Rüppel, incited by the love of natural history, passed fourteen years in Africa. At different times, he brought home with him many interesting animals from Egypt, and from the interior regions of Nubia and Abyssinia, and they are put up and arranged in the finest condition possible. The giraffes are noble figures. The tallest is, I should think, seventeen feet high to the crown of his head,



the hippopotamus is of vast size, eighteen feet long, and four in diameter.

The antelope family are wonderfully well represented here, and better than in any museum elsewhere, owing to Dr. Rüppel's successful researches in Africa. They are exceedingly diversified in form, color, and size. In fact, the zoology and comparative anatomy of this museum are, in all departments, very extensive, and the specimens are well preserved. The skeletons of a large part of the animals whose stuffed skins so faithfully represent their living forms, are also set up in this museum.

The skeletons of the fishes are put up with exquisite skill; and even snakes, and the most delicately constructed animals, have their framework perfectly restored. The geology is also considerable. The museum is shown gratis, and lectures, open to the public, are given there. This institution does honor to the city, and cannot fail to enlighten and elevate the public mind.

THE CITY LIBRARY contains 60,000 volumes. In a brief call at this Institution, we saw an original portrait of Luther, and another of his wife; also a pair of his shoes, very stout, cut down at the heels, with thick and stubbed soles, and heavy heels, as if they were made to crush and trample down abuses. If these humble appendages of the great Reformer were worthy of inspection, still more was LUTHER'S HOUSE, and the window from which he preached to the people in the streets. His dwelling is in good preservation, and looks as if it might stand for centuries to come. We also saw the house in which he was born, with the family arms over the door.

In the library there is a grand statue of Goethe. It is larger than life, and represents him in a sitting posture. There is also a colossal bronze statue of Goethe in one of the public squares. It is a very dignified figure; both in the statue and in the picture in the library, the features and the head are of the most elevated moral mould, and of the highest intellectual character.

We visited the JEWS' QUARTER, and, of course, the house

where the mother of the celebrated Rothschilds lived; but these are so often described that I pass them without further comment. The condition of the Jews in Frankfort is now greatly ameliorated, and most of the restrictions formerly imposed upon them have been either removed entirely or greatly lightened.

### Frankfort to Mayence.

We returned from Darmstadt just in time to take the cars for Mayence. As all necessary arrangements had been made, we passed from one station-house to the other in Frankfort without returning to our hotel, and in one hour were in Mayence. The evening was hot, like our American July, and in a crowded car we were less comfortable than usual, but the time was short, and we took every thing cheerfully.

Mayence is situated at the confluence of the Maine and the Rhine. We passed on a bridge of boats, as at Strasburg, and found our apartments ready in the *Hôtel d'Angleterre*.

There was still an hour or two of daylight, and as we were to leave Mayence in the morning, we took a carriage without loss of time, and with a commissionaire acquainted with the city and its environs, we drove through the principal streets; viewed the cathedral, the theatre, and the royal palace, all constructed of red sandstone, and all of them buildings of imposing appearance.

We went out of the city through a very strong portal, and saw the thick massy walls, double on this side of the town, and with the deep and wide fosse forming a defence apparently impregnable. There are, of course, embrasures for cannon, with loopholes for musketry; and as war has often visited this stronghold of Germany, it will not be found unprepared when it shall come again. Prussian and Austrian soldiers met us every where. We were assured that 10,000 soldiers of those nations are now here in garrison, and in war 30,000 would be required to man the works and defend the fortress.

As we had met with no elevated ground since leaving Heidelberg, we were the more gratified as we rode out of the city at finding ourselves in the public gardens, which are situated so high as to afford a beautiful view of the powerful Rhine, and of its important auxiliary, the Maine. Their junction takes place a little above the city; and the Maine is then merged in the Rhine, upon whose banks Mayence stands. The prospect is rich in mild rural scenery, with excellent cultivation.

Returning, we drove rapidly here and there, and continued our recognizance until the dark curtain of night was dropping before our eyes. We passed the palaces of the Austrian, and of the Prussian commander; also another palace, where Napoleon lodged when he was here. We saw, also, the barracks of the troops, and the best built street in the city, where the nobility live.

Mayence is a handsome city, and its position gives it peculiar importance in a military point of view. Its population is 36,600, exclusive of the soldiers of the garrison. It belongs to the Grand Duke of Hesse Darmstadt, and is the most important city in his dominions. It was the Moguntiacum of the Romans, and was founded by Drusus.

### Descent of the Rhine.

July 30.

We left Mayence at seven and a half o'clock A. M., in a beautiful steamer of small size, but sufficiently large to afford a neat and comfortable cabin, and we arrived at Cologne at four P. M., after a smooth and pleasant passage of about 100 miles. I shall not attempt to describe the various towns, villas, and ruins which line both shores of this river, nor to sketch the history of the memorable events which have happened along its banks. This region has indeed been the theatre of much bloodshed, and its history is, to a great extent, that of the wars of the large and important part of Europe, through which this river runs.

Such is the impulse which the Rhine receives in its descent from its parent Alps, that, even opposite to this city, it flows so rapidly, that the natural current carries the wheels of mills anchored in the stream.

As far as we have seen the Rhine, its waters are muddy, like those of the Ohio and Mississippi; not, however, in so great a degree as in the last named river. Flowing from the Alps, like the Rhone, and fed by torrents from the melting glaciers, it can never exhibit entirely pellucid waters. Unlike the Rhone, it has no Lemane Lake to receive its sedimentary deposits, and thus render it clear—no fountain in which “to wash the River Rhine.”

Its steamers, although of beautiful model, long and sharp, and well adapted to the service of this river, are mere toys, when compared with the vast naval structures which navigate the Hudson, and other great North American rivers and lakes. Their number, although considerable, is much inferior to that on our waters. The number of people whom they can transport must be very limited, compared with the immense human flood which rolls between the banks of the Hudson, Ohio, and Mississippi. At our dinner-table I counted thirty-five persons, and the people of the boat being added, the entire number would not exceed fifty. If we multiply these numbers by ten, we shall be within limits as regards the number of persons usually found on the large Hudson river boats.

The width of the Rhine at its widest point is stated at 2000 feet. I crossed this river (1805) in Holland, near to its mouth, and my recollection is, that it does not there exceed that width.

The Rhine abounds with towns, villages, and cities all along its banks. There are also many palaces of nobles, and even of crowned heads, embellished with ornamental groves, and with grounds laid out in princely style. Among them we regretted to pass that of the prince of Newid,\* so advanta-

\* We had an introductory letter addressed to him by our late lamented friend Dr. S. G. Morton of Philadelphia.

geously known in the United States. His mansion is modestly beautiful, his grounds appeared in the same taste, and both were in harmony with his character.

The Rhine has bold shores of rocks and hills, rising almost to the altitude of mountains; and for 70. or 80 miles in continuation, from Mayence to Bonn, the steamboat dashes along between the towering barriers. Many a barren precipitous cliff or shelving rock, shows the ruined castles of other centuries, with their broken walls and tottering towers, dilapidated by violence and by time, and telling of an era of local feuds, of aggressive violence, of robbery and murder; and, these ruthless deeds being accomplished, were followed by lordly revelry, securely held within the frowning battlements.

The Rhine passes between two igneous formations. On the right, a few miles above Bonn, are the seven hills, or Siebengebirge.\* They are,—Stromberg, height 1053 feet; Neider-Stromberg, 1046 feet; Oelberg, 1453 feet; Wolkenberg, 1055 feet; Drachenfels, 1056 feet; and Lowenberg, 1415 feet. These rocks are composed of basalt and trachyte, and lava is named among their products, but they have no craters. On the left of the river, and nearly opposite to those named above, there are undoubted volcanic cones; particularly in the Eifel district, between Andernach and Cologne. The cones are frequently wooded, and not unfrequently cultivated. Many of the craters are filled with water, and these lakes are called Maars. There are, among the seven hills, well formed basaltic columns, but in general the shafts do not exceed eight or ten inches in diameter. We saw a pile of them in the door-yard of M. Krantz, at Bonn. They are about four feet long, and by drilling holes longitudinally in the ends, and connecting them by iron pins, they are made to answer as posts.

Several of the old castles on the Rhine have been fitted up as modern residences; and a very large one at a distance,

\* Particularly described by Sir Charles Lyell in his geology.

whose name I did not learn, makes an imposing appearance. There is another, called *the Castle of Rheineck*, which consists of an ancient watch tower and a modern castellated residence, built at a very great expense for Professor Hollweg of Bonn. Several of these restored castles appear to be very inconvenient residences, on account of the difficulty of approach, and the barrenness of the surrounding country.

Most of the old towns along the Rhine are walled, and have towers either upon the walls or near them; but, in most instances, both are now entirely useless.

Coblentz is a fortified town on the left bank of the Rhine, at the confluence of the Moselle. This city now belongs to Prussia, and being considered as a key of Germany, it has been rendered very formidable by the fortress of Ehrenbreitstein, on a height upon the opposite side of the river. These vast defences form a fortified camp capable of containing 100,000 men, and their construction occupied nearly 20 years.

The Rhine is navigated by sea-going vessels as far as Cologne, and by small craft for 600 miles.

A comparison is often made between the Hudson and the Rhine, by those who have been familiar with both streams. Both rivers have their lofty barriers of volcanic and other rocks, giving a certain similarity of natural scenery, and both are the channels of a large commerce. The romance of ancient legends of castles and barons, knights and ladies, and of the fierce conflicts of two thousand years, throws an indescribable interest over every promontory, valley, and hill along the Rhine. But aside from this, and in comparison merely of natural beauty, it appears to me that the advantage is on the side of the Hudson. The feature of cultivation peculiar to the Rhine is, of course, the vine, which is altogether wanting upon the Hudson; and so far as beauty is concerned, the absence of this stiff and ungraceful culture is not to be regretted.

Before evening we reached Cologne, where we found our friend and fellow-traveller, Mr. Brush, who had come up from Paris to accompany us to Berlin. On the following morning,

before seeing any thing of this city, I went, with my son and Mr. B., to pay a visit to

### Bonn.

Bonn is 10 miles above Cologne on the banks of the river, and is reached by a short railroad ride. One of our plans in visiting Bonn was to purchase minerals and fossils, from Dr. A. Krantz, the well-known mineral dealer, formerly in Berlin. We had for many years been in correspondence with Dr. Krantz, and had lately seen in the United States his travelling agent, Mr. Seamann.

The collections of Dr. Krantz are well worth a visit, even if one has no intention to become a purchaser. He has erected, just on the outskirts of Bonn, half a mile from the University, a spacious house for their reception, and in which they had but lately been rearranged after their removal from Berlin. In one room there are a large number of fine mahogany cases of drawers, surmounted with glass cases, in which the more choice and beautiful portion of the collection is disposed, and from which specimens are procured only for cash. In another and larger room, are thousands of drawers in which are arranged the more ordinary specimens, that are either sold for money or exchanged for other specimens. We occupied the whole of a long morning in inspecting the collection, and in selecting the things which we wanted. Dr. Krantz had, when we were there, a number of very perfect skeletons of the saurians (ancient lizards) of the period of the English lias, varying in price from 80 dollars to 150 for the best, according to their size and completeness. Among the simple minerals, were a great number exceedingly rare and curious from their chemical constitution; such was the thorite of Berzelius lately rediscovered, and the orangite, of similar constitution.

I bought a model in plaster of the head and paddle of the largest ichthyosaurus that had then been discovered. It was

thought that the animal when living must have been 60 feet long. These two models cost 21 dollars. I obtained also a model of the enormous head of the ancient fossil frog (batracian). Its dimensions are such as to justify the opinion that the entire animal was as large as a large ox. We selected also a considerable number of simple minerals, both for private cabinets and for that of Yale College. Our visit was made very pleasant both by the interesting things we saw, including some of the most beautiful minerals we had any where seen; and the courtesy of the heads of the establishment was something quite beyond the civility of trade.

THE UNIVERSITY.—Bonn is a beautiful city. Its population was stated 20 years ago as 10,600, and its houses over 1100; probably both are now much increased. It is adorned by public squares, and grand avenues, and groves of the finest trees. In these respects it reminded us strongly of New Haven, and among the German towns which we have seen, it appears as peculiar as New Haven is among those of our country, and for the same reasons. It has a university, with more than 40 professors and 1000 students. It was preceded by an academy in 1777, which was erected into a university in 1786. The King of Prussia, in 1818, gave it a charter, under the name of the University of the Rhine, with an annual income of 80,000 Prussian dollars, 16,000 of this sum being appropriated to the Botanical Garden. The old palace of Poppelsdorf, the former residence of the Elector of Cologne, was fitted up with great expense, and contains lecture halls, a library, museum, casts and paintings, with accommodations for all the branches of university education, and for the researches of men of learning. The library contains 150,000 volumes. Some of our New Haven friends and others from America, have found Bonn both an agreeable residence and by its great literary advantages conducive to learning.

PROFESSOR FREDERICK REAUMER, of the department of geology and paleontology, was, some five years before our visit, three years resident in the United States, where we had known



him well. By his kindness we visited the Botanical Garden, which is large and in fine order; and he also conducted us through the very extensive museum of natural history, which includes all departments. It contains the fossils that were so elaborately figured and described by the late Professor Goldfuss, whose successor in office is Professor Reaumer.

This museum is rich in the bones of the largest extinct races of fossil animals, found in the valley and bed of the Rhine, also in the caverns and elsewhere in Germany. Here are a head and vertebræ of the mososaurus, brought by Prince Neweid from Missouri; the animal appears to have been about 25 feet long.

Professor Reaumer speaks English very correctly, and having been so long in the United States, we felt quite at home in his society. He has written elaborately on paleontology, and made good use of his opportunities in the United States, especially in the southwest. In Texas, he discovered an equivalent of the chalk formation of Europe, the chalk itself being absent. He is well acquainted with our institutions, and is able to compare them with those of his own country; and regarding the latter, he gave us some very interesting views, in animated conversation.

Several young gentlemen, members of the university, returned with us to Cologne, and we noticed the various colored caps, which serve to distinguish the members of a particular province. Some of them had their faces very much disfigured by scars received from cuts, given by the small-sword in duels; which are still of almost daily occurrence in the German universities. It is strange that so reprehensible a custom should still be maintained.

The houses of the professors, as far as we saw them, are large and handsome. Many of the best houses in the town have their grounds extending quite down to the river. We noticed a statue erected, in 1845, to the memory of Beethoven, the great composer, who was born in Bonn in 1770, and died here in 1827.

### Cologne.

This city has 95,000 inhabitants. Like most of the towns on the Rhine, it was founded by the Romans, and its origin is attributed to Agrippina, the wife of Claudius. It is surrounded by walls and towers, and like most of the fortified towns on the river, has been desolated by war. Like Bonn, it is now under the dominion of Prussia, and a large number of the brilliantly-clad troops of that nation are here.

They wear a glossy black helmet, highly ornamented with brass, surmounted by a brass cone. The coat is blue, with white underdress. Among the Prussian troops, we have often observed young men whose countenance and appearance indicate a higher origin than that which generally belongs to the common soldier; and we are informed that the conscription spares no one except the clergy. For this reason, the recruits are obtained from families of every description. Neither profession nor condition can excuse the conscript, although he is allowed to obtain a competent substitute, but it requires a large expense. The service is from one year to four or five years. An eminent man of science in Berlin told me that his son was then serving, and that he, the father, was obliged to provide the horse and his equipment, which he evidently regarded as a hard case.

Cologne has a history of great interest, into which I cannot enter. It was, in early centuries, a city of large trade and great opulence; but its prosperity was prostrated by bigotry and war; and the Dutch, by shutting the mouth of the river, effectually crippled its foreign commerce. Since it has been reopened to the sea, its business has revived, and the city is again expanding and advancing in wealth.

Cologne is not without good buildings; but the streets are in general narrow, with lofty houses, and Germans and strangers unite in reproaching it for want of cleanliness. People in Bonn wondered that we "should stop in the dirty city of Co-

logne" rather than in their clean and beautiful town. Cologne is said to have all the styles of architecture that have prevailed for 1000 years. Our hotel was near the quay, and we were annoyed both by the noise and the evil odors.

**THE CATHEDRAL.**—It is well known that the Cathedral of Cologne is at once its ornament and its reproach. It was begun in 1248 by the Elector Conrad, more than 600 years ago, but it is not yet finished, although the present Prussian king is expending vast sums upon it. Since the city has passed under the Prussian dominion, and more especially since the accession of the present king, important aid has been obtained from the government. The unfinished towers are rising year by year; and if the annual supplies that have been granted are continued, another fifteen years may possibly see it completed. The estimated expense of finishing it is 5,000,000 of dollars.

It is considered as a very fine specimen of the Gothic architecture. One tower, that on the front, is completed. This cathedral is exceedingly gorgeous in decorations, combining all the features that belong to this species of architecture. The choir is finished, and exceeds in splendid beauty every thing which we have seen. It is very rich in stained glass, and this is true also of the body of the church. Much of the pictured glass is modern: it is set in the same window with the ancient, and is not inferior to it in splendor.

The cathedral is paved with rude, common stones, doubtless intended to be temporary only, and to be in due time replaced by marble. It was originally intended that the towers of this cathedral should be 500 feet high. The dimensions on the ground are 400 feet by 180. The nave is supported by 100 columns, of which the middle ones are 40 feet in circumference.

## Cologne to Berlin.

July 31, 1851.

Expecting to return to Cologne, we stored all our heavy baggage at the hotel, and left that city at ten P. M. At three P. M. of the next day we arrived in Berlin, the time being seventeen hours, exclusive of stops (in all nearly two hours); our actual speed over the ground was about twenty-seven miles an hour, or twenty-three and a half miles, stops included.

We made two stops of half an hour each; one at eleven A. M., near Hanover, for our *déjeuner*; and the other under the walls of Magdeburgh, to oil the wheels of the carriages, where we were very much annoyed by the powerful reflection of heat from the walls of this strongly-fortified city. The coaches were very comfortable, and the police excellent.

On the continent, and particularly in Germany, we have generally taken the second-class carriages. They are in all respects desirable; and few persons, except the nobility, travel in those of the first class, which appear to possess no advantage, except the aristocratic one of partial exclusion of other travelers by a higher price. In the second-class carriages we have met with none but civil and well-dressed people. As far as we have seen railroads in Europe, both in Great Britain and on the Continent, the carriages are distinct coaches, without communication with each other. Some of our American railroads began in that way, but it was soon relinquished in favor of the long coach, which is more in harmony with our state of society. The long car, by means of the middle passage, and the door at each end, secures an easy communication through the whole train, thus enabling one to find a friend in another car; and the conductor can thus arrange all the payments while the cars are in full career. In England, the train is stopped just before entering a town, and is detained until all payments are adjusted, and the tickets taken up.

On the Continent, the conductors, while the train is moving, slide along, with some risk, upon the bars outside of the coach, and look in at the windows. The tickets are then exhibited: and as they are merely slips of common thin paper, a corner is torn off by the conductor: at each station the ticket is shown, and another piece is torn off, or a rent is made in the body of the ticket, that it may thus appear that it has been seen. The ticket is then returned to the holder, who retains it until his arrival.

There is on the Continent a third class of cars, less comfortable, and a fourth, which are merely pens or inclosures, such as animals are often confined in. In these the passengers all stand up, as there are no seats: and it may be presumed that none take those places except those to whom money is of more importance than comfort.

In England, the second-class vehicles are made very uncomfortable. They have no cushions, but simply naked board seats: the backs are high, and perpendicular. Still, the second-class cars in England are well filled, doubtless from economy, as the saving is very considerable. Our excellent system of checks for baggage appears to be unknown in Europe. Instead of it they paste a printed paper upon the trunks stating the place where received and the destination: but the traveller has nothing in hand to serve as a receipt, as the check does with us. At Berlin, as in other places, our courier was obliged to wait half an hour before he could obtain our baggage, small as it was, most of it, as already remarked, having been left at Cologne.

In our night ride from that city, the motion of the train was so smooth that sleep was not precluded; and the journey in the day was comfortably accomplished, except the annoyance of oppressive heat after mid-day.

In our rapid and uninterrupted journey we passed places of great **v**; among them were Dusseldorf, Minden, Hanover **k**, Magdeburg, and Potsdam; but to us they **v** blank, as our limits of time did not permit us to

divide our journey.\* Magdeburg alone was visible, with its immense fortifications, towers, and dwellings. It is situated on the Elbe. The country also was almost one continued plain, and presented only a succession of champaign lands, and such culture and crops as have been already described.

ENTRANCE INTO BERLIN.—In passing out of the station-house at Berlin, our passport was called for by a military man, having with him a guard of soldiers, and we were then allowed to pass into the city. Having no baggage, except small valises, we took two one-horse carriages. Three of our party rode in one carriage, and four in the other; but as we were about moving, one of the coachmen leaped from his box, and ran to a military officer near at hand, and both came to the carriage containing four persons, among whom were the ladies. The officer observing our number, approached close to us, and with a courteous smile, bordering a little on the ludicrous, inquired whether "Mademoiselle was over twelve years of age;" but the gallant young soldier politely waved his inquiry on a point which he perhaps felt to be one of some delicacy.

The occurrence was explained, when we were informed that a police regulation in Berlin prohibits the carrying of more than three persons with their baggage in a single horse carriage; unless the fourth person, if any, is under twelve years of age.

### Berlin.

We were soon established in the principal street of Berlin, in the Hôtel de Rome. After the refreshment and ablutions rendered both necessary and grateful by our long and rapid ride, we had only time, before evening, to walk out into the great square.

MONUMENT TO FREDERICK THE GREAT.—Almost the first object that arrested our attention, was the magnificent monu-

\* Berlin and Dresden were not originally in our plans; and the time we took to visit these cities was taxed upon other parts of our tour.

ment, which, with a tardy justice, they have only very recently erected to the memory of their great hero-king. It was finished only three weeks before our visit, and so new was the bronze, that at first we thought it was gilded.

Frederick II. was to Berlin what Peter the Great was to Russia; he was almost the creator of his kingdom. This monument is by far the grandest thing of the kind that we have any where seen; in magnitude it is ultra colossal. It is equestrian, and both the royal horse and rider are larger than any similar figures that we have met with, perhaps larger than any in existence. An idea of its arrangement will be gained from the annexed engraving. Frederick wears the three-cornered military hat of that age; which is, however, still worn on many military heads upon the Continent; his long martial cloak flows loosely over his person, and hangs down on the sides of the horse. As he is still within the personal recollection of more than 80 persons, his soldiers and others, who are \* still living in Berlin and its vicinity, we must presume that his person, features, and manner, as represented in the monument, are his own, and would be the subjects of criticism if they were not faithful copies.

There is much of character in the figure; cool and calm decision and self-possession, acquired or confirmed amidst the tempests of battle, are strongly marked features.

The horse is a grand and beautiful animal, with flowing mane and tail, and he appears to participate in the traits of his master; as he is moving, or appearing to move, quietly along with an easy, natural gait, without the over-wrought fierceness and the incredible postures which war-horses and their riders are often made to assume. The horse is 16 feet high, and the rider is in due proportion; the entire height of the monument, from the ground to the top of the king's head, is 43 feet.

The pedestal, also of bronze, is of great dimensions, and is laid upon blocks of red granite, beautifully polished. Its four

\* Or were in August, 1851.

angles sustain equestrian figures, as large as life, of Frederick's four greatest generals; and between them there are, on one side, six figures, and on each of the other three sides, five figures, twenty-one in all, representing other principal men, civil and military. Various characters and occupations are indicated upon the bas-reliefs; on the breasts of some are stars, and they wear embroidered coats; there is a book in the hands of another, and still another, in a plain coat, holds various instruments, and another displays the plan of a fortress.

The king and the four generals (all equestrian), and the 21 figures on the panels, give a total of 26 figures of men; add the five horses, and we have 31 large figures in this remarkable monument, without counting the females in the upper compartments. The men and horses are not seen merely in relief; they stand out in full form, and upon a review in a second inspection, I came to the opinion that the figures on the panels are all larger than life; otherwise, at the elevation of 20 feet from the ground, they would appear less than life. I had, by the eye, estimated the entire height at 45 feet; Professor Rose corrected me to 43 feet. By pacing, I made the foundation 30 feet on a side, the polished granite masses are at least 10 feet in thickness, and there is a broad basement of unpolished granite sustaining the whole.

Nothing can exceed the beauty and characteristic fidelity to nature of the whole, while the attitudes and manner are dignified and graceful; the men appear like gentlemen of high station in the olden time. Beneath the figures, are cannon, trumpets, breastplates, and other paraphernalia of war. The very horses seem intelligent, and all the men have high character and individuality. Above the groups which I have described there is another set of panels furnished with female figures in bas-relief; four principal figures at the four corners, and smaller figures between.

As a work of art, this monument \* has probably never been

\* The name of the artist is Rauch.



excelled, and whatever estimate we may form of the personal character of Frederick the Great, Prussia owes him all honor as being the founder of her national greatness.

PROFESSOR RAMMELSBERG. *August 2.*—While the ladies were occupied with the great Royal Picture Gallery, those of us who were interested in science called on Professor Rammelsberg, the eminent chemical mineralogist. We found him in his laboratory, and were received with great courtesy. His laboratory, in both of its departments—that one devoted to his pupils and the other to his own private pursuits—presents a fine example of order, neatness, and skilful adaptation to the labors of the place. He kindly explained to us some interesting peculiarities of his furnaces, of his glass inclosures for confining corrosive and offensive gases, and many practical details of a working laboratory, which would be interesting chiefly to chemists.

His lecture-room is also very good; the backs of the seats lean at a convenient angle and support on each writing tables, 10 or 12 inches broad, for the taking of notes. Professor Rammelsberg is a very animated and agreeable gentleman, and appears not yet to have reached the meridian of life. His annual report of the analysis of minerals is a work of high authority, and at the time of our visit seven numbers had been published.

PROFESSOR RITTER AND THE GEOGRAPHICAL SOCIETY.—Among our introductions, was one from Professor (Guyot, late of Neufchatel, but now a citizen of our country, to the celebrated Professor Carl Ritter, the well-known physical geographer.

He is a tall, handsome man, of most noble person and mien, and prepossessing address. His dignified presence is tempered by a mild and winning manner, and by his musical, although powerful voice; and we listened with pleasure to his very good English, uttered with dignified deliberation. His healthful and bright appearance by no means indicates his age, as he is still in the full energy of physical and mental power.

Professor Ritter gave us an invitation to attend in the

evening the meeting of the Geographical Society, of which he is president; and he treated us while there with the utmost kindness and consideration.

Several papers were read on geographical subjects, and different gentlemen were called upon to elucidate particular topics. Their course is not only to illustrate topography but all allied themes, including the different branches of natural history and of meteorology that are connected with the country under consideration. In this manner, the discussions become fruitful of instruction and entertainment, and the interest is greatly enhanced.

A supper followed, in the great room of the society, in which a large chandelier, lighted by gas, made noonday of night. Among the eminent men present whose fame was known to us at home, were Professor Ehrenberg, the philosopher of the microscopic world; the two brothers Rose, Gustave, of mineralogy, and Heinrich, of analytical chemistry; Professor Dove, the meteorologist and physicist; Professor Magnus, of electro-magnetism; Professor Poggendorf, the editor of the well-known journal which bears his name; Professor Mitscherlich, of general and applied chemistry, besides many others almost equally distinguished.

We received a warm welcome to Berlin, and throughout the interview of the evening the most kind and cordial treatment. We were highly gratified by the interview, and were again at home in our hotel before eleven o'clock. Professor Ritter spoke in very warm terms of approbation of the researches made in the East by our countryman, Professor Robinson, and by the Rev. Eli Smith, now of Beyrut.

We had to regret the absence of M. Von Buch, the distinguished geologist, who was on a tour in Switzerland.\*

Professor Dove called the next day at our hotel, and left his card, with the announcement that Baron Von Humboldt would see us on Monday, between twelve and two o'clock, at his house in the city.

\* This distinguished man has died since.

BARON VON HUMBOLDT.—In fulfilment of this appointment, we went at one, and were admitted by his faithful servant, the companion of many an arduous journey. His mansion is a plain edifice, situated in a retired part of the city; and he would not have been now at home had not the king gone to Königsberg; for his residence is generally with the king, at Potsdam, who keeps him near his person, as his father did before him, not only for his society and conversation, but, no doubt, also as a counsellor, wise from his many years, and his large experience in the world. We passed through his library, which fills, on all sides, a room of considerable size; and he issued from a door on the remote side of the apartment, opening apparently from his private room. He met us with great kindness, and perfect frankness, and with a pleasant rebuke for my having hesitated to call on him (I had written a note, asking permission to call), implying that he was not ignorant of my position and efforts at home. I then introduced my son and Mr. Brush, and we were at once placed perfectly at our ease. His bright countenance expresses great benevolence; and from the fountain of his immense stores of knowledge, a stream, almost constant, flowed for nearly an hour. He was not engrossing, but yielded to our promptings, whenever we suggested an inquiry, or alluded to any particular topic; for we did not wish to occupy the time with our own remarks any further than to draw him out. He has a perfect command of the best English, and speaks the language quite agreeably. There is no stateliness or reserve about him; and he is as affable as if he had no claims to superiority. His voice is exceedingly musical, and he is so animated and amiable that you feel at once as if he were an old friend. His person is not much above the middle size: he is not unlike in form to the late Colonel Trumbull. He stoops a little, but less than most men at the age of 82. He has no appearance of decrepitude; his eyes are brilliant, his complexion light; his features and person are round, although not fat; his hair thin and white; his mind very active, and his language brilliant, and sparkling with bright

thoughts. He alluded in a flattering manner to our progress in knowledge in the United States, and to the effect which the *American Journal of Science and Arts* had produced in promoting it. He showed himself perfectly acquainted with the progress of physical science and general improvement in our country, and particularly commended the labors of Colonel Fremont in the Far West, of Professor Bache in the coast survey, and of Lieutenant Maury in navigation. Bringing out his maps, and tracing his lines without glasses, he pointed out a channel of communication across the Isthmus of Darien, which he had observed and described more than forty years ago, and to which his attention had been recalled by a paper of Captain Fitzroy's in the *Journal of the Royal Geographical Society*. He showed us that there are no mountains in the course that he indicated, which is more southern than any of the existing routes, and that it possessed several important advantages. I alluded to his brief visit in the United States in 1804, when he travelled no further north than Philadelphia. He told us that he passed three weeks at Monticello, with the late Mr. Jefferson, who entertained him with an extraordinary project of his inventive but often visionary mind, regarding the ultimate division of the American continent into three great Republics, involving the conquest of Mexico and of the South American States. He discussed many topics regarding the United States. The discovery of gold in California furnished him a fertile theme—our topography, climates, productions, institutions, and even political controversies, were all familiar to him.

Baron Humboldt, although associated intimately with kings, is evidently a friend to human liberty, and rejoices in the prosperity of our country. He made some very interesting remarks on the present state of Europe, and on the impossibility of keeping down moral power by physical force. In his library hung an excellent likeness of the king, and another of his own brother, the late William Humboldt, the eminent philologist and ethnological antiquary.

We retired greatly gratified, and the more so, as a man in his 83d year might soon pass away.\*

When we were about leaving Berlin, I addressed a note to the Baron, expressing our great satisfaction in the interview, bidding him farewell, and asking for his autograph. He readily replied, but instead of his signature merely, he sent an interesting original letter, written on the occasion, from which, I trust, it is not improper to make an extract of sentiments relating to the American continents.

After some very kind expressions of personal regard, he alludes to his usual residence at Potsdam, where are both the rural palace of the king, and the tombs of some preceding monarchs: "Compelled to return in the morning to the country, where are the tombs which I shall soon occupy, I have reserved to myself the perusal of"—certain scientific American papers which had been presented to him. He then adds: "I have moral reasons to fear the immeasurable aggrandizement of your confederacy—the temptations to the abuse of power, dangerous to the Union, (and have occasion also to fear) the distinct individual character of the other populations† (descriptions of population‡) of America. I am not less impressed by the great advantages which the physical knowledge of the world, and positive science and intelligence, ought to derive from this very aggrandizement—from that intelligence which, by peaceable conquests, facilitates the movement of knowledge, and superimposes, not without violence, new classes of population upon the indigenous races which are in a course

\* August, 1853. Two years have gone by since that interview, and I believe the eminent philosopher still lives, although he has in the interim encountered a serious illness. He has recently given the world the 3d and 4th volumes of his *Kosmos*.

† In a marginal note, he adds: "And the possible formation of a powerful empire, independent of sugar, slaves, and cotton, and the temporizing legislation—*la douce* legislation—which accompanies this species of culture.

‡ The words in parenthesis are not in the original letter written in French, but are added to elucidate his meaning.

of rapid extinction. However imposing this spectacle may be, which is being realized under our eyes, and is preparing another still more remarkable for the history of the intellectual development of our races; I already descry the distinct epoch, when a high degree of civilization, and institutions free, firm and peaceful (three elements which are not easily associated), shall penetrate into the tropical regions where the high table lands of Mexico, Bogota, Quito, and Potosi shall come to resemble (in their institutions) New-York, Boston, and Philadelphia."

The letter concludes with warm personal good wishes, and a kind message to Professor Agassiz, "equally distinguished by his vast and solid acquisitions in science and the great amenity of his character."

The signature is without a title: "ALEXANDRE HUMBOLDT, à Berlin, 5 Juillet (it should have been Aout), 1851."

It is proper to add, that at the time of our visit Baron Von Humboldt was engaged in the preparation of a new production on the Outline Form of Mountain Peaks, in which he was working up original observations and drawings made during the course of his various wanderings. He assured us that the greater part of his literary labor was of necessity performed when others slept, as the hours of usual labor were with him consumed by the demands of the king. He added, that he early made the discovery that he could get on very well with four hours of sleep. This, as has been often remarked, accounts for his prodigious performances in literary labor.

Such are the modest and unassuming language and appearance of one who has, in person, explored a larger portion of our globe than any other living traveller; of a philosopher who has illustrated and enlarged almost every department of human knowledge; general physics and chemistry, geology, natural history, philology, civil antiquities, and ethnography, have all been illustrated by him.

He has endured the extreme vicissitudes of opposite climates, and seen men, and animals, and plants, under every phase and

aspect. His published works are a library. His faculties combine the enthusiasm of poetry with the severity of science; and from the culminating point of fourscore years and four, he surveys all his vast labors, and the wide panorama of universal science, which, as probably his last labor, he is now presenting to his fellow-men by the reflection of that splendid intellectual mirror, his Kosmos—the comprehensive *Hellenism*, which expressed both *the universal* and *the beautiful*.

Such is the philosopher, who of all living men belongs not so much to his country as to mankind, and who, when he departs will leave no one who can fill his place.

We dismiss him, with the hope that he may inherit blessings beyond the grave, and find in a higher state of being, that his large measure of human knowledge is infinitely surpassed by the spiritual illumination and revelations of that glorious world.

CABINET OF MINERALOGY, GEOLOGY, AND PALEONTOLOGY IN THE UNIVERSITY.—Professor Gustave Rose attended us through all these departments, but with more particular reference to elementary mineralogy. The collection in that department is very extensive, and is exceedingly rich in fine specimens. There are many examples of meteoric iron and of meteoric stones. Two pieces of meteoric iron fell in 1847 at Brunau,\* which are perfect nickeliferous iron with pyrites; these masses, one of 30, and the other of 42 pounds weight, fell without the adhesion of any stony matter, and were thus similar to the case of Agram, in 1757. The iron is highly crystalline in its structure, breaking with a smooth laminated fracture and a brilliant lustre. The Siberian and Russian minerals of this collection are the finest out of St. Petersburg, and the American series is remarkably well represented.

I left my companions to examine more critically the very splendid specimens in mineralogy, while I hastened to observe the paleontology. The rooms devoted to this department

\* The facts are related in Poggendorf's *Annals*, vol. 72.

abound in interesting and instructive fossils, of which I can mention only a few. The fossil fishes and the crustacea are very fine. Some of the fishes were two feet long and very distinct. Among them were some, not merely perfect impressions, but entire fishes, fossilized in full form. The fossil crabs and craw-fishes, from Solenhofen in Germany, are very perfect; many are very minute, and still their legs and antennæ are perfectly preserved.

The fossil plants of the coal measures, and other fossil plants from different formations, are excellent. Among the dicotyledonous fossil trees, one silicified trunk had been sawn in two, and being polished, presented a perfectly distinct view of the concentric annual rings and of the medullary rays.

Among the large fossilized animals, there were some very capital specimens. Those of the cavern bear and of the lion, as in the museum at Hesse Darmstadt, were numerous and very large. There is here a great head of the *elephas primogenius* which retains the teeth in the jaws, and the tusks remain in their natural connection with the head. There are also numerous detached tusks and teeth of the elephant, and many similar remains of the mastodon. There were the cranium, the jaws, the teeth and tusks of the mastodon, all of which, as well as the remains of the elephant, are found abundantly near Berlin. There is here also a grand pair of horns of the fossil Irish elk—the megalocervus. They measured, along the curve of the horns, over the skull, nearly 12 feet; across from antler to antler, in the line of the bow string, seven feet three inches; the breadth of the broad, or palmated part, was 18 inches, and the length of this part was nearly three feet. I saw in another museum a tusk of the Siberian elephant which was perfect ivory, fit to be manufactured. Many such tusks from those northern fossil deposits are sold every year, and form an important source of ivory in northern commerce. In the Berlin museum of paleontology, there are excellent casts, and some original specimens of the Himalaya fossils.

The limbs of the sivatherium, without the body, stood



higher than my head. This extinct animal resembled most a gigantic antelope, with four horns.

The chirotherial impressions, or rather the natural casts of the impressions, were highly satisfactory. In two of the white sandstone slabs, the copy of the large foot was of the size of my hand. The animal had made five steps upon the materials of the slab when they were soft and yielding, and they became afterwards consolidated so as to retain the impression; the distance between the feet was 24 inches; the forefoot was, as usual, much smaller. I have already remarked that this animal was the gigantic frog of geological antiquity, that he was of the size of a large bull, and might even have rivalled that animal in strength of intonation.

The lily encrinite of this collection, I have never seen surpassed. Many of the beautiful heads and stems lay in the limestone, as if they had been carefully put up in a case to preserve them. In preparing the specimens, the limestone had been skilfully cut away above the fossils, so as to bring them fully into view. Here also we met, at his rooms in the museum, the eminent crystallographer, Professor Weis, whose system of crystallography has been so generally adopted.

ACADEMY OF THE FINE ARTS.—A large palace, heretofore belonging to one of the princes, is appropriated to pictures, statuary, and antiquities. The building is very handsome, and the entire front is adorned by a line of columns. Immediately before it stands an immense syenitic vase, highly polished. This vase is 22 feet in diameter, and was worked out from a boulder which travelled over from Norway in an ancient geological age. Professor Rose confirms the statement that the boulders within reach of Berlin have been used up in architecture, but that great numbers still exist in this country, in almost mountain piles, especially contiguous to the mountains of Silesia.

Beneath the portico, which is supported by columns, there are very large fresco paintings. In the interior, room after room is gorgeously decorated with pictures, great and small;

but I walked rapidly through them as, a few days ago, I did through those of Darmstadt.

The eye and the mind become satiated by frequent repetition of galleries of pictures, among which some are bad, many are indifferent, and a few only are in the first order of excellence. The annunciation, the nativity, the madonna, the infant Saviour, and John, the flight into Egypt, the crucifixion, the descent from the cross, and the transfiguration meet us in almost every gallery. The madonna and infant Saviour are often repeated, many times in the same suite of rooms, and the solemnity of the impression is thus impaired by reiteration.

We cannot say much in favor of the perpetuation of the absurd fables of ancient mythology and heathen poetry, and some of them are morally offensive. Europa and the Bull, Leda and the Swan, Jupiter in a shower of gold, Mars and Venus, Bacchus, and Fauns, and Satyrs are the offspring of a morbid imagination, and even Diana and her bathing and hunting nymphs, if real women, would hardly be admitted, at the present day, into decent society. Battles have become trite, and human slaughter is both revolting and offensive to moral taste. The martyrs of the battle-field, splendidly decorated, as were anciently the victims adorned by garlands for the altar, may march to their death under the fascination of martial music; but, by reflection, we come to detest war because it is wicked and cruel, and to loathe it because it is trite and vulgar.

But scenes of nature and of real life, and morals and manners, will, as subjects for the art of painting, ever harmonize with human feelings, nor will such pictures ever tire the beholder. A portion of such pictures was found in the present collection, and probably an artist would find here productions of superior merit, which we might have overlooked.

*Statuary and Antiquities.*—The collection in the lower rooms of the same building is extensive and various, but it contains little that is different from similar things already described, and therefore I am not disposed to enter into particulars.

*Statue of Napoleon.*—One fact impressed me favorably

regarding the magnanimity of the Prussian government. It is the preservation of the statue of Napoleon, which is here in full imperial robes, and mounted upon an elevated pedestal—a noble figure and a fine work of art. He had, indeed, inflicted upon Prussia such deep injuries, that it would have been very natural to have removed his statue, as was done by the Austrians at Milan, and to have placed it in durance, as there, like a culprit, in some dark corner. The opposite was, however, the course of true honor and self-respect; for Napoleon, with all his faults, was a magnificent man. He belongs to history, and no narrow-minded prejudices or resentment can banish him from its pages, or obliterate the stern records of time. There are in the palace many interesting relics of him and of Frederick the Great, which we have made an ineffectual effort to see.

THE ARSENAL.—This is a magnificent building, standing very near to the Museum. It is externally decorated by statues, and by emblems which indicate the panoply within. It contains cannon and mortars of prodigious size, cast for the siege of Cadiz, which the French long pressed ineffectually, until they were compelled to raise it at last. After the downfall of Napoleon, these cannon and mortars were brought off from Paris by the Prussians as trophies. The arsenal, like other repositories of the same kind, is filled with the weapons of death, arranged in tasteful, symmetrical groups all around an immense room. There are not only modern arms, kept in perfect order, and ready for immediate use, but there is also much ancient armor. Curiously wrought pistols, and guns, and cross-bows, with machines to wind them up, or rather to bring the string to its place, as the most powerful bows are of steel, and extremely thick and rigid. The rooms are adorned with many groups of colors, standards, and flags captured in war during the numerous conflicts for existence which Prussia has sustained. These soiled and tattered remnants of sanguinary struggles, purchased at an immense sacrifice of life, tell of battle-fields in which Austrians, Swedes, and French, and

troops of other distinguished nations were the antagonistic combatants. Even Poland, oppressed and crushed by the triple league of enmity and cruelty of the three great powers, her piratical neighbors, shows, in this room, touching proofs of the severity of her last dying struggle for the recovery of her liberty, namely, the scythes of the peasants, mounted upon long poles. Tremendous instruments they were in the hands of an exasperated people.

PALACES.—Under royal governments, palaces are, perhaps, necessary exhibitions of national wealth and dignity, and appropriate illustrations of the triumphs of art. They are reared, not so much for the personal accommodation of the reigning sovereign, as proofs of national wealth, and of a spirit both loyal and patriotic. Under all monarchies there are usually several palaces, both urban and rural, and the same is the fact in Prussia.

In company with the ladies I visited two of them, while the other gentlemen were more usefully employed in seeing some beautiful and instructive experiments in optics, especially in the polarization of light by Prof. Dove, which, much to my regret, I lost.

The immense palace in the centre of the city, forms one side of that square, or group of squares, which, in the magnificence of its public buildings, is not surpassed, if it is equalled, in any capital in Europe, certainly not any one that we have seen. Having no exact measurement, I can only conjecture that all its four exterior walls, and the cross divisions of its vast interior court, if extended in one line, would approximate to half a mile. The outside of this palace is disfigured in consequence of the dropping off of the cement in many places, and the whole pile, although graceful in architecture and dignified by magnitude, is rusty and dingy with the effect of time. The included court looks still worse in all respects, than the exterior. The holes made in the wall to sustain the scaffolding remain open, as in many of the Italian cathedrals, just as they were left at the moment when the beams were

pulled out, exhibiting roughness and neglect, in strong contrast with the splendor of the interior.

We passed the guards, who, in full military costume, with brilliant arms and burnished metallic helmets, are found at every public place in Berlin, their long and sharp-pointed bayonets, glittering on their muskets, and their swords hanging by their sides. In peace they are a harmless pageant, although, with all their splendor, they are far from being agreeable objects; for, with few exceptions, in all the cities, and in most of the towns of continental Europe, they remind you of the afflictive reality of a military despotism, bearing the people down with a tremendous pressure.

On most of the cannon in the arsenal here in Berlin, I read "*ultima ratio regis*," not *regum*, but a more exact and personal reference to the reigning sovereign. There was also the following sentiment in Latin upon other pieces of ordnance, "Do your duty and trust in God;" or, as Cromwell used to say to his soldiers, "Trust in God, and keep your powder dry." In all wars in countries nominally Christian, the combatants proclaim the justice of their cause, and appeal to God for his support!

But to the palace again. We ascended an inclined plane, like that of the great bell tower of Venice, or St. Peter's at Rome. It was winding, and the basis on which we trode was made by setting bricks upon edge. By long use they were much worn and distorted, forming a rude up-hill walk, quite worthy of a barn. The coarse floors and banisters of wood which follow are in keeping with the stairway, and it would almost seem as if they were intended to prepare the visitor to be the more impressed by the contrasted splendor which bursts upon him when he enters the rooms of state.

The floors of most of them being of wood, resemble mosaic, exquisitely polished, and beautifully inlaid with ornamental figures of different colors. You are, therefore, desired, on entering the palace, to slip your feet into heavy woollen socks, which there is an abundant supply at the door, and in these

you sail about like boys sliding on ice, carefully avoiding to lift your limbs, as the owl's feet would drop off.

In this costume we glided through a long succession of magnificent apartments, most of them very large, and adorned by splendid furniture and tapestry. On the walls, embellished with a profusion of gilding, are rich damask hangings, with a host of pictures of electors, and kings, and queens, and statesmen, and generals, interspersed among landscapes and battle-scenes, while complex groups of statuary, or of allegorical and mystical beings, cluster in the angles, or hang from the coping of the apartments.

There are also guard-rooms, and reception-rooms, and levee-rooms, and a dining-room of vast extent; some of the bed-rooms remain just as, perhaps, a century ago, they were left by the then royal occupant for a narrower couch. If these general terms fail to convey distinct impressions, I may add, with more precision, that much of the furniture and decoration is of massive silver, and even of gold. There are candelabra of silver, of great size and height. At the foot of a great picture, commemorative of the coronation of the present king, there is a broad scroll of gold, with an inscription, whose letters are inlaid with precious stones. There is a chandelier formerly belonging to Madame Pompadour, mistress of Louis XV., of France, all the pendants of which—nearly as broad as the palm of the hand—are of rock crystal, cut and polished, and a solid globe, seven or eight inches in diameter, made of the same material, hangs from the bottom as a finishing ornament. There are many vases of precious pictured porcelain as tall as one's head, and the skill of Russia, Prussia, and France is brought into rivalry by vases from their respective manufactures.

The most beautiful of the ornaments is a vase of malachite (green carbonate of copper), presented by the Emperor Nicholas of Russia. It is a counterpart of that in the Vatican. It is of exquisite beauty in the materials, and it is also of exquisite finish in the workmanship. This vase of malachite is perfectly

polished, and although it consists of many pieces, they are so skilfully joined that, until it is minutely inspected, it appears to be all of one mass. It measures 56 inches across from outside to outside; its interior depth is 12 inches, and its height, from the marble pedestal on which it stands, is 37 inches. The apartments that were occupied by Frederick the Great when in Berlin are in this palace, but those rooms were not open to the public.

The rooms that were occupied by Napoleon during the six weeks that he remained in Berlin are beneath the great rooms of state. They are very elegant, but much plainer than the rooms above. The present king resides in this palace only one month in the year, and during the other months it is untenanted. Thus, in the language of the Bible, the great men of the earth build desolate places for themselves. The usual residence of the present king is at Potsdam, four or five leagues from Berlin; but during our visit in the latter city he was in Königsburg.

There are no gardens in the rear of the palace in town, but the ornamented grounds in front are a substitute, and in them a single jet d'eau rises perhaps 25 feet, being lifted by steam power, for in this level country there is no natural hydraulic head to feed fountains and elevate jets of water.

PALACE OF CHARLOTTENHOF.—With the ladies of our party, I drove two or three miles from the city to see the ancient palace of Charlottenhof, built by the grandmother of Frederick the Great. It is a plain, unostentatious building, covered externally with yellow cement, and stretches out mainly in one continued line, the front of which looks into a beautiful park.

It is the winter residence of the present royal family, and from its comparative modesty of decoration, as well as from its lovely rural associations, and perfect quiet, it appears to be a very desirable abode. Although comparatively plain, it is very elegant; its tasteful simplicity is most agreeably contrasted with the oppressive magnificence, and unmeaning

splendor of the palace in town. There are indeed statues and pictures, and other regal ornaments, but they seem appropriate to the place, and not to have been introduced for mere display. There are here good portraits both of the late king and queen, and of their present majesties. There is also a statue of the Empress of Russia, who is a sister of the King of Prussia. She is a lovely lady, as was the queen of the late King of Prussia; and so they appear both in the marble and in the living tints on the canvas.

I forbear to mention other particulars of the contents of this palace. Palaces are but human dwellings; and domestic affection seeks retirement rather than ostentatious display. This truth is forcibly and beautifully illustrated by a little boudoir which they showed us. It is a charming miniature room, hardly twelve feet square, and was a favorite with the late queen, where she and her husband used to take their dinner quietly together. In front of the palace was a long row of orange-trees, standing in tubs, to be removed before cold weather returns. The air was deliciously perfumed by their blossoms.

The time at our command allowed us only a limited walk in the park, whose avenues, winding among the stately cedars, and other trees of the forest, were very inviting. Our guide led us to a lake well stocked with carps, to which family of fishes it exclusively belongs. Among them, he assured us, was a veteran carp which has lived in this lake 160 years, being coeval with the kingdom of Prussia from its dawn as a distinct empire. This venerable fish has attained a length measured by a man's expanded arms, and we were, of course, desirous of an interview. Accordingly he was summoned by a bell, being, it would seem, a disciplined fish—a true Prussian—and the more prevailing motive of appetite was addressed also, by pieces of biscuit thrown upon the water. A flock of swans at the water's edge was first driven away, with some menaces and vociferation on our part, and much hissing on theirs; but all in vain. We were assured that the patriarch of the lake was intimidated by the noise, or offended by our freedom; for he



did not come, although invoked from his puny deep, while multitudes of smaller fishes dashed instantly at the floating fragments, and bore them away, perhaps, to the oozy bed of their finny monarch.

**MAUSOLEUM OF THE LATE KING AND QUEEN.**—A more interesting subject, a touching reality, next engaged our attention. The late king, Frederic William III., and his queen, are interred in a beautiful mausoleum, erected beneath the shades of this his favorite park. A portion of his reign was rendered a season of intense suffering by the wanton invasion of Napoleon in 1806—by the slaughter of great numbers of his people, by the military occupation of his capital by the conqueror, and by the temporary subjugation of his kingdom. He survived to the age of 72, and died in 1832. The queen was removed from life at 36 years of age, having died in 1811.\*

In this secluded mausoleum, whose front is adorned by highly polished pillars of red granite, the mortal remains of the late king and queen repose, in the palace of death. Their forms are exquisitely sculptured in pure white marble. They are not standing, but laid upon their tombs, which are separate, although contiguous, marble sarcophagi, elevated to a proper height above the floor.

They are not in funeral robes—not in imaginary classical attire, but are dressed as a gentleman and a lady would be in full life. Thus they repose upon their sepulchres with the natural expression of sweet and undisturbed slumber—he, manly and dignified; she, so beautiful and lovely, that the observer might naturally linger for the awakening, that he might hear the sound of her voice.

\* Napoleon has, ever since his Prussian campaign, suffered much in the estimation of the world as a man of honor, a gentleman, and a soldier, because he permitted gross ribaldry and abuse of this lovely and excellent lady and patriotic queen to appear in his bulletins of the progress of the war. I well remember the painful impressions which, at the time, were made on my own mind by those coarse effusions, worthy only of the vilest period of the French Revolution

These tombs are not in a gloomy vault; they are on the floor of the mausoleum, in full daylight, in an elegant hall, and exhibit nothing of death but its repose. I have never seen any funeral monument so tenderly touching, except that of the late Duke of Orleans at Paris. The forms of the Knights of Jerusalem, in their martial slumber, in their church at Temple Bar, in London, produces an impression of pathos, more heroic, but less tender and affecting.

MONUMENT TO THE MEMORY OF THE VICTIMS SLAIN IN THE WAR OF THE RESTORATION IN 1814-'15.—The late king caused this monument to be erected in honor of those brave men who fought and died to restore the independence of his kingdom. Returning from the palace, we drove out in an opposite direction, to see this beautiful structure; and being attended by some of our Prussian friends, we enjoyed the benefit of their explanations. It is a mile or two from Berlin, and stands on almost the only hill in its vicinity. It is a slight elevation, not of rock, but of sand, and gravel, and loose stones, and just serves to give a distinct view of the city. The monument appears to be eighty feet high, and is composed of the elegant iron castings for which Berlin is celebrated. Nothing could be more appropriate. The aspect is funereal, and the stern material is a very natural emblem of war. We ascended by ten granite steps, arranged in an octagonal form, in correspondence with that of a surrounding iron fence, and with the figure of the monument itself, which is an octagonal pyramid, rising by gradations, with offsets, and tapering to the summit, like a steeple, and all is in the Gothic style. There are at the angles eight smaller pyramids, in the same style as the monument. In the niches there are iron statues. On four of the eight sides of the great pyramid are inscribed in gold, alternating between the angles, the names of four principal battles, in which the armies of Prussia were engaged; namely, La Belle Alliance, Leipsic, Paris, and Gosh Goshen. The places of eight other battles are also inscribed in the niches, in letters cast in the iron. The monument does honor to the monarch, by whose

care it was erected, and to the memory of the devoted men whom it commemorates.

**BOULDERS.**—At six P. M., August 5, agreeably to the previous arrangement, we made an excursion with Professors Gustavus and Heinrich Rose and Mitcherlich, to see, in the vicinity of Berlin, some of those Scandinavian boulders which were formerly found in great numbers on the plains of Prussia, and of middle and northern Germany. The *drift* of loose, unconsolidated materials of foreign origin was also included in our plan.

The progress of the Scandinavian boulders south and west was arrested by the mountain chains on the borders of Silesia, where, according to the decided testimony of these gentlemen, they are piled in enormous masses, and attain the height of 800 and even 1200 feet above the base of the mountains. While writing upon the Alpine glaciers, I have already remarked, that this is not a fit work in which to discuss the theory of drift and boulders; for although glaciers, and water, and icebergs have, unquestionably, effected their removal, the subject is far from being cleared of all difficulties. In one particular regarding the boulders, we have not found things as we expected. In our progress over these immense plains, 600 miles at least, we have not seen, as we expected, numerous boulders lying on the surface, as we saw them on the Jura Mountains, and on the Salève, near to Geneva, and as I have found them in the Western States of America, north of the Ohio River. Proofs of the former existence of boulders are indeed seen here on the Prussian plains, in houses constructed of primitive rocks, in much variety, while no such rocks are found in place in these countries, covered as they are with drifts and tertiary beds. I believe the difficulty is solved by what these gentlemen, our immediate companions in this recognizance, all of them expert geologists, have enabled us to see. In the vicinity of Berlin there are some boulders on the surface, two and three feet in diameter; and there are many of smaller size, which we saw as we wandered with our Prussian friends in the fields, and upon the low

hills around the city. But this is not all; in addition to these, and to the innumerable primitive boulders which have been worked up to meet the architectural demands of a great city, and which are now built into its walls and monuments, there is a vast repository of these erratics in the almost interminable bed of clay, which, being cut into near the city for economical purposes, shows a thickness of twenty to forty feet. This bed, which contains no imbedded shells, extends over thousands of square miles, in continuity, or rarely broken. It reposes every where upon siliceous sand, in which the lines of arrangement in strata, with flexions, delicate and beautiful as if sketched in a diagram, record the more gentle undulations of water, preceding that more violent movement which brought the beds of clay and their contents over the arenaceous strata. The clay has no arrangement; but in and among its masses are scattered every where the ruins of the Scandinavian primary mountains, mainly granite, and its associated rocks. There are not wanting, moreover, representatives of the chalk, which formation is still found in the Isle of Rugen, and in other places of the Baltic region. They appear in the form of small imbedded portions of the white chalk itself, as well as in frequent and often large masses of the chalk-flints. From these beds of clay laborers are constantly extracting great numbers of boulders, both large and small, which are laid by in piles for use; and as the washing by the rains also uncovers the boulders, these beds of clay prove rich quarries for building stones, which, as far as man can see, will never be exhausted. These facts, connected with the great erratics which were, in ancient time, strewn over the surface, and still cover it more or less in parts of these great plains remote from the wants of architecture, present a rich theme for contemplation, and for speculations, in which I will not now indulge.

SOIRÉE AT THE HOUSE OF PROFESSOR MITCHERLICH.—Our geological excursion was concluded by a visit at the house of the eminent Professor Mitcherlich, a gentleman of noble person, and open, winning manners. Indeed, the Berlin savants have,

in this latter respect, a common character; all, without exception, have been cordial and zealous in their efforts to inform and gratify us.

Professor Mitcherlich has an ample mansion, and his laboratory is in the basement. It is on a large scale, has several smaller apartments annexed for chemical analysis, for furnace operations, and other purposes, and the entire establishment embraces every necessary facility for teaching both the science of chemistry and the connected physical sciences, and their applications to the arts. There is also above the laboratory a convenient lecture-room, with accommodations for a large class. Professor Mitcherlich is known throughout the scientific world, and has distinguished himself, especially in his discoveries on the dimorphism (double form) of crystallized bodies, and the artificial formation of minerals.

In the private apartments above the laboratory, we met the lady of the house and members of her family, and were introduced to several invited guests, mostly men of science or travellers. One had been in the United States, and made many inquiries regarding mutual acquaintances, while another had travelled extensively in the East, and was full of information regarding the Oriental countries, from which he had recently returned. Dr. Brown, of Heidelberg, was there, a brother-in-law of Professor Agassiz. Dr. B. is a botanist, and well known for numerous researches in his own departments. A hospitable supper, in the German style, with meats, and wines, and ices, completed the evening, and we took leave of our kind friends with much feeling. Our personal acquaintance of a few days had elicited so much genuine kindness and cordiality on their part, and sentiments so reciprocal on our own, that we felt as if we had known them always, and as if we should be delighted to see them every day. The scientific and literary society of Berlin is probably the finest in Europe, and in the presence of such men as Humboldt, Ritter, Ehrenberg, the Roses, Mitcherlich, and others whom we have before mentioned, one sees the highest result of the refining influence of modern civilization.

PROFESSOR EHRENBURG.—We called at the house of this distinguished master of the microscope, and of the wonderful world which it has disclosed to our view; we found also in him a glow and animation which assured us of a hearty welcome.

At our request, he showed us his microscopes, and the ingenious appendages by which he brings the focus to bear upon those vanishing, almost mathematical, points, which in the mineral masses often disclose a delicate animal organization, where none was suspected before; and in the living animalcules of infusions, and other provinces of these infinitesimals of the creation, reveal a structure as perfect for their purposes as our own is for us, and when their transparent films are rendered visible by the absorption of colored fluids into their organs, they often display a delicate beauty of arrangement, their pictured forms rivalling the most beautiful flowers and the finest vegetable structure.

We made a parting call upon our earliest Berlin friend, Professor Carl Ritter, a particular friend also of our Professor Robinson; and at the moment of adieu, we found that, although in distant continents, we first saw the light on the very same day of the same year, August 8, 1779; a circumstance of some interest to us mutually, and not likely soon to escape our recollection, until memory itself shall fade away.

THE PHILOSOPHICAL ARTISTS OF BERLIN are celebrated for their skill in the construction of physical and chemical apparatus. The microscopes which we saw at Professor Ehrenberg's were constructed by Oberhauser, now of Paris, who is well known to all microscopical observers; we thought that we had seen better results obtained with other instruments, and that our own artists had little to learn in this department. Not so, however, in other directions. At the atelier of the celebrated Oertling, we saw the well-known graduating engine for the graduation of astronomical and other instruments of research. This engine has been regarded as the most exact ever constructed, and was built at a cost of 30,000 thalers, which was paid by the Prus-

sian government. The portfolio of drawings illustrating its construction was given to us by Oertling, and has been of service to gentlemen in the United States interested in the construction of such apparatus. The chemical balances of Mr. Oertling are very well known in this country, as among the very best which are made. One of our party was so fortunate as to secure one already made, a thing not often possible, owing to the demand. The establishment of Messrs. Luhme & Co., for chemical and physical apparatus, is one of the best in Europe. We found M. Luhme just departing for London, where he had a large display of his goods in the Crystal Palace. From his well-furnished warerooms we were able to select many things for our future use.

THE ENVIRONS OF BERLIN are extremely beautiful. On the avenues leading into the city there are many rural residences; detached dwellings with ornamental grounds surrounding them. Very extensive public parks and pleasure-grounds have been reserved near to and around the city. Many hundreds of acres, 880 in one tract, are thus appropriated for ever, being government property. They are filled with groves, many of which contain beautiful flowering and ornamental forest-trees. There is a park joining upon the city, in which the trees are so numerous, that the people, following along the serpentine gravelled walks, are in a deep forest shade, through which the sun throws only a checkered golden light, flickering among the dark shadows, and the pedestrians appear like a show in a moving panorama. The groves, stretching farther, are continued for two or three miles into the country. Every where, gravelled walks and tasteful seats invite the rover to rest. Houses of refreshment are scattered also along the borders of the forests.

Not far from these scenes is the Royal Botanical Garden, accessible, gratuitously, on certain days, to the public. We found it in very excellent condition. There is a vast area of glass for the protection of tender plants and exotics; the pots, when we saw them, were in the open air exposed to the summer temperature. It is in these grounds that they hold their after-

noon concerts and rural theatres, and amusements of a like nature.

The population of Berlin is reputed to be about 400,000, including the soldiers.

EDUCATION.—We cannot leave Berlin without adverting to the Prussian system of universal instruction in elementary education, in all classes in the kingdom, a peculiarity by which Prussia is, I believe, distinguished from every other kingdom on the Continent.

Conversing with a Prussian gentleman of high position and intelligence, I said, "You require all your young men to learn the art of war, by actual service for a term of years; you require that all your children should learn to read, and write, and keep accounts; what is to come from all this course of discipline, when your people have all come to know their rights as well as their duties, and have acquired the skill to vindicate them? What will be the final result?" He replied, with energy, "A struggle will follow, more severe than any one that has preceded it, in which despotism will be put down, and the false potentates, who have deceived the people by promises of constitutional liberty, which they have ever suppressed and broken down, will themselves be sacrificed by popular vengeance!"

He looked evidently to a general movement among the continental nations; which, however, seems now (1853) farther off than ever.

## Berlin to Dresden.

August 6.

We left Berlin as we had entered it, by the grand Brandenburg Gate, at seven A. M., on the rails for Dresden, and arrived there at one P. M.

The country through which we passed was very similar to that between Cologne and Berlin. It was an interminable level, with hardly a wave of variation; and the people, *cultive*



tion, and crops were identical with those already described. We passed by, or near, only a few towns. Sand and sand hills were of frequent occurrence, but no boulders, although some houses, as already intimated, were constructed of primitive rocks, doubtless split from boulders. As we approached Dresden, the country became more hilly and more beautiful; and we soon after arrived in that ancient city, passing into it over a stone bridge. The structure that was here in 1813 was blown up by the French, to enable their army to escape by retarding the pursuit of the Allies.

We found every thing ready for our reception at the Hôtel de Saxe, in the great square of the city.

As we proposed visiting the mines at Freiburg, we accordingly made arrangements without delay, proposing to see the most interesting objects in Dresden on our return. While our horses were being made ready, we took a hasty glance at the picture gallery. The Dresden collection is justly celebrated, for it contains the largest and best selection of the Italian school, out of Italy; and among them are Raphael's San Sisto and Correggio's Magdalen, which alone would give character to any collection. I do not, however, now remember any gallery in which there are so many pictures that are objectionable in point of decency. Some of them are too gross for public inspection, and should be banished.

### Excursion to Freiburg.

The Saxon Freiburg, the seat of the School of Mines of the celebrated Professor Werner, is within twenty-five miles of Dresden, and the gentlemen of our party made an excursion to see it. Without losing the remainder of the afternoon, we took an extra post carriage, and at six o'clock were on our way. One mile from Dresden the coachman pointed out the place where General Moreau met his death. When Napoleon began

to unfold his vast plans of personal ambition, Moreau, who, like La Fayette, was really a patriot, declined going on with him, and, being tried for his life, was condemned to two years' imprisonment, but was permitted to emigrate to the United States, where he lived in retirement near Trenton, New Jersey. When the great struggle consequent on Napoleon's invasion of Russia came on, he returned to Europe and joined the Allies. In the battle before Dresden, August 27, 1813, Napoleon, observing a group of officers, directed a cannon to be discharged at them, and that shot proved fatal to Moreau. While conversing with the Emperor Alexander, the commissioned ball shattered his limbs, and he died five days after. A monument to his memory was erected on the spot where he fell, but he was buried at St. Petersburg.

The country through which we rode was very beautiful. The first ten miles we travelled in a winding defile or gorge, and alongside of a lively river, which was bounded by hills and vertical strata of rocks. Ten miles from Dresden, at the considerable village of Tharant, we were overtaken by night; but on our return I observed the country through which we travelled in the dark, and found it to be equally beautiful as that which we had seen: wide sweeping, verdant hills and valleys, were rich in grass and crops. The towns, villages, and rural abodes, appeared in a high degree respectable and comfortable. Many houses and manufactories indicated wealth. The people were well clad, and their aspect and demeanor indicated contentment.

- FEMALE SLAVERY.—There was, however, one important drawback—and the remarks I am about to make are applicable to other parts of Saxony besides this beautiful region;—the slavery of women appeared in very revolting forms. Not only were all the usual labors of the farm performed by them, such as reaping, mowing, threshing, pitching, and spreading manure, hoeing, ploughing, raking hay, and loading it on the cart; the drawing of wagons, sometimes aided by dogs and cows in harness, *but never by men*; and heavy burdens were often seen,

all along the road, pressing hard upon the head, shoulders, and backs of females. In Dresden we saw, for the first time, women wheeling the long and heavy barrows, on which great burdens are carried. Old women, those of middle age, and young maidens, were there engaged in these laborious occupations. Among the burdens borne by women on the head and shoulders were hay in bundles, packages of brushwood and other fuel; and in Frieberg we saw a feeble old woman carrying up several flights of stairs, in a kind of basket on her back, enormous loads of solid wood for fuel; they would have been a full burden for a strong man. In the School of Mines, she toiled up one flight of stairs after another, tottering under her load, a spectacle which was a disgrace to humanity. I afterwards saw, with mingled sorrow and anger, that same old woman staggering up the same stairs under a heavy load of furniture, apparently the beams of a bedstead.

It was past eleven o'clock at night when we arrived at Frieberg. As we descended into the valley, a chill atmosphere, loaded with vapor, and charged with arsenical and sulphureous fumes, saluted us, and announced our proximity to the smelting works. We found, however, a comfortable inn, and the next day (August 7) being bright and cheering, dissipated the damps of the night.

Frieberg is in the centre of a vast region of mines. There are 130 within an area of a few square miles or leagues.

DESCENT INTO THE MINES.—Our younger gentlemen were disposed to descend into the mines; but having seen enough of such subterranean regions in earlier years, I declined the enterprise, and preferred the quiet of my chamber and pen, and a promenade about the town. Forty-six years ago I made a similar descent into the Dolcoath mine, in Cornwall, England, and to the same depth that was reported in this case, i. e., 600 feet; and now, by God's blessing, I found myself here, in the heart of Germany, still in active health, as a companion to those who were not born until many years after the period named.

The party were gone several hours upon their subterranean

journey, and returned highly gratified but thoroughly coated with mud and well fatigued. One of their number afterwards furnished me with the following narrative of the descent :

“ It is necessary to have a written order or permission from the master of the mines before access can be had to the works under ground. It is a printed form, covering half a page. Armed with this, we set off, at eight A. M., to the Himmelsfurth mine, which is about one mile from the hotel, and at present one of the most actively worked mines, not less than 1200 men and boys being engaged in its various departments.

“ We were first conducted to the office of the overseer, where we found a party of head miners at breakfast. We produced the order, and were requested, in German, to be seated. No one of them spoke English or French, and we did not speak much German. Presently, a young woman, who had gone out, returned, bringing a quantity of miners' clothes, into which we inserted ourselves as well as we could. Those given to the writer were intended for a decidedly slender man, and defied all his efforts at causing the buttons to approach. Another suit was, however, found, which was a better fit. The dress is peculiar. The stuff is black glazed cambric, of which the coat and pantaloons are made. The coat has a cape, is buttoned close to the wrists, and is provided with a ring at the collar to hang the lantern in. An apron of stout leather was strapped on *behind*, in a singular but very useful position. All miners, of every degree, wear this dress. The lantern is a little box of wood, lined with brass, round at top, and open in front. On the back is a long loop to hang it through the ring on the coat. Thus arranged, we followed our leader, who was a young head miner, and entered the centre and highest of a large number of build-ings, in which is the opening of the mine.

“ The shaft is divided into four parts nearly equal, of which the two central are for hauling up the ore and refuse rocks; the divisions at the end are shared between the pump rods and the ladders by which the mine is reached. The lateral, or end openings, are closed by a trap-door, and you descend as if going

into a cellar. The lowest depth which has been reached in this mine was reported as being about 1500 feet. The rock is granitic gneiss, of a reddish color. Our guide seized the rounds of the ladder in a firm way, and instructed us how to place our hands; he then went down, and we followed. The ladders are nearly vertical, and about 36 feet long each. At the foot is a stage, or platform, on which you land before you enter on a new one, an arrangement which secures greater safety in the descent in case of accident. We toiled on downward about 550 feet, when we were led off by a horizontal gallery. In our descent also we passed numerous other levels or horizontal galleries, which we discerned dimly by the light of our lamps; but, during our progress, we saw no metallic minerals in the gneiss. After following our guide about a quarter of a mile at the level of 550 feet, we began to hear the noise of hammers, and, before we reached the workmen, we saw the line of junction between the gneiss and the granite. The ore in this mine is a rich argentiferous galena, in a vein of considerable thickness, accompanied by mispickel (white iron pyrites) and yellow copper, in all 18 inches to two feet thick. They were working on the course of the vein, which runs in an oblique direction, at an angle of about  $40^\circ$  and in the general direction of N.N.W. The yield must be immense, judging from the mass of the vein which we saw open. This mine is certainly very vast—a labyrinth of passages, a few of which we followed. It is very dry, and the hydraulic apparatus required to pump it is, consequently, not very large. The steam engine used is a high-pressure one, and the cylinder, about 15 inches in diameter, is placed horizontally. Its power I should think not over that of 100 horses, perhaps not more than 75.

“We ascended by another shaft than that by which we descended, and this brought us out nearly half a mile from where we went down. The apparatus used in preparing the ore is very simple. The ore is picked over by boys, who select the good pieces, and break out the rock with hammers. The selected ore is crushed dry by a battery of nine vertical stamps

driven by steam, each stamp being shod with a heavy hammer of cast iron. Men are constantly engaged in throwing the coarse bits with a long-handled shovel under the breakers, and in withdrawing the finer part, which is passed through iron sieves, and is then ready for the process of roasting.

"As no tedious process of washing the ore is required in this mine, the method is easy, simple, and economical. The roasting is performed at another place, which we did not visit; but the evening of our arrival, owing to a heavy atmosphere, as already remarked, we had an opportunity of smelling the mixed vapors of sulphur and arsenic, with which the air was loaded. Unfortunately for us, all the professors of the School of Mines were absent;—Messrs. Plattner, Scheerer, and others, whose absence we had occasion to regret. It was the summer vacation. This region is very instructive as regards the occurrence of valuable ores, in a granitic rock, and in a region free from mountains. The yield of silver continues to be good, and the mines are farmed by the government. Miners from the Hartz Mountains first settled in Frieberg in 1195, and commenced working the mines."

GENERAL REMARKS.—Frieberg was anciently an imperial city, with 40,000 inhabitants, and was the residence of the Saxon princes, who conferred upon it important privileges; now, it contains less than 12,000 inhabitants, while its ruined walls and towers attest its former extent and importance. In a walk around the town, I saw them engaged in filling up its deep and wide fosse, as has already been done to a great extent, to form a promenade; but enough of walls and towers remains to form an impressive ruin.

In this city of the miners there are beautiful public walks with fine trees, and near one of the promenades is a monument, commemorating victories obtained in the seventeenth century by the soldiers of Frieberg over the Swedes.

The appearance of this city is that of an ancient German town. The houses have sharp roofs, covered with red tiles, and most of the people whom we meet in the streets are miners, distinguished by their dark glazed dress, and by their aprons,

often worn behind both in the mines and out of them, especially on days of ceremony.

The aspect of the country in and around Freiburg is not that which we usually expect in mining regions; it is not at all mountainous. Gently swelling hills, and beautifully curved valleys, give no indication of nature's great doings beneath the surface. The enormous piles of rocks brought out of the mines, and laid up so as to occupy as little of the area as possible, with the various buildings erected at the mouths of the mines, usually with tall chimneys, and steam machinery; these appearances, with the peculiar costume, and the physical and moral aspect of the miners, are nearly all that, to a passing traveller, indicate a mining country.

The mines have been wrought for nearly 700 years, and the silver obtained from them has been a great source of wealth to the Saxon princes. Many of the mines have been sunk to such a depth that the heat\* of the lower passages, and the water, have stopped the operations. A stupendous enterprise has been carried through to drain the mines by a tunnel, cut 24 miles, under the mountains to Meissen on the Elbe.

Prof. Breithaupt, an eminent living professor of the School of Mines here, calculates that the mines had produced in 640 years, down to 1825, 82,000 hundred weight of silver, equivalent to 240,000 millions of dollars. The product in 1835 was 523,952 dollars.

In the venerable cathedral are contained tombs and trophies of Saxon princes and eminent men. The tomb of Werner is there.

A flat, round stone in the market-place, indicates the spot where Thaufungen, the robber knight, who stole the two young princes, Ernest and Albert, was beheaded in 1455.

THE SCHOOL OF MINES OF WERNER.—My early professional studies created in me a high admiration of this school of mines, founded in 1765; and of WERNER, its illustrious

\* An additional proof of the heated condition of the interior of the earth.

ornament, whose name was, for half a century, of decisive authority upon all questions relating to the sciences connected with the mineral kingdom.

The personal knowledge which I had of Wernerian teachers, especially of the late Dr. John Murray, of Edinburgh, whose pupil I was in 1805; and of writers whose works were founded upon the doctrines of this school, among whom were Jameson, of Edinburgh, Brochant and d'Aubuisson, of Paris; or of the works of men trained by him, whether adopting all his opinions or not (Humboldt and Von Buch were of this class), or of ardent explorers and geological travellers, formed upon the Wernerian model, of whom, both in Europe and North America, the late William Maclure was the most distinguished;—all these sources of influence, and many more of the same class, having been brought to bear upon my mind in the ascendant of my life, produced a strong and lasting effect, and therefore WERNER has ever since remained with me *clarum et venerabile nomen!*

The great advance made since the time of Werner in the knowledge of minerals, and of their composition, has, as regards elementary mineralogy, introduced improved methods both of arrangement and description, and the progress of geology has shown that Werner's views, derived almost exclusively from an examination of his own native Saxony, were far too limited, and in some respects erroneous. But still, he, more than any other man in his time, imparted interest and gave impulse to these studies, so fruitful in important results both to science and the arts.

Such views and feelings, shared also by my companions, naturally led us to make Freiburg a capital point in our rapid glance at Germany.

RELICS OF WERNER.—It was no small satisfaction to us that we found all things personal to Werner remaining as he left them in 1816, when he died. Both in the lecture-room and in his private apartments, the cabinets of minerals remain as they were. The minerals were arranged principally in



drawers, in plain cases, painted white; large and showy specimens were placed on the tops of the cases, and protected by glass covers. Many of them were fine, and a smaller number are unique, while all are interesting in a high degree from their personal association. The building for the School of Mines is plain, but of ample dimensions, and affords all necessary accommodations. In an upper room there is an extensive collection of models of mining machinery, of the structure of mines, of the pumps for clearing them of water, and of every thing else connected with the business. There is an ingenious contrivance for putting these models in motion. Water, from a reservoir, descends in tubes, and by an easy arrangement is made to fall upon the parts to be moved, while, at the same time, the water that would otherwise accumulate is discharged by the pumps. There are also models of bridges, and of buildings, and of various objects connected with civil architecture. Prof. Fischer, of the mining school, was so kind as to open every thing for our inspection. Breithaupt's collection of minerals is in the same suite of rooms with the models. It is moderately extensive, and contains many very interesting things, but is crowded, and badly arranged.

Werner's sword and cane hang in his lecture-room. They are gold-hilted and gold-headed. I drew the sword from its scabbard; it was bright, and elegantly ornamented. The portrait of Werner was also here. The form of the face, round and full, is decidedly German, and his head is large and grand—an excellent phrenological model. The expression of his countenance is delightful; high intelligence is blended with a glowing good humor, and softened by benevolence; in a word, the development, both in his head and face, is in perfect correspondence with the uniform report made of his character and talents by his pupils. Such were his talents, zeal, and knowledge, and so amiable and attractive was he as a man, that he drew to Frieburg students from all the countries of Europe, and even from the distant continents of both Americas. His lectures were highly instructive and delightful. His

invested even the dry stones with interest; and he is said to have added a charm to his discussions in geology by digressions, growing indeed naturally out of his subject. He retained the clue, however, in his hand, and in due time returned again to the proper point.

In topographical geology he often introduced historical facts of high interest. Through this gorge an army advanced or retreated; from that cliff stones were hurled down vengeance upon the invader, and this plain, a great battle-field, was soaked with human blood. Thus thrilling associations were formed with the natural features of scenery, and those who did not care for the granite precipice, or the sandstone strata, would remember them if the former had been scaled, or the latter marched over by advancing or retreating armies.

MINERALS ON SALE.—There is a room devoted to this object on account of the School of Mines, as a public establishment. Our mineralogists selected a considerable number of good specimens, at prices more moderate than any where else in Europe, so far as we have seen; and being packed at once, they were brought away with us.

### Return to Dresden.

At five o'clock, *p. m.*, we were again in our carriages, and were safe in Dresden at half-past nine o'clock.

FORESTS.—We have often observed, and more particularly to-day, the extreme beauty of the forests of fir-trees obtained by planting. The successive crops are sown annually, and thus a regular progress is made, year by year, up to 40 years, when the timber is large enough to be cut for use. Thus every year a new crop is coming mature, and if the work is faithfully followed up there need never be a scarcity of timber, especially if a similar course is followed with other forest trees.

On the fir-trees few limbs are seen, except near the top; the trunks are perfectly straight, and free from any irregularity.

A forest of these trees is extremely beautiful—as evergreens always are—and here they are marshalled like a regular army, in rank and file, forming a singular contrast with the irregularity of the natural growth of self-planted trees in forests. Since we have passed the Alps we have seen no proofs of deficiency in timber. Trees, both for beauty and economical use, have been numerous. Clusters, clumps, avenues, groves and forests, have appeared abundantly, and there seems to be a sufficient supply for every purpose.

It is maintained, however, by provident care; for, if the demand for use were not supplied by planting, the forests would, in the course of a few years, disappear. The trees are pruned, and the woods cleared by public authority; superfluities are removed, and deficiencies supplied; but every thing is saved. The brushwood, and small tops, and pruned shoots are made up into bundles and carried home for fuel, chiefly on the heads of women.

We were in Dresden at an unfortunate juncture. Tickets of admission to several of its public institutions are issued only in a limited number at a time, and we were obliged to wait nearly a day for our turn to see what is, indeed, well worth waiting for

THE GREEN VAULT.—This trivial name has been bestowed, I believe, on account of the color of some of the ornaments, but it would be quite appropriate, and far more proper, to name this establishment the Saxon Regalia, for such it really is. Saxony is an ancient kingdom, dating back, I suppose, 1000 years or more. There has, therefore, been time for the amassing of an immense collection of gems, and of other rare and curious things, which occupy eight large rooms in one wing of an immense palace. Through these successively you are conducted. The mines of Saxony have contributed their wealth to enable the Saxon princes, in the progress of many centuries, to amass such a collection as is, I presume, nowhere else to be seen. I believe you cannot name a gem, or a beautiful stone, which is not found here in pro

monds are in these rooms, I will not say by hundreds, but literally by thousands. Many of them are of large size; we counted over two hundred mounted as buttons, each one of which was as large as boys' playing marbles.

The emblems of royalty, the sword of state, the sword-belt, the stars, the garters and buttons, the collar and various orders, and innumerable other things, sparkle with diamonds of fine water and brilliant polish. We saw here an immense diamond, of the highest lustre, whose color was that of the sapphire, and also a green brilliant, weighing 160 grains. The diamonds are arranged upon a dark velvet ground, and interspersed are rubies, sapphires, emeralds, topazes, turquoises, amethysts, and opals, all of large size and most exquisite beauty, and being set in gold, they appear the more splendid by contrast. Not only the state dress, but the miner's costume of the king are all sparkling with diamonds set in gold. The king is, by courtesy, head miner, and on certain days leads the procession of miners, in full costume, to the church.

The sword of state, a very long weapon, is brought out at the coronation, and that it may befit the august occasion, both the hilt and the scabbard are covered with diamonds. This ancient sword is still in perfection, and is indeed a splendid emblem of power.

All the more common hard stones, chalcedony, agate, jasper, onyx, &c., are here in immense profusion, and being cut in the most beautiful forms, and highly polished, they make a splendid appearance. The largest onyx in the world is here; it is black, and of an oval form, six and a half inches long and four and a half broad. A white elliptical band runs through and around it, and parallel to its exterior. The vessels of rock crystal, smoky quartz, and other varieties of this species, are numerous; some of them are very large, and are cut into the most graceful and elegant figures. The transparency is so perfect, that it is not easy to believe that they are not glass, until a trial of hardness is made, or their internal crystalline structure is observed. A mirror of rock crystal is quite per-

fect. It is suspended in a frame, and turns so that there are two mirrors seen on the opposite sides.

Among other rare things are numerous ancient vessels of enamel; the enamel is wrought over metal, which it covers and conceals. It was an anticipation of the most beautiful porcelain, the art of manufacturing which was, in that age, unknown in Europe. Of this sort is a miniature representation of the court of the great Mogul Aurungzebe, preserved as an exhibition of the skill of the artist Dinlinger, who wrought at it seven years; but it is a toy, and not worthy of the dignity of a palace.

There is in the Green Vault a vast amount of silver vessels, richly wrought, and gilt inside; wine-coolers, of such weight that they can hardly be lifted by one man; ewers, épergnes, and various vessels of utility or ornament, fashioned in different epochs from the silver of the Saxon mines. These are only parts of extensive sets of silver service, and of gold also, for the royal tables, but used only on great occasions of state or set feast days.

Time would fail to enumerate, in the briefest manner, the riches of these imperial apartments—costly tables of Florentine mosaic, toilet services of amber, ivory carvings, curiously wrought specimens of ostrich eggs, and nautilus shells, pearls without number, and the celebrated Nuremberg egg of gold, inclosing in its yolk a chicken, a ring, and a crown. But in this world of treasures I have only glanced at a few principal things. To a mineralogist its chief value is as a cabinet of gems, which he may never see equalled. It is surprising that in the numerous wars of Germany this collection has never been plundered. During the revolution in 1848 a battalion of soldiers was constantly stationed here, within the hollow square of the palace, to prevent the ingress of the mob. That there was sufficient reason for this fear is but too apparent from the outrages committed in another magnificent establishment, a vast and grand palace, which contained a museum of natural history, a great collection of antiques, an opera house, and other institutions. It was burned, whether by acci-

dent or design is not certain. There it stands, a vast ruin, blackened with smoke, and dilapidated by the fire. Its stone walls are still entire, with their numerous statues and architectural ornaments, but mutilated and defaced. In this part of the city, as in Genoa, Naples, Messina, Catania, Berlin, and other cities which we have visited, the impresses of bullets upon the cement of the houses are numerous, and savage war has marked its progress by mournful ruins.

MUSEUM OF GEOLOGY.—A portion of the natural history collections which were in this palace was saved from destruction, and already, when we were there, the building had been so far repaired that we were able to see a part of the geological specimens. They were kindly exhibited to us by Dr. Geinitz.\* Here is a complete mounted skeleton of the fossil cavern bear, the only entire one that we had ever seen; and of the same great animal there are also heads and many other bones. The skeleton of the bear is 87 inches long; that is, 7 feet and 3 inches; the length of the cranium is 17 inches, of the fore feet 12 inches, of the hind feet 15.

This bear, living and clothed with muscles, furnished with blood-vessels, wrapped in integuments and fur, and rounded by fat, would have been a giant among the primeval animals.

In this collection there is an interesting series of teeth, to show, in several fossil animals, the progress of dentition from infancy to maturity, particularly in the bear and the ancient elephant. The bones of the fossil bear are from Sundwich, near Treolohn. We saw also here the bones of a fossil animal approximating to a horse, and the head of the extinct *bos priscus*, allied to, but not identical with the aurochs, or wild ox, which, by the care of the Emperor of Russia, is still protected and preserved, as a living race, in the forests of Lithuania. There are here beautiful teeth of the *zyglodon*, of Alabama,

\* Dr. Geinitz is Professor of Geology in the Polytechnic School of Saxony; and the collection referred to is a part of the means of instruction in that well-ordered institution, in which there are twenty-seven Professors.

brought out along with a vast collection of the bones of that immense fossil cetacean, by Dr. Koch, who is a friend of Dr. Geinitz.

GENERAL REMARKS ON DRESDEN.—My hasty survey of Dresden was finished by a ride through its principal streets, and around its environs. It is a thoroughly built city, of strong stone houses, with streets generally of tolerable width, and with several expansions into areas, like public squares.

Dresden is situated upon the Elbe, which flows by it with a rapid current. The city is in the midst of a fertile and beautiful country, a part of that vast region of level, or only gently undulating land over which, in different directions, we have been recently travelling many hundreds of miles.

On seeing it, we were not greatly surprised that the tide of war has often rolled over this region, as there is so little to arrest its billows; so little, I mean, of physical barriers; and those of art, in the shape of fortresses, which the skill of man has erected, the assaults of man have been able to destroy. The famous Dresden porcelain manufactory was broken up by Frederick—certainly not in this instance entitled to the usual epithet of *the great*. He selfishly transferred the manufactory to Berlin, with its materials and tools, and as far as possible its workmen also. The manufacture of Dresden porcelain is now, however, carried forward in the country on private account. We had not time to visit the Berlin manufactory of porcelain, but we saw specimens of it in the Great Exhibition at London, and also a superb vase at the house of Baron Von Humboldt. It was almost identical with that of Sèvres near Paris.

### Dresden to Leipzig and Cologne.

Aug. 8.

An evening ride, between six and nine o'clock, was attended with very little interest. We regretted very much to arrive at Leipzig in the night, and to leave it ~~early~~ in the morning, without even entering the city; for the

tion and the house where we lodged were just at its confines. It had been with me a favorite object to survey that great field of blood, where, in the autumn of 1813, was fought the decisive battle of the nations; where, for three successive days, 136,000 of the French, and 230,000 of the Allies, with 1600 pieces of cannon, contended with desperate obstinacy; when the conqueror of nations, with the odds of 94,000 men against him, was himself compelled to retreat, although his final overthrow was not accomplished until June 18, 1815, at Waterloo. It was impossible for us now, being within less than a month of our time of sailing from England for America, to give a day to Leipsic. Our road carried us, indeed, over a portion of the field of battle, but we could have no intelligent military observation of the country. We could, however, understand that there was room enough on this immense plain for 366,000 men and 1600 pieces of cannon to play their deadly game. As they contended, with nothing but their own bravery and military skill to prevent a decisive rush, there must have been a scene of unmitigated slaughter; and we cannot wonder that more than 50,000 men were laid low. The rapid flight of the cars soon bore us away from the sight of Leipsic, although not away from the associated recollections of those great events, still fresh in my memory.

Leipsic has 50,000 inhabitants. It has a celebrated University, with 200,000 volumes, and its annual book-fair is famous all over the reading world.

*Aug. 9.* This day's ride, begun at six A. M., and ended at eleven P. M., must have carried us more than 400 miles, and most of it on the same road by which we passed to Berlin. The same towns came in our way, but without the slightest opportunity to know any thing of them; nor did the country present any new features, except increased herds of grazing cattle and Saxon sheep, whose fleeces were so foul that it was wonderful they could ever be made clean. For the first time in Europe, we saw to-day extensive fields of buckwheat in blossom.



We were surprised at the great length of the railroad trains, and at the deluge of people that poured out of the cars at the different stations. The conductors are much more attentive than with us in giving notice of the length of time that they will stop. Instantly, as the cars come to a state of rest, they make proclamation—three minutes, five minutes, ten minutes, or whatever time is allowed; and they are very punctual in starting.

Refreshments are ready at the different stations—fruit, cake, coffee, and, above all, the favorite German beer. We saw no inebriety any where in Germany. The day was very hot: the dust, in fine powder, covered our clothes, and annoyed our eyes and lungs. This was quite a new trouble for a railroad in Europe, although so common on our American railroads. In all other instances in our various journeys abroad, the railway path was grassed, or gravelled, or watered. On the continent, it is usually watered; so that this instance only excepted, we have been protected from dust. The termination of our day's ride was, therefore, welcomed with satisfaction, when an omnibus took us again from the station-house over the magnificent Rhine, upon the admirable bridge of boats; the silver moonbeams played with the waves, while the flood rushed along as if impatient of the impediment of the fast-anchored line of boats.

We again found excellent apartments at our old home in the Hôtel Royal de Cologne, but were greatly disappointed that there were no letters from home, as our friend, M. Bosange, one of the most punctual of men, was charged to forward our letters to Cologne, if any should arrive while we were gone to Berlin.\*

\* It is not agreeable to mar my narrative with the only instance of falsehood and breach of trust which we met with abroad. The master of the house at Cologne denied that any letters had come, and his servants knew nothing of the matter. But on our arrival at Paris, we soon learned from M. Boesange that a large parcel of letters had been forwarded; and on correspondence with the post-office

COLOGNE. *Aug. 10.*—A day of rest was most welcome after the long ride of yesterday, and the more welcome because it was the Christian Sabbath, and because we have again enjoyed its worship in our own language.

With our guide, we found a small English church, "an upper room," as in the days of the apostles. We could never have found it alone, for it was in a remote street, and we clambered up to it from a back yard by a narrow, corkscrew staircase of cast iron. There we found about fifty people, apparently English, and two clergymen, who conducted the service with dignity. One read the prayers impressively, and the other preached a very good sermon, although brief—eighteen minutes long—from the parable of the fig-tree.

### Cologne to Brussels.

We had to regret the necessity of another night journey, chiefly because the country through which we were to pass would be, in a great measure, lost to us. This journey was performed on the rails, between eleven at night and eight the next morning, nine hours, the distance probably 180 miles. It was very unfortunate to pass Liege and Aix-la-Chapelle in the dark; and some portions of the country between the Rhine and Brussels are reported to be very beautiful. About one in the morning we entered Belgium; and on passing the frontier of the kingdom we were detained forty minutes for the custom-house inspection, which was not rigorous.

In my trunk, the eyes of the officers were attracted by a of Cologne, they were recovered, with the information that the master of the hotel declined taking them up from unwillingness to advance the postage, always, it is true, heavy on the continent. But he had all our trunks in deposit, and was, therefore, sure of our return to his house, and, of course, could not fail to be reimbursed.

The only caustic we had occasion to use abroad was administered to him from Paris for his duplicity.

paper parcel, secured by a string. This was the only thing that they unrolled ; but it proved to be my travelling Bible, which was returned without remark. The station-house was well lighted, and the cars were superior to any we had seen on the Continent ; but their nice and comfortable cushions were rendered almost unavailing for sleep by a violent lateral vibration of the coach, swinging constantly from side to side, as if it would leap off from the rails. The night, however, passed away safely. The declining moon had not yet sunk below the western horizon before the dawn purpled the eastern sky, and disclosed to us a splendid country, near the city of Mechlin, where we paused for a few minutes, and had just time to realize that this was the town so distinguished for producing the most beautiful lace.

The full daylight regaled our eyes with the most splendid crops, and the most beautiful cultivation, every where apparent around us. There were also excellent buildings, and frequent hedge-rows, neatly trimmed. We had, in fact hardly time to realize that we were flying through the garden of Europe, before we arrived at the station-house, and an omnibus soon placed us in the midst of one of the most beautiful cities in the world.

### Brussels.

Although we had arrived after a sleepless night, we allowed ourselves no time for repose. The refreshment by ablutions, change of apparel, and breakfast, sufficiently reinforced our physical powers ; nor did we permit our eyes to linger on the beauties of this gem among cities, whose features broke upon us with a charm. A more exciting object was in view, and we made, as early as possible, the necessary arrangements for an excursion to a place more memorable than Marathon and Thermopylæ, and which will be visited and explored until time shall cease to count the hours.

## Waterloo.

We were in our carriage at ten, and at once drove out upon the road, which leads through the famed wood of Soignes. Many trees have been cut away since 1815, but a great forest still remains, which we passed chiefly on the left, and for a long distance. The trees are large, and so thickly planted that only a pedestrian or a single horseman can traverse the wood.

Waterloo now belongs to history. It has no longer the thrilling, tragical interest which it possessed when our ears were first made to tingle with the astounding tidings which, in the summer of 1815, were borne on the wings of the wind to every quarter of the globe, and called forth the effusions of poets and tourists, and the efforts of the pencil, to portray the acts of the deep tragedy of June 18, 1815.

I will not linger long upon its historical details, already familiar, while I endeavor to convey in some degree to others, the impressions made upon my own mind by a visit to the ground.

Approaching Waterloo through a highly picturesque and beautiful country, varied with hills and dales, and presenting a rich harvest in its cultivated fields, I turned my eyes eagerly to desery the first houses in the village. Soon the dome of the church—the mausoleum of many of the slain—arrested our attention; but reserving it for our return, we passed on through the village of Waterloo. The buildings that were here in 1815 are easily distinguished by their antique style, while many new houses, and among them some beautiful dwellings, have sprung up, evincing a degree of prosperity which is, doubtless, due, in a great measure, to the celebrity conferred by the great battle upon a village formerly of little importance. Crowds of visitors resort to Waterloo, Prussians, Germans, Belgians, and Hollanders; the English, of course, in still greater proportion; and we

were assured that during the present season the Americans had exceeded all other nations in number. There are very few French visitors; for to them the view of Waterloo must be painful. As we approached the village, three men met us on the road, offering their services as conductors.

Pierson, whom we accepted as our guide, was not in the military service, but being then eighteen years of age, he lived at the time, on the very battle field, and was personally acquainted with the events. With him we traversed the ground: and by the aid of the published plans, and his explanations, we were able to understand the localities. No battle, probably, was ever more severely contested by hard fighting, without strategy or military tactics: these were excluded, because Wellington maintained through the fight the highly advantageous ground which he had chosen. The strong chateau of Hougoumont was the key of his position. This country-house, in the manner of the chateaus of France, was constructed in so substantial a manner as to be of itself a fortress; and the brick wall immediately inclosing the premises was so thick and high as to afford an effectual protection and defence. The adjoining field or park was surrounded on all sides in the same manner, by a wall thick enough to resist bullets and grape-shot, and to sustain, for a short time, a cannonade. The approach also to the wall was defended by an orchard, and by a wood, with a high hedge, which served for an abattis. In the brick wall as originally constructed, there were some loop-holes for musketry, and many more were rudely knocked through the wall by Wellington's men the night previous to the battle. Through these holes, which are still open as then, the soldiers standing on the ground could fire; and to provide for a line of men above them, a platform was erected on the inside of the wall, so that bullets might be fired over the top, while comrades were also firing below through the loop-holes.

The English army was arranged around in a bow in the rear of Hougoumont, and to the north of it, on ground so elevated that their artillery sent a destructive fire of cannon balls

over Hougoumont, while the French artillery in turn could hardly be brought to bear upon this part of the English position.

Hougoumont, being in the midst of a great battle-field, was several times assaulted, and as constantly defended with the most persevering valor. The French again and again stormed the court-yard of the house, but were driven out at the point of the bayonet, or slaughtered on the spot. Hougoumont was, in fact, a fortress between the English and French armies; and could this post have been carried, there might have been a chance to break the English line.

Such was the slaughter at this post, that the orchard near Hougoumont was all obstructed by corpses lying thick upon the ground; and the old trees, when we were there, at the time of our visit, thirty-six years after the battle, still exhibited in their mutilated trunks and limbs the effects of the missiles of that day.

We were assured that after the battle, 2000 corpses, collected from the slaughter-ground of Hougoumont, were burned here. The piles were made near the scene of conflict, and, by the aid of fuel, they continued to burn during five or six days, friends and foes being mingled without distinction. The squares formed by Lord Wellington on the ridge, which was a low swelling boundary, were maintained to the last; not one of them was broken, although they were incessantly cannonaded and impetuously charged, again and again, by the Cuirassiers, whose mail of iron defended them, in a great measure, from the bullets of the English. The troopers rode around and between the squares, deliberately looking for a weak spot through which they might break;\* but none was found, although the squares suffered severely from the artillery of the French.

The English reserve lay, in a great measure, protected behind the low ridge on which the squares were formed. They were in a natural hollow, and had not yet been brought into

\* As I was informed by a British captain who was in the battle.



chy's corps of 30,000 men, either of which events singly would, doubtless, have decided the battle. At last, the French heard a heavy firing on their right, and supposing it to arise from the corps of Grouchy coming to their assistance, a shout of exultation went up from their decimated columns; but alas, it, was not Grouchy's army—it was Blucher and Bulow, with the Prussians, who had arrived, although late, upon the field of battle. A courier was dispatched to Napoleon, who saw that all was now lost, unless he could, by a last effort, break the British line, which had never wavered during this longest of the days of summer. The British line must be broken immediately, and before the Prussians had fully completed their junction with the British. The French guards, which had hitherto been held in reserve in the rear of their army, were now ordered to advance—first the Young Guard, and then the Old Guard who had never been known to waver. While they marched across an intervening hollow, and up a gentle acivity, against the British cavalry, they seem not to have been aware that they masked a powerful battery of many cannon, which being opened upon them, they were mowed down in such numbers that all hope was soon lost. A colonel of Polish lancers, who was at Waterloo, has recently assured us that not a man of the Old Guard survived. When challenged to surrender, the well-known reply was, "We know how to die, but not to surrender." A single officer alone remained alive. He wrapped himself in an imperial ensign, and then fell, pierced with bullets, thus mingling his blood with that of his slaughtered comrades. The French army was now broken, all order was lost; and although groups of officers and soldiers, here and there, continued to fight, the rout soon became general.

It was at this moment that Wellington gave the brief, energetic order\* to his prostrated guards, who, as before observed, lay protected in a natural hollow behind the squares, to spring

\* This order has always been quoted in five words—"Up, guards, at them." Since Wellington's death, it has been denied in the h prints that he used this language. Feb. 26, 1852.



to their feet and pursue the flying French. They were prompt to obey the mandate, and death trode hard upon the heels of the fugitives.

Thus ended the tragedy of Waterloo! Had the French succeeded in taking Hougoumont, had Grouchy brought up seasonably his reserve of 30,000 men, or had the Prussians failed to arrive, this memorable battle might have had a very different issue.

Our guide assured us that six different couriers, who were dispatched to summon Grouchy to advance, were all killed or captured, and he would persuade us that Grouchy was not treacherous. The French army, however, regarded him as a traitor, and as such he was insulted in the city of Philadelphia by surviving officers who, like himself, had escaped to America. It is said, also, that Grouchy was caressed and honored, and appointed to high offices under Louis XVIII., as a reward for his treason.

There is a museum here of relics of the battle-field, which cannot be viewed without deep interest. It contains all kinds of deadly weapons and winged messengers of death, in the form of missiles; also insignia belonging to the different classes of combatants, and of some of them the particular history is known. The collection was made by the late Major Cotton, an English soldier, and is shown by his niece, a very intelligent and courteous person. Major Cotton published a small volume, which he entitled "A Voice from Waterloo;" it contains interesting particulars of the campaign, and of the battle which closed the military and imperial career of Napoleon.

On our return, we visited the church, where are numerous monuments to British officers and soldiers who fell at Waterloo. One young officer had been exposed to the fire of the French in thirty-three battles, and died at last at their hands, when only 24 years of age. Another, and he a Colonel, who ended his brief career at Waterloo, was only eighteen years old. Several of the monuments, in a spirit at once of ~~rom~~ and justice, commemorate the private soldiers, and

few instances their names are cut into the marble—the only fame they can enjoy on earth ; for the private soldier dies undistinguished and often unlamented, and the deaths of thousands falling in one battle are remembered only in the cold ledger account of losses.

La Belle Alliance, a farm-house, has been rendered memorable as being the place where Wellington and Blucher met after the battle, and St. Jean, the farm-house where 1000 British wounded died, will ever be regarded with a mournful interest. The number engaged on both sides at Waterloo was probably about 200,000, with from three to four hundred pieces of artillery.

When we see, as in our travels we have every where seen, of what materials the armies of Europe are now composed—chiefly of young men, most of them between 18 and 25 years of age—it is distressing to think what a sweep of death a few great battles would make among the rising youth ! and what interest, as individuals, have they at stake !

### Excursion to Antwerp.

It had been in our plan to visit Holland—a country which I had once seen and should have been well pleased to see again. The remaining time, however, was too limited ; but we decided to make an excursion to Antwerp, which is but one hour from Brussels. Our principal object was to see some of the most celebrated pictures of Rubens.

A bright and warm day gave the country and the city of Antwerp a cheerful appearance. I was the more willing to see it in that guise, as my recollections of it were not very agreeable on account of the repulse I met with there in October 1805, when Antwerp was in possession of the French. It was a dark and rainy night, when on going for my passport I was told peremptorily, at the office of the prefect, that I must wait.

proceed to Paris; \* and I left Antwerp in the morning on my return to Rotterdam, without the expectation or the wish ever to see it again. But circumstances were now very different. We had full liberty, and I was not, as then, under suspicion and espionage. After being refreshed, we took a one-horse carriage—called here a *fiacre*—and drove to the two churches where we were told that the pictures of Rubens would be found; but we were only partly successful. We found indeed some fine pictures of Rubens, but the two which we most desired to see had been taken down and placed in the hands of the cleaner, whom we endeavored, but in vain, to induce to deviate from his rule. The two pictures were, the elevation of the Saviour upon the cross and the descent from it. Of the former, however, we saw a good, small copy, by Rubens himself, in the public museum here, which has a very extensive collection of pictures; some of them are very fine, and several are of very large dimensions.

Among those of great size, there is one representing an attack by the Spaniards upon Antwerp, and its defence by its own citizens. It was a sudden assault, and wives, and daughters, and sons were witnesses to the cruel slaughter of husbands, fathers, and brothers. The picture is splendid, but very revolting, the murder seems so real. The treatment of the people of the low countries by the Spaniards was to the last degree cruel and wicked, and was equalled in enormity only by the sufferings inflicted by the same people upon the Mexicans and Peruvians.

The elevation upon the cross we saw in these rooms; it is of great size, and is a picture most distressing to contemplate. The Saviour is self-sustained in his sufferings; a heavenly serenity beams in his countenance, and not having struggled under his torture, his wounds are only those of the nails driven through his hands and feet; dreadful enough **certainly,**

\* As related in my early travels in England and Scotland, 1780; they took it into their heads that I might be an English

but the mortal agony of the thieves, especially of one of them, who has torn his lacerated bleeding foot from the spike, is too horrible even for description in words. I did not so much regret failing to see the original, for who, except an artist, would wish to study the horrors of such a scene!

This splendid gallery contains many fine pictures, but there are some which, it seemed to me, ought to be committed to the flames. Of this description, is a large and elaborate piece, at once horrible and ludicrous, the subject of which is, the fall of the rebel angels.

GENERAL VIEW OF ANTWERP.—While my friends lingered in this gallery, I drove rapidly with the guide through the principal streets, that I might obtain some just notions of this ancient and celebrated city, which has now but 79,000 inhabitants, instead of 200,000 which it contained during its days of prosperity in the sixteenth century.

In the reign of Charles V. of Spain, who ruled also the Netherlands, 2500 vessels were sometimes lying at the quays of Antwerp, and 500 loaded wagons daily passed its gates from the country. Its circulation of money was 500,000,000 of guilders,\* and 5000 merchants met daily on its exchange.

The infamous Duke of Alva, as the instrument of that cruel bigot, Philip II. of Spain, and of the Inquisition, by persecution, tortures and death, in many forms, inflicted unmitigated sufferings upon this country, which drove off many thousands of the survivors, and among them a large portion of the most valuable part of the population; thus skilful artists were transferred to England and other countries, and foreign lands reaped great advantage from the horrid reign of religious tyranny. There were 18,000 persons executed by Alva, and 100,000 fled from their country.

Antwerp has been often assailed in open war, and has been also the victim of political bargains, resulting from the intrigues

\* A Dutch guilder is one shilling and nine pence sterling, or 38

of cabinets. The last act of its eventful drama, was the destruction of the immense works constructed here by Napoleon for the purpose of making it a great naval station, and upon which undertaking he had expended £2,000,000.

In 1832, the citadel of Antwerp sustained a protracted and vigorous siege by the troops of Louis Philippe, and the brave old Dutch general surrendered only when the post became untenable. I drove to the gate, hoping to visit the scene of a conflict, which, as Europe was then every where else at peace, attracted universal attention on account of the signal bravery and skill of the defence. I was, however, refused admittance; but many things were obvious to the eye without entering the gate. Great numbers of long heavy cannon were lying at the gate of the citadel, and a large area of ground was occupied by the works, which appeared rather like a group of open forts than an inclosed fortress of stone surrounded by bastions—a citadel in the more common acceptation of the word.

We rode along the quays upon the Scheldt, which is a grand river. There was only one large vessel, a steamer, which is a regular packet to England. There were many small vessels and river boats, but no indication of great commerce. What a change from three centuries ago!

I was glad that I had seen Antwerp again, and I now left it with more favorable impressions than in 1805. As we passed out of the town I gave a glance at the public hall, I suppose it was that in which my repulse took place.

### Brussels.

We returned to Brussels, but it was only to leave it in an hour. I cannot, however, dismiss so interesting a city without a few additional remarks.

Before going to Antwerp, we visited one of its modern palaces, where we found a small gallery of very good pictures, and many other elegant objects, such as are usual in such establishments.

We saw, also, in a public square, the ancient Spanish palace, with its gorgeous internal adornments, including much Gobelin tapestry. In one of these pieces the detestable Duke of Alva stands conspicuous; he has a round face, which is not so harsh in the expression as we might expect from his character. There is a room here, in which all marriage contracts, whether of princes or plebeians, are executed according to legal forms; the parties being present, who then resort to some church, to crown the civil contract by the religious ceremonial. On the other side of the street is the palace in which the Spanish governors resided, when this country was under the dominion of Spain. Both palaces have a good degree of grandeur; their style of architecture is that of the fourteenth century, and they would be more interesting objects, if their history were not associated with that of bloody persecution. One cannot look at them without bitter remembrance of the vindictive intolerance which, only 300 years ago, consigned human beings to the dungeon, the rack, the scaffold, and the flames, on account of their religious belief or political opinions.

Brussels is one of the best built cities in Europe; its houses of stone are generally white, and in the newer parts of the town the streets are wide and clean. The upper part of the city is magnificent. The park is a very large tract in the midst of the city; it is, in fact, a superb forest, with shaded, gravelled walks. Except in Paris we have seen nothing on the Continent to equal it in extent, and it is superior to Paris in the size and richness of the trees. It is surrounded by palaces, public offices, and principal private houses. The town is ornamented with twenty public fountains, all embellished with sculpture. The lower part of the city lies on a flat, has narrow streets, and is intersected by several canals connected with the great canal of the Scheldt.

Among the manufactures of Brussels, those of carpets and lace are most remarkable. A few years since 10,000 persons were employed here upon the making of lace. We visited a ~~manufacture~~ of this kind where 2000 females were employed.

We saw 33 of them at work in one room. Most of the fine work is done by the needle; it is very trying to the eyes, which rarely serve more than twenty years; the women do not become blind, but their eyes lose the delicacy of vision which the manufacture requires, and they are, therefore, long before middle-life, incapacitated from pursuing this employment! There are few examples of mere luxury in dress, which are so expensive to the most important of human senses; it would be happy if the same amount of industry and skill could be turned to account in some other branch, the prosecution of which does not impair vision. Small samples of lace which we purchased as gifts for friends at home, cost but a trifle here compared with the price charged in America.

Brussels has 125,000 inhabitants, or, as we were assured here, 135,000. It is the residence of the Belgian king, Leopold. The English reside here in considerable numbers. The beauty of the city and country, the comparative freedom of the people, and the short distance in time from the two great capitals of Europe and the world, sixteen hours from London, and ten from Paris, present great attractions both for those who wish to economize their resources, and for those who are able and disposed to expend their money freely. It was not in our power to visit the Royal Academy of Sciences, of whose excellent transactions we have many volumes at home; nor did we succeed in obtaining an interview with our correspondent, its distinguished secretary, M. Quetelet, whose engagements, at the moment, did not permit him to call, nor did ours allow us to wait for his leisure.

Brussels has a large public library, an astronomical observatory, a medical school, a botanic garden, a foundling hospital, a central school, and other important public institutions. We felt that we had done no justice to this very attractive city, when we resolved to leave it that very evening at six o'clock.

### Brussels to Paris.

August 12.

In addition to the motive from economy of time (as only three weeks of our allotted period in Europe remained), we were very desirous to avoid the excessive heat, and, as far as possible, the dust also; we therefore decided on a night ride to Paris, as we could endure two nights out of three in the cars having reserved only one for our beds. That portion of the country through which we passed before night was very beautiful; but the twilight soon yielded to the light of the moon. I can, however, say little more of our route than that we travelled through Mons, Douay, and Amiens. We were not annoyed by that lateral vibration of the cars which was so uncomfortable between Cologne and Brussels; on the contrary, the motion was so quiet and gentle that a pleasant oblivion came over us. We were transported along like prisoners,\* unknowing and unknown. The party in our coach were all American, except one French gentleman, who spoke not one word, and probably understood as little of our conversation. In addition to our own proper family, we had Dr. Green and Mr. Douglass, of New-York.

### Arrival at Paris.

August 13.

Morning disclosed again the beautiful fields of la Belle France, and at half past five o'clock, eleven hours from Brussels, we were safe through the city gate, and arrived at the custom-house, the same that we entered from Boulogne April 1.

We were set at liberty within half an hour, which was con-

\* And such we are, in fact, in most European cars, as the key is generally turned upon us as soon as all are seated.



sumed in examining our baggage. Only three or four trunks of the party were opened, and mine was not examined at all.

The system of passports and custom-house inspection is annoying to travellers, without any adequate advantage for security or revenue, and ought to be abolished. In general, however, we have found it to be conducted with much lenity, and with very little vexation.

**HÔTEL MEURICE.**—As Paris was reported to be overflowing with strangers, François had, by correspondence, secured for us rooms at Hôtel Meurice, so named from its master. It is situated in the Rue Rivoli, opposite to the gardens of the Tuileries, and has no obstruction in front to impede prospect or ventilation. It is a favorite house with both English and Americans. During the present season there have been here many more of the latter than of the former; and I have repeatedly mentioned that we have found this to be the fact wherever we have travelled.

Americans visiting London, of course pass over to Paris, and many proceed to Italy. We are now known as a distinct class of travellers, and are generally received with attention. This results from the general courtesy of manners in Europe; and Americans not being stately and exacting, and spending their money freely, are welcome guests.

Our attentive friend, M. Bossange, sent us immediately our letters\* of a later date than those that had been sent to Cologne, which, as I have already mentioned, were in due time returned. Our first day in Paris, after so long and active a course of travelling, was given to repose and refreshment, and to the interchange of kind salutations with friends, both French and American. Of the latter we found a number of individuals and families whom we had known in America—college friends—our own people from Connecticut, from New Haven even, and from Boston, Providence, New-York and Washington; we saw also our diplomatic representatives, Mr.

\* Death had been busy among our friends at home, I families.

Rives, and Mr. Sanford. I had the pleasure of meeting an early fellow traveller, Mr. Elisha Riggs, with whom I crossed the ocean to Liverpool in April, 1805; and after forty-six years, now in the evening, as we were then in the morning of life, we were permitted to meet again in Europe.

Paris had now put on its beautiful livery of green: its groves were in full leaf, and the view in front of our hotel presented an almost uninterrupted forest scene, dotted with the numerous bridges over the Seine, and bounded by palaces and public buildings.

I had only a few days more for Paris, and had determined to proceed to London, where I wished to pass the time that my companions preferred to spend here. In my case, therefore, there was leisure for the notice of only a few more public objects, in addition to those which were mentioned when we were here in April. I have not attempted a description of Paris—an undertaking equally arduous and unnecessary, as it has been done so ably by many other writers, historical, statistical, and miscellaneous; among the latter of whom, Sir Francis Head, in his "Fagot of French Sticks," is one of the most eccentric, graphic, and witty. In addition to what I formerly wrote, I shall mention a few public institutions, with some passing remarks.

THE LOUVRE.—Who has not heard of the Louvre and who can describe this most magnificent collection!

When we were here before it was not accessible, as it was undergoing repairs. Now, on the sole condition of showing our passport, we were admitted, and passed around through its spacious and almost endless apartments.

A mere catalogue of the objects in the Louvre, with the most brief description, would swell to a volume. The building actually occupied is situated along the Seine; it forms part of a vast unfinished quadrangle, upon the usual plan of ancient castles and palaces. In various stages of its progress, during many centuries, it has been used both as a castle and a palace.

From its windows, or from the windows of a building occupying the same place, the infamous Charles IX. fired upon his Protestant subjects during the massacre of St. Bartholomew, in August 24, 1572, crying, with the voice of a fiend, "Kill! kill!!"

The Louvre, as a grand museum of the arts, is indebted chiefly to Napoleon and Louis Philippe. Even as late as the reign of Louis XVI., the greater part of the Louvre remained without a roof. The magnificent bronze gates are due to Napoleon. He and Louis Philippe did more for the embellishment of Paris than any monarch, except Louis XIV. Had we seen the Louvre when we were first in Paris, it would have made a much stronger impression than now; and this remark can be, in a degree, extended to all its various contents, whether statues, ancient or modern, antiquities of various ages and nations, Egyptian, Assyrian, Etruscan, Grecian, Roman, Mexican, or Peruvian, or of whatever name. Exquisite objects, in curious arts, may be included—cameos, gems, crystal vessels, and ornaments. Even at this late period of our tour, the Louvre has, however, made a very strong impression. It is a glorious spectacle, there is no museum that can compare with it, except that of the Vatican. The British Museum is not a fair subject of comparison with either of these, as its plan and main objects are different. The Louvre is strictly a museum of the fine arts and of antiquities. Libraries it has not, nor does it include natural history, which is so abundantly illustrated at the Garden of Plants, and in the other excellent institutions in Paris. That hall of the Louvre which is called the long gallery is 1332 feet in length, over a quarter of a mile, and 42 feet wide, all seen in one view. The walls are entirely covered by pictures, amounting in the aggregate to 1408, of which 380 are French, 540 are Flemish and German, 480 are Italian, and eight are modern copies of ancient pictures. Only the works of deceased artists are admitted into this museum, which was formed principally by Napoleon, and enriched with most of the *chefs d'œuvre* of Europe. The greater part of those foreign pictures

were claimed and removed by the Allies in 1815; but they are hardly missed; for, even now, this gallery is one of the finest in the world.

I have already had occasion to remark that in our tour we have seen a number of pictures and statues in various cities, particularly in Italy, which, having travelled to Paris, were restored after the Russian campaign and the battle of Waterloo. There were, however, so many fine things left behind in the different galleries, from which those pictures had been taken, that the omission would hardly be noticed there, any more than their absence from the Louvre is observed now, except by a few scrutinizing artists and connoisseurs.

In despair of making any progress in this vast collection, I shall not even attempt to describe any particular pictures, and thus I must pass by the grandest gallery perhaps in the world, because I cannot do it any justice, and for a still worse reason, because so many galleries of less importance have been visited first. The room called *Salle de Bijoux* is very rich in the rare and costly things which kings are wont to collect, and which are here so numerous and beautiful that they surpass the similar collections in the Pitti palace in Florence, but they are inferior in splendor and magnificence to those we had lately seen at Dresden. There is here, however, a profusion of gems, diamonds, sapphires, rubies, &c.; and the vessels fabricated from rock crystal are numerous, large, and splendid.

The Egyptian Museum is particularly rich in every thing which illustrates the history and manners of that country. The gallery of ancient statuary, and of modern copies, is so similar to what we have seen in Italy, that I will not enter into particulars. There is nothing here more surprising than the stupendous sculptured stones from Nineveh, sent out by M. Botta, the French consul. They are not so numerous as in the collection which we saw in the British Museum, but there are figures here which surpass in magnitude any that are there; at least such is my recollection. The winged bulls, with a

lion's head, and the figures on the reverse of the stone panels are of such vast size, that we are astonished that they could have been transported without injury from the other side of the world. A tall man is a dwarf by their side.

THE PALACE OF THE TUILERIES.—I am not about to attempt the description of this abode of departed kings. Within my own time it has been inhabited by Louis XVI, by Napoleon, by Louis XVIII, by Charles X, by Louis Philippe, and by Napoleon III. It was inhabited also by several monarchs anterior to Louis XIV.

The principal object which we had in view, was to identify the places which had been associated with so many important events, and particularly with the sudden and disastrous termination of the reign of Louis Philippe. Those events, having happened so recently, are fresh in the recollection of all. We walked with deep interest through all the principal apartments of the palace. It is of great extent, contains magnificent rooms, and the splendid frescoes on some of the walls are of the age of Louis XIV. The palace, at the time of the flight of Louis Philippe, was sumptuously adorned with pictures, and all the saloons and halls were decorated with the most costly furniture. But the irruption of the mob of Paris, following almost instantly the retreat of the king, laid every thing waste. The details, fully published at the time, are very painful, and have stamped disgrace upon the licentious multitude who waged war against the arts as well as against the monarch.

Nearly every thing in the palace was destroyed. The throne and the most beautiful and expensive furniture were thrown out of the windows and demolished. Mirrors and tables were left, and some few sofas and chairs, for the accommodation of the savage rabble, who mounted with their muddy feet upon beautiful damask seats.

They revelled there day and night, in drunkenness and licentiousness, and added another proof (alas, there were too

many before), that no beings can be more fierce, savage, and brutal than a Paris mob.\*

The palace itself was not much injured on this occasion; the rooms remain with comparatively little mutilation, and they were rendered more decent by furniture brought into them after the catastrophe. The round-table, covered with green cloth, at which the king sat in council, with his ministers, is preserved in place; and at this table the fatal resolution was taken to forbid the banquets of the people, and the popular addresses which would have followed. Had they been permitted, perhaps, it would have proved a safety-valve to French excitability; the democratical element might have spent itself in windy harangues, and possibly the crisis might have been averted. Vesuvius is more dangerous when the lava has congealed in the vent and sealed it hermetically, than when it is free to blow off its gas and steam.† We felt interested to see the stairs by which the king and queen descended, and the door by which they went out, when they quitted their royal abode, and royalty itself for ever. We descended the stairs and walked out of the middle front door of the palace, where they passed; we then followed their mournful way—

\* February 28, 1853. Within a few days I have read again (for I had perused it many years ago) Clery's *Journal of the imprisonment of Louis XVI.*, with his queen and the rest of the royal family, in the Temple prison, during the four months that preceded the execution of Louis in January, 1793. Probably no record, ancient or modern, can equal this in the exhibition of vulgar, cruel, and insulting brutality towards those innocent victims of popular vengeance. Their privations were such as the vilest convicts for the most atrocious crimes would not be subjected to, and the orders came not from the rabble, but from the high men then in power, most of whom perished in their turn under the axe of the guillotine, a fate which many of them richly deserved.

† It remains to be seen whether France is safe from convulsions, when hermetically sealed again, as now. France is a political Vesuvius, which has had many explosions, and may have many more (August, 1853).

their *via dolorosa*, across the garden of the Tuileries, to the column of Luxor, where they paused a moment on the very place where Louis XVI. bled. A cab then conveyed them to St. Cloud, whence they proceeded to Versailles, and fled as disguised fugitives to the coast, and by a perilous boat voyage to England.

Verily the monarchs of France, during the last 60 years, have been roughly treated, and all but one by their own polished people: Louis XVI., beheaded; Louis XVII., the dauphin, believed to have been murdered in prison; Louis XVIII., expelled from France; Napoleon, deposed by the allies; Charles and Louis Philippe, expelled.

### Hôtel de Ville.

August 15.

We obtained admission to-day to the memorable city hall, the Hôtel de Ville. I was not prepared for such an exhibition of grandeur and regal splendor. The Hôtel de Ville is a building of very large dimensions, and of great height; it was begun 300 years ago, but was not finished until 1628. Its position is very near the Seine. We naturally think of a city hall or town house as a place of business. Such is in fact the Hôtel de Ville de Paris. There are numerous offices here for the transaction of public business; but there are also magnificent state apartments, with all the decoration of the most sumptuous palaces, reception rooms, a dining-room, a ball-room, &c., all of them large and splendid.

Louis Philippe, who followed the example of Napoleon in his efforts to aggrandize Paris, expended very large sums in enlarging and adorning the Hôtel de Ville. The mob in 1848 took possession of this building also, and it remained for some time in their hands. When they were proceeding to deface it, they were appeased by being reminded (a happy thought of some astute observer) that it was *the people's own palace*, and that it was folly to destroy what belonged to them already; this

suggestion arrested their violence. The Hôtel de Ville has been memorable as the scene of many important political events. Here, in 1830, La Fayette proclaimed Louis Philippe the *citizen king*. Here, that atrocious monster Robespierre shot himself, and his brother leaped in despair from the window, but neither of them was killed; they were both dragged to the guillotine to which they had consigned many thousands of innocent people. The building is highly ornamented with paintings and statuary, and in the dining-room and ball-room, there is a very great number of chandeliers, of the most elegant and expensive patterns. A grand fête was given here a few weeks ago, by the magistracy of Paris to the lord mayor of London, and to a great number of persons of high distinction who were invited to cross the Channel on the occasion.

HOTEL CLUNY. August 14.—We visited this old abode of royalty, probably the most ancient in Paris. It is said to have been a palace in the time of the Romans during their dominion in Gaul, and it is even averred that it was occupied by Julius Cæsar. The site of the Roman baths is pointed out in the basement of the building. The appearance of the architecture in the basement is Roman, but we have seen so much of Roman buildings in Rome itself, and in other parts of Italy, that these more obscure structures excite less interest than they would otherwise do.

This old palace is filled with curious antiquities, amassed, as we were informed, chiefly by the efforts and at the expense of a private individual. Ancient carved oak is here seen in perfection, upon the doors and panels. Immense pains and great skill were bestowed in former times upon these carvings in wood, of which we have elsewhere seen many examples.

In Cluny, there is much ancient porcelain and glass, and armor of past ages, and there are many articles that have belonged to individuals who are known. Here is a prayer book of Charles IX.; one would think that the wretch could never have prayed; but sometimes fanaticism and cruelty are united in the same morally distempered mind.



**THE ARMORY.**—This is a place of great interest. It is not an arsenal in the common acceptation of that word—that is, a magazine of weapons to be drawn forth to supply an army in case of war. It is rather a museum of the implements of death, which have, in many cases, been drawn from remote ages, passing through the various stages of improvement in the art of human slaughter; for such is war, in whatever mode it may be carried on, whether by the savage with his war club and tomahawk, crushing and cleaving human skulls, or by the refinements of mechanical science, throwing projectiles with fatal precision, and followed perhaps by a still more fatal explosion. It would seem as if every form of weapon to be managed by the human hand was here, whether sword, knife, dagger, pistol, musket, or cross-bow; but I shall not attempt to describe them.

Among the swords, pistols, and muskets, are many that have been sent as presents by foreign potentates; they are often adorned with a profusion of diamonds, rubies, sapphires, and other gems. One musket, in particular, has the breech covered with diamonds; a space as large as the palm of a man's hand being studded with them.

There is here a series of cannon, from the earliest and most simple, made of wrought iron, down to the most improved and beautiful modern castings. It is a curious fact, however, that the great guns now constructed to throw balls of enormous size are made of wrought iron, thus returning to the primitive method, although they are manufactured in a very different way. Some of the Turkish and Algerine cannon found here, are of astonishing length, and highly ornamented with numerous figures and inscriptions. In one of them there is a deep indentation made by a cannon ball; this cannon is of bronze, and the impress of the ball corresponds to about one-sixth part of its diameter; the cavity made by it is quite smooth, as if it had been turned by art.

The iron chain which the Turks extended across the **Dan** to support their bridge of boats during their siege of **Vien**

here; like all chains made for similar purposes, it is of very great strength. Among innumerable daggers preserved in this armory, they show you that used by Ravaillac in the assassination of Henry IV.; it is long, slender, and acute, and like the rest, is highly polished.

As in the Tower of London, ancient armor is here mounted on figures intended to represent real life, both horses and men being clad in brilliant panoply. The armor of Louis XIV. is shown; it is, however, adapted to a much smaller man than is represented by the pictures and statues of that monarch; for, the artists do often exaggerate the size of those whom they wish to exalt. Here is also the bright armor of the Maid of Orleans. Who could see it without emotion! It seems, however, ill adapted to the female form, the figure being rather that of a man.

In this armory the horses, as well as the men, are more or less completely clad in mail, and some are entirely covered, including the head and neck. One of the horses was protected by movable plates, adapted like the scales of a fish, and in another, the covering flared outward at the bottom in a solid and rigid form, shelving like the roof of a house, so as to protect the animal. In all such collections we find shirts of mail made of wires looped together. We have seen many examples of the huge two-handed sword, five or six feet long, and requiring a giant's strength to wield it.

We were in these rooms, in company with a throng of French soldiers off from duty, who seemed very curious to examine the various instruments of death.

CONSERVATOIRE DES ARTS ET METIERS.—This grand establishment does great honor to Paris. As it was a fête day, we knew that it was closed. Although at first decidedly refused, we tried the silver key; a five-franc piece threw the bolt back, and we enjoyed the advantage of a view of the place without the pressure of a crowd. The Conservatoire is now arranged in a very ample and new stone building, all finished except the portico. Like the other institutions of Paris,

this is on a vast scale: the apartments are numerous and large, they are in the form of galleries, with walks or alleys between the ranges of cases.

A tour through the whole is a very long walk, especially if the observer doubles or triples his track, by passing along all the separate rows of cases, of which there are usually three in each room, parallel to each other; the inspection, even if it should not be very detailed, would occupy the hours of one day, and would lead several miles. This establishment is devoted to the illustration, by instruments or models, of all the arts, and the sciences to which they appertain. In so vast a field, I can only select a few examples by way of illustration.

*Weights and Measures.*—All the standards of weight and measure, and their parts, are here. The original metre, with its subdivisions; the original litre, with its parts; the gramme and its multiples, all are here.

Here also are, to a great extent, the weights and measures of other countries. Those of the United States, with a large balance, were in fine order, and compare very well with those of other countries.

*Steam Engines, Locomotives, &c.*—All that relates to this great subject is very fully illustrated. There seems no limit to the number and variety of furnaces and boilers, of working steam engines, of locomotives and cars, and of many other machines in which steam is the motive power.

*Agriculture.*—Ploughs, harrows, shovels, rakes, axes, drilling and planting machines, fans and other contrivances for winnowing wheat and other cereals; and, in short, all that belongs to the rural field, the farm, the barn, and the garden, and to ornamental grounds, has here either originals or models.

Thus, without farther specification, we may run through all the mechanical arts and their applications, and find that none of them have been neglected.

In the same manner, the vast kingdom of the *Astronomy* has all its great departments illustrated. *Optics*, prisms, mirrors, n telescopes, pn

necessary to the assistance of vision and to the illustration of its laws. *Geometry*, with its forms and its palpable diagrams of lines in a tangible shape; and *Electricity*, with its appropriate machines. *Chemistry and Chemical Arts*.—This important department has received its proper share of attention, and is furnished with the requisite apparatus and preparations. These are only a few instances in the wide range of the sciences that relate to matter, and the machines are not mute. They are made to speak and impart instruction through an able corps of engineers, each devoted to a particular branch. It is worthy of observation also, that all the machines capable of motion can be made to move by steam or some other power existing in the establishment, and thus to prove the truths they were cited as witnesses to support.

It is high time that our government should institute a conservatory of arts and trades at Washington. The collections in the patent office would serve to make a beginning, but eventually a distinct building should be constructed of large dimensions, with ample space around it, so that it may admit of extension as the demands of the country and its productions in arts and practical science may require. Such an establishment would be truly national, and would form a strong bond of union between all the members of our great confederacy.

### Paris to London.

August 16.

The time had now arrived for my departure from Paris the rest of the party, as I have intimated, preferring to remain a few days longer. Dr. Green and Mr. Douglas, whom I have mentioned as our fellow-passengers from Brussels to Paris, were my companions again.

I took leave for a short time of our party, not forgetting a final one for our worthy François. We decided to go in the to Boulogne, much regretting that the arrangement of days from the two vessels did not permit me to go by

Calais and Dover, as I had intended, for I had not a day to spare. The weather was fine, and we took our passage through to London.\*

Our little steamer was crowded with passengers, chiefly French, going over to see the great Exhibition. The Channel was smooth, and few of the passengers were sick. We stepped ashore at Folkstone, at three P. M., after a passage of two and a half hours. All the dutiable articles of our party were collected together in Paris, there to be placed under seal, and shipped from Havre to Liverpool, for the United States, and thence to go home with us in the steamer, without being opened in England. This arrangement saves a great deal of trouble, and some expense. The examination of baggage at Folkstone for our large company occupied nearly two hours. The transit of my own was made very easy by the unexpected kindness of a gentleman (Mr. S. J. Mackie, of London), who, hearing my name, recognized me as a friend of Dr. Mantell. Upon his assurance, my luggage was passed unopened.

### England.—Folkstone to London.

Once more in the English cars, we now passed by daylight over a region through which we had before rode in the night, and I was glad of the opportunity of seeing the country. It is composed of chalk hills—the chalk appearing, to a great extent, on the surface. It is beautifully varied by hill and dale; and the mature crop of wheat is here also being gathered in. The rural scenes were beautiful, but not more so than in many of the continental countries through which we had travelled, especially in Lombardy, Switzerland, and Germany.

The cars of the first class in England are generally not

\* Fare through 63 francs and 3-100, baggage 3 francs 53-100, making 66 francs and 56-100—about \$13, or about 5 cents a mile land and water included.

better than those of the second class on the continent, especially in Germany. We arrived safe at the London station at seven P. M., whence we departed for Paris on the last day of March. We experienced at once the comfort and the convenience of the excellent railroad police of England. One of the officers came forward of his own accord, took charge of our baggage, and without delay summoned a cab, whose price being fixed by law, he told us what we had to pay at Chester Square, the end of our ride, at the distance of two or three miles. He saw us comfortably placed in the carriage with our baggage, and civilly bade us good evening.

ARRIVAL IN CHESTER SQUARE.—To a home already endeared by my previous residence there, and to which I was again most kindly invited, I drove without hesitation, and was received with a very warm welcome, but with a kind reproof for lingering so long abroad, and leaving so little time for England.

I found Dr. Mantell uncommonly well, and very spirited, and we entered at once upon a wide range of conversation. In this most interesting field he was\* exceedingly winning and instructive. The stream of his thoughts flowed on and on, rich, grand, and inexhaustible. It was, moreover, delightful to me (as it was on my return from Holland in 1805), to find myself safe again in Old England, where there are no more passports nor surveillance.

This part of London is new, clean, airy and quiet, and this house is full of treasures of nature and art. I had enjoyed much on the Continent, but this was now *a home*, and in it I was happy.

\* I am, alas, compelled to use the past time! He had long been a martyr to a severe neuralgic affection, induced by a fall many years ago, from his carriage, and at times suffered intense pain, which gradually broke down his fine constitution. We were, however, permitted to have two weeks more of high social enjoyment together. He died November 10, 1852, aged 64, his last letter to me having been written about a month before his death.

## London.

The morning dawned on the Sabbath, and I found in the vicinity an Episcopal church. The building was plain, very plain, the people not fashionable, but in appearance very respectable, grave, and devout, and both they and their minister evidently in earnest. It was a pleasant beginning again in London. Business followed the Sabbath, and I took a *hansom* (named after the inventor) to convey me to the counting-room of the Barings for my letters from America. A hansom is a low gig, but a foot or fifteen inches above the pavement; a door of wood, in halves and hung on hinges, is shut and opened by the passenger himself, the driver is perched behind, on a seat higher than the carriage; he drives over the top, and does not leave his seat.

*Call at Clapham.*—A return call to some interesting friends of Dr. Mantell, of the family of Allnutt, who had met us at his house during our transit to the Continent in March, now took us to the beautiful suburban village of Clapham. Our call was rendered very pleasant by the warm welcome of a happy family, living in a very delightful country residence contiguous to Clapham Common. All the peculiar embellishments of an English rural abode are there; very extensive fields, laid out in walks or drives; water, groves, flowers, birds, and, among the trees, grazing cattle; the high heaven above, and the green earth beneath! In the house, books, pictures, and other rare objects of art, refined manners, and elegant hospitality.

I was happy to visit Clapham again; for it has had a strong hold on my better feelings ever since my early residence in London, especially on account of its association with the memory of Lord Teignmouth,\* Mr. Henry Thornton, and Wilberforce. Dr. Mantell, at my request, was so k

\* Once Sir John St. John, Governor of India.

direct his servant to drive by those large and fine houses, which were there forty-six years ago, and in one of which, Mr. Thornton's, I was a favored guest in the autumn of 1805. I was admitted to the domestic intimacy of a refined, religious family among the higher gentry, passed the day and night, and spent the morning, till dinner of the next day, in the enlightened society of Mr. Wilberforce, whose residence was at the next door. There, despite of time, stand the still stately mansions. There is the same circular coach-drive in front of Mr. Thornton's house; and, no doubt, in the rear, are the same ample grounds and gardens, in which I then walked, as at Mr. Allnutt's now. But all who then adorned those noble houses are gone—their delightful family circles are broken up; the great and good senators no longer guide the councils of their country; and the eloquent orator, who swayed the House of Commons, and held them spell-bound, as much by his goodness as by his mental power, is now, we trust, a member of a higher assembly. We drove by the site of Lord Teignmouth's house—for the mansion is no longer there—and it is a subject of exultation to Wiseman and his friends, that on the very spot where the Bible Society was founded\* a Roman Catholic chapel has been erected!

Such are the vicissitudes of human affairs in this ever changing world.

Clapham Common appeared to me more overgrown with wild shrubs and natural grass than in 1805, although architecture has embellished its borders. Returning, as on our way out, we drove through one continued street, or succession of streets, which now join Clapham to London. In my early time, it was all country between, for several miles; now Clapham is but a suburb of London.

We passed Vauxhall Bridge, which was not there in my youth. It is a large and beautiful structure. The street leading from it towards the country is ample, and very handsome, be  
fine houses. It was evening twilight as we



passed Vauxhall Bridge, and I then saw a row of lights on another bridge, which, on inquiry, I found to be that of Westminster. In 1805, this was the highest bridge—the furthest up stream—on the Thames, in its course through London; and as you ascended still higher, there was no bridge until you came to the wooden one at Battersea, opposite to Clapham. London has absorbed the rural villages that stood all around it, here and there, like sentinels.

GENERAL IMPRESSIONS OF LONDON. *August 18.*—I have now passed again through several of the principal streets of London; through the entire length from the extreme west, and from the railroad station there to the extreme east, and the similar station there. I have traversed the Strand, Ludgate Hill, Fleet-street, Cheapside by the Exchange, into Leadenhall-street, Bishopgate-street, through High Holborn, Oxford-street or Road, Picadilly, through the parks, and several of the public squares, and my general impression is, that of most decided improvement.

The city is, in general, extremely well built. I suppose that the streets, except a few that have been enlarged, are not any wider than formerly; but in comparison with those of most continental cities, they appear to be so, and there is nowhere else in the world such manifest evidence of wealth. The thoroughfares are more thronged than formerly, and well they may be, since the population has more than doubled since 1805. It was thought then to be approaching a million, but a recent enumeration shows that it now exceeds two millions by two or three hundred thousand.

In my youth, there were no public vehicles for the city and Westminster, except a limited number of indifferent hackney coaches. Now, the coaches are far more frequent, and in a far better style than then. Cabs, and hansoms, and omnibuses, then unknown, are now numerous; inconveniently so on account of pressure. In riding through Cheapside, recently, there was such a wilderness of these different ~~car-~~  
ges, that the space seemed quite full; we w

stop frequently, and wait a movement of the sluggish flood. Although the omnibus has, usually, but one horse, it often carries an enormous load—there are people on the top as well as filling the inside. In 1805 there was only a slender corps of watchmen; often these were old men, and there was no appearance of an active police. Now, some of the policemen, introduced by Sir Robert Peel, are almost always in view. They are generally young men, distinguished by a blue dress with white trimmings, and they are at hand, night and day, to give information and assistance, and to aid in suppressing disorder; but, in general, they have no weapons, except a club, unless in extreme cases, when they carry a sword.

The constant possession of deadly weapons would, in case of affrays, naturally lead to bloodshed.

In Paris, gendarmes have always swords by their sides, and in case of disturbance, would not hesitate to use them. London is now, in general, a very quiet city, and very few soldiers are seen in the streets. In this last respect London forms a very strong contrast with Paris, and, indeed, with most of the cities of the continent of Europe.

*Excursion on the River.*—Dr. Mantell kindly proposed an evening excursion on the Thames. In 1805 we had only wherries or light row-boats, or for freight, still larger and more tardy craft. The boatmen upon the river formed a large and active class, and we were much indebted to them, as at Venice, for comfortable transportation, not only from one part of London to another, but to Wandsworth and Clapham above, and to Greenwich and Blackwall below, as well as to other places. Our progress was then comparatively slow, and the capacity of the boats for passengers very limited. In the present excursion, we stepped on board a small steamer, perfectly plain and unadorned, but sharp in the bow, and rapid in movement. Her deck was already full of people, and away she dashed down the river rapid as a race horse, and the seven bridges were passed in quick succession.

In 1805 there were but three bridges. London Bridge was

then, as now, farthest down the stream, and above this bridge sea-going vessels did not ascend. Then going up stream, there was Blackfriars Bridge, opposite to the middle of the city, and last of all, Westminster Bridge, near the Parliament House, and the famous old Abbey. London Bridge has been rebuilt with granite. Westminster Bridge is in decay: Blackfriars is becoming infirm, and both will, probably, at no distant period, be rebuilt. Now, we have seven bridges instead of three. Vauxhall Bridge, built with iron arches and covered with stone, is highest up the river. Next, descending, we pass Westminster Bridge, and Hungerford Suspension Bridge for foot passengers only, comes next. It is a beautiful iron structure, as light and graceful, as if it were only a piece of fancy work, while it is firm as iron and stone can make it. Below Hungerford Bridge and above Blackfriars there is still another called Waterloo Bridge; it is built of granite, and is a capital structure for vehicles of all sorts as well as people. Between Blackfriars and London Bridge, there is still another, a new one, it is the iron bridge of Southwark; this is also for vehicles. Thus the wide spaces formerly existing between the bridges, which rendered the aid of boats necessary, are now so much diminished, that the pedestrian is nowhere very far from a bridge.

During our excursion we saw numerous steamers plying up and down the river; they were full of people; on the decks of some there were such dense masses of human beings, that there seemed not to be room for another individual. For the accommodation of the boats there are floating bridges along the shores, wharf-like, placed at short distances apart, where the steamers touch, discharge their passengers, and receive more.

We passed the new parliament house, extending several hundred feet along the river, an immense Gothic range, profusely adorned with delicate and complex tracery carved in stone.

A little removed from the shore rise the venerable towers of Westminster Abbey, in which I was often accustomed to meditate when here in my prime. Farther down the west bank of the river, - the long, and of

of Somerset House; it was a palace in the age of Charles II., but has been, for many years, devoted to public offices, and to afford accommodations for learned societies and for the fine arts.

On our right, we saw Lambeth the ancient Episcopal palace, the residence of the Bishop of London. Contiguous to it, is the dark and frowning stone tower of the Lollards, which, in ancient times, was used as a prison. Then, again, on our left, rise the monument of London and the solemn dome of St. Paul's, looking just as they did forty-six years ago.

Evening had now set in, and the lighted bridges shone splendidly, their illuminated parapets being disclosed beneath the arches, as we passed under them. The bending shores were brilliant with innumerable fires, shining from houses, shops, manufactories, and palaces, and the lights of the streets. This vivid illumination gave evidence of a vast and active population crowding the shores, not indeed of the largest river in the world, but of the most opulent; a river, from whose banks emanates a more potent and extensive sway of empire than the world has ever known. Not one of the empires of antiquity could compare with it; nor even, in modern times, the stupendous fabric of Napoleon, which collapsed, and was crushed by its own weight.

How different the scene, when, before the advent of the Saviour of men, the stern Roman landed in Sussex, in a heathen island, and encountered a barbarous people "with pinked and painted hide," and clothed with the skins and fur of the native animals of their forests. What a contrast between Boudicea and Victoria!

### Excursion to the Isle of Wight.

August 20.

We left London at eleven A. M., from a station house in passing out of the city at an elevation above the sea, in a portion of the metropolis, not, however,

very well built, and the houses not remarkably high. We arrived at Gosport, opposite to Portsmouth on the English Channel, at two P. M.—90 miles, 30 miles to the hour, stops included.

Our course was over the chalk, and we saw some sections in the cretaceous strata; we passed also upon the Bagshot sand, and the tertiary was beneath the rails. But who can study geological features, while flying by them in the cars! Fortunately I had studied long and carefully the geology of the south and southeast of England, in the admirable works of my learned friend, and with him for a companion and guide I need not fear to err.

Some parts of the country were sandy and barren (Bagshot sand), or had only a light sandy soil; but as we advanced, the land became more fertile, and was beautifully varied with hill and dale, valley and lawn.

We passed near the ancient town of Basingstoke, and within sight of the venerable Winchester, once a Roman station, long the seat of Saxon and Norman dominion, and the home of learning and of educated men. It was with much regret that we relinquished the design which we had formed of stopping there.

Gosport is a considerable town opposite to Portsmouth, and derives its importance chiefly from establishments connected with national defence; it is auxiliary to the more important naval station of Portsmouth.

In a small steamer we passed through the harbor to Ryde, in the Isle of Wight.

In the harbor of Portsmouth there were several large men-of-war moored, as prisons, and as receiving ships, and to my great surprise and gratification, the *VICTORY*, Lord Nelson's flag-ship at the battle of Trafalgar, which was fought October 21, 1805, lay before us at anchor. On the 14th day of September, 1805, forty-six years ago, I saw this same ship lying at anchor at St. Helens, between this city and the Isle of Wight.

I was in an advantageous position upon the walls of th

fortifications nearest the sea, when I saw Lord Nelson step on board his barge, then in waiting, to convey him to the *Victory*, which, with Admiral Collingwood's ship, the *Sovereign*, of 110 guns, was in full view. This was Nelson's adieu to England, as he fell in the great conflict.

Little did I expect ever to see the *Victory* again. She looks as she did on the day of the battle, when from her open port-holes the storm of cannon balls was poured into the hostile fleets of France and Spain. She appears in fine order, being completely rigged, painted in black and white stripes, and colors flying at masthead. Doubtless she is preserved as a national monument in honor of the great victory, and the great naval commander.

RYDE.—Half an hour from Portsmouth placed us in the beautiful town of Ryde, rising elegantly from the water, and surrounded by groves and tasteful rural dwellings. The water was alive with small sailing vessels—yachts—which have contended for the Queen's prize of one hundred pounds, and on Friday next there is to be a race between them and the New-York yacht *America*, Captain Stevens, who has come over to challenge a trial of speed.

The English papers speak in the highest terms of the completeness and beauty of the *America*, and of her great speed in the excursions she has already made in these waters, and they anticipate a victory for her; how infinitely to be preferred to a triumph at the cost of human blood. The weather was very fine, and in a crowded state of the town of Ryde, we found lodgings in a very small house, with miniature bedrooms, and shared a common parlor with several gentlemanly Englishmen. Even a parlor in partnership is a luxury unknown on the continent, where there is never a sitting-room in common, and no alternative between a hired parlor and your bedroom. This is generally the case in England also, the coffee-room and news-room excepted.

Ryde is a beautiful place, looking young and fresh, like our new American towns. As it rises so rapidly from the

views are steep and average height by the shoreward; they are broken into good exposures and unmanufactured carriage ways. The masses are composed of a thin-bedded limestone of the Niagara, Onondaga formation, or they are covered by a deposit of the same rock. They are all dead and many of them of regular construction.

Light is a summer favorite resort for the party of London was wont to enjoy the fine air and splendid views of both sea and water scenery. The town has a northwest aspect and looks directly towards Plovermouth. The strait, called the Strait Sea, is four miles wide and is all in view from the English Channel to the southeast, and beyond to view to the southwest. It is a great rendezvous for ships, and along with Plovermouth is a principal resort for the navy. A famous sea-dog's bay was named at an early date before the discovery of America, and named for the Malabarian.

The Strait Sea presents a scene of great activity with the great ships and smaller sailing vessels and the fishing boats, and a host of small water's work, pleasure wharves, and other objects, and American bridge extends out half a mile from the shore. The summer winds are often arriving and departing with the passengers and crews, and at the end of the long voyage. They pass between York and Plovermouth and to speak. When I was born in September, 1845, there were only sailing points either on the Strait Sea or on the coast. Within two years a wave from that time, and the first of the largest and most steam vessels, but first passing to Albany and back and then to Plover, then followed a great many other ships that has been widely known. Now, the water at a steam vessel, and I have by a powerful propeller, and the water is a great distance, and only the beginning.

Brown's quarry.—In 1845, I went with me a mile from town to the Plover stone quarry. fresh-water  
limestone, contains shells, and contains the most  
ancient quadr heria of geol stone

belongs to the tertiary era. In our ride we encircled this charming town, whose environs, with the marine and land scenery, are extremely beautiful. I know not a more desirable place.

There are, in the shops, small collections of the fossils and minerals of the island, which afforded us entertainment and instruction. Dr. Mantell has agents here to procure the best specimens for his own collection. The population of Ryde is 9000.

Dr. Mantell has many acquaintances in the Isle of Wight, but our time permitted us to make only one call, at the house of the Rev. Mr. Kimball, a clergyman of the establishment, whose charge is in the confines of London towards Clapham.

A VOYAGE AROUND THE ISLAND. *August 21.*—A steamer, when the weather is favorable, makes this circumnavigation twice weekly, and I gladly accepted the invitation for the day that we were at Ryde. In addition to the recreation of the trip, as the steamer navigates close in shore, it affords an excellent opportunity to observe both the scenery and the geology of the island; the latter is strongly exhibited in the cliffs and banks that present natural sections of the strata, and from the deck of the steamer they are seen to great advantage.

The weather was the finest possible; the air was balmy and soft, without being too hot or too cool. The pier-head was thronged with persons of both sexes, and as soon as the expected boat from Portsmouth touched the wharf, her deck was crowded with passengers, so numerous, that it was difficult to move among them. It was supposed that there were 300; and, although for want of space on the deck of the little steamer, many were obliged to stand, they were all in good humor throughout the day.

Some friends of Dr. M.'s saluted us on the pier, and we had for a fellow-passenger, the interesting gentleman whose family I have already mentioned, the Rev. Charles Kemble of Stockwell, near London. Although we were, occasionally, in



conversation with others, we three formed a little group by ourselves.

OSBORN HOUSE.—At Cowes, we were very near to Osborn House, the favorite rural retreat of the Queen, and where she is at present residing with Prince Albert and their children. As we navigated just at the foot of the hill on which they live, when in retirement here, we could distinctly see the palace and very perfectly by the aid of a glass. The building is of stone; it has two towers, one for the clock and the other for the flag. The territory includes thirteen or fourteen hundred acres, and is, in part, covered with forest. The prince is fond of rural improvement, of which the place is susceptible, and it appears to need skilful culture. The ground is so elevated, that it commands a fine prospect, and in time, it will, doubtless, be brought into a beautiful condition. The principal attraction, however, of Osborn House is, that it contains a happy family, the wise and blameless lives of whose heads is exerting an excellent influence upon the nation. With the glass we could see people moving on the lawn. We were told, that not only do the children, as becomes their age, play on the grass beneath the trees, but that in fine, mild weather, a carpet is spread in the shade, and the family dine there in rural style. We passed three steamers that are constantly in waiting to obey the royal will. Two are mere tenders, one quite small, the other larger, and the third (a most beautiful ship) is of sufficient size and strength for ocean service. She is elegantly fitted up, and fully manned and officered. The officers were in the navy uniform as in the regular service. We passed close alongside, and could have conversed with them.

Unfortunately Prince Albert cannot bear the sea, and this great ship, therefore, does not often transport the Royal family, who find more agreeable recreation on shore.

COWES.—We were now at Cowes, a well-known port, whose harbor is often the resort of American ships. There were many vessels at anchor, including several yachts, and among these was the *America*. We passed close to her; she is, in-

deed, an elegant vessel; narrow and sharp in the bow, broad in the stern, low in her quarters, and her spars long and high for her size; no superfluity of ropes; every thing is snug and compact. She appeared almost like a sea bird, and she impressed all with the belief, that she must be a rapid vessel. I believe all the passengers, except myself, were English, and they were loud in their commendations of the yacht, and in their predictions that she would distance all competitors.

There are many beautiful rural abodes near Cowes, and among them is a modern castle, with towers and battlements entirely invested by ivy, and rising out of the dense foliage of a closely-arranged grove; while it is entirely modern it has the appearance of great antiquity, an illusion which the architect intended to produce, and in which he has been entirely successful. The proprietor is a gentleman, connected with the London press, Mr. Bell of the *Messenger*.

The shores of the island are, every where, picturesque and beautiful. The tertiary strata in the part looking towards Hampshire, form the immediate coast, and as we approach the south west end of the island, the high cliffs of white chalk become vertical, the strata having been elevated, and their position so nearly reversed, that instead of sustaining the tertiary strata, they lean over upon them obliquely; as one book may be made to lean against another. The contrast is perfectly distinct, the tertiary being red and the chalk white, except that the chalk is also colored in stripes up and down.

ALUM BAY is the name of this place, which is well known to geologists, and I thought it a rare good fortune that I had an opportunity to see it. The white chalk now appeared in cliffs, three to four hundred feet high, and with a glass, the flints could be distinctly seen, following the arrangement of the strata, and marking it by delicate dark lines. We soon passed beyond the beautiful and instructive groups of Alum Bay.

Turning the southwest point of the island with the land close aboard, we passed another famous group, the *NEEDLES*; they were on our left and between the boat and the chalk ~~cliffs~~.

The Needles are huge masses of chalk, once forming a part of the main cliff, which have been separated by the erosion of the waves. They now stand alone in the sea, which completely surrounds them, flows between and breaks against them. The Needles are not slides—they are the remains of the chalk strata; the sea by incessant action, both by tides and tempests, has breached this stormy headland, and has cut its way through, thus carving out several small islands of white chalk. They look like towers of white marble rising out of the sea, which is constantly wearing them away, and will, in time, effect their destruction.

THE WAVES.—Here, as we drew away from under the protection of the land, a strong head wind and tide raised a heavy swell, which struck the boat so suddenly and powerfully that the passengers were hardly able to keep their feet, the ladies were agitated, and were sustained from falling by their friends. Dr. Mantell and his two friends stood with arms locked for mutual support, but a sudden lurch of the boat threw them with others, all in a heap upon the cable coiled on deck; and as we were down, we were content to remain upon the rope as a seat, although none of the softest. As we were now nearing a very interesting region, where some of the finest of the discoveries of Dr. Mantell had been made, he, with aid from those near at hand, unrolled some large and fine geological diagrams, containing sectional views illustrating this very remarkable coast; but we had hardly begun to compare them with the original before us, when a wave broke over the bow and flooded the deck where we sat, so that we were glad to spring on our feet again, and to save the drawings in the best manner we could.

HURST CASTLE.—On our right, projecting from the Hampshire coast, is a long reef, called by the English a spit, which runs out from the land into the waves, and upon its seaward extremity stands Hurst Castle, constructed of stone, and being of very large dimensions, it has a formidable appearance, but I am not aware that it has been associated with any remark-

able event. Beyond it, farther to the west and southwest, is the peninsular headland of Portland, usually called the Island of Portland, where are the famous quarries of oolite, which afforded building stone for many public edifices in London. It is also memorable for a fossil forest of tropical trees, ages ago converted into agate. The strata on which the forest grew are *marine*, but they were covered by other strata of *fresh-water limestone*, each having been, in its turn, the upper surface.

Rounding this headland, we now had a glorious view for many miles along the coast of the island. The chalk cliffs at the Needles are part of a range of the same material, which extends eastward through the island; and far ahead, rose another chalk cliff, called St. Catherine's Head; between them the chalk had been removed by denudation, and a wide hollow of many miles in extent had been formed, producing a low-lying coast—a long barrier-like line, elevated but a few yards above the waves.

This barrier or sea-coast is distinctly stratified; it is generally of a reddish color, and is the famous Wealden\* formation of English geology. It is characterized by fresh-water plants, fishes, and shells, and is the grave of the gigantic reptiles so ably described by Dr. Mantell, and whose colossal bones fill the observer with astonishment. This author's highly philosophical works must be consulted for the details. He first discovered this fresh water formation and its reptilian and other remains in Tilgate forest, on the main land. There is no doubt that the same formation extends beneath the Solent Sea, and underlies the chalk both on the main land and in the Isle of Wight.

We soon shot along by this most instructive scene. The lower members of the chalk formation, at Atherfield, were seen lapping over and rising upon the Wealden strata; turning St. Catherine's Head, which here forms an elevated headland, and proceeding southeast along the seaward side of the island, we passed, for many miles, near a shore covered by the ruins of

\* So named from an ancient Saxon word meaning a forest.

chalk slides, they having fallen from the higher cliffs, which run along the coast and form the sea barrier. On account of the ruins accumulated beneath the cliff, this region is called *Undercliff*. The lower members of the chalk formation, here form the top line of the cliff. They are distinctly stratified, and have generally parted with the upper member, the white chalk proper, whose enormous masses, owing to the undermining of the sea, have fallen or slidden down, and now form a slope of ruins from the cliffs to the sea, into which they project.

A great slide had taken place here, a little before the time of my visit in September, 1805, and I was therefore induced at that time, to take the Isle of Wight in my way, returning from Cornwall to London. I crossed on horseback from Newport and Cowes, and passed a night in a solitary house beneath the Undercliff; the next day I examined the enormous masses of chalk that had then recently fallen, and which were all in fresh fracture with their fossils in full view—echini, shells, &c.

I approached Undercliff by the village of Niton, and returned to Cowes by the splendid seat of Appuldurcombe and by Godshall, not forgetting the grand but melancholy ruin of Carisbrook Castle near Newport, the last prison of Charles I. before he was carried to London to meet his death at the hand of the executioner. I entered the room in which he was confined.

CHANGES ALONG THE COAST.—It was interesting to me to observe how time has covered with grass the masses of chalk, which in September, 1805, I saw quite white and fresh from their fracture and fall.

From the deck, I readily recognized a high and very steep hill, then, as now, covered with verdure; I then climbed it for the prospect, and lingered until a sea fog enveloped it and me, and I was obliged to slide rather than walk down its slippery banks, wet with the misty rain. It was nightfall when I sought repose in the one solitary house of Undercliff, already named, where a merry-making of young people, an excursion party from the village, with the violin and the dance, almost banished sleep.

I now observed from the boat, VENTNER, a considerable

village, that had since grown up at this place, which on account of its protected position, sunny exposure, and comparatively mild climate, is a favorite place of resort for invalids with pulmonary complaints; who, as happens with the same class in America, too often leave their own comfortable homes only to die among strangers. We were assured that the cemetery at Ventner bears painful testimony to the truth of this statement. At this village, we had intended to land, and to return across the country to the coast which we had just passed, in order to make some more particular observations; but, as a high surf rendered the landing difficult, and no boat put off from the shore, we remained with our companions in the steamer.

In the progress of our voyage eastward, we soon opened Sandown Bay, including a long range of coast, bounded on the east by another promontory, named Culver Head, and hardly inferior in grandeur to that at the Needles. The intermediate coast is composed of the lower members of the chalk formation, with some still lower-lying members of the Wealden strata, which here also contain the bones of colossal reptiles. Soon after passing Culver Cliff, we disclosed White Cliff Bay and the Bay of Brading, belonging to the village of the same name, and which has been rendered memorable by its having been the residence of the excellent Legh Richmond, the touching history of whose family and of the Dairyman's Daughter is so well known to the religious world. The cottage of the dairyman was still farther from the coast.

THE RACE OF THE AMERICA.—We now descried Portsmouth in the distance on our left, as we were entering the wide waters of St. Helens and Spithead, famous in English naval history. The scene was invested with life, by the numerous vessels under sail, with a brisk breeze; among them the pleasure yachts made a conspicuous figure, and the AMERICA under full speed arrested every eye; her peculiar figure and trimmings easily distinguished her among her rival companions. She readily distanced all competitors, of whom there were about twenty of all sizes sailing with her, and we could see that she

gained upon them as evidently as a swift courser distances the ordinary horses of the turf.

The little fleet of yachts was laying its course northeast, and a south wind filled their sails, all of which, except in the America, were swollen round and full; they carried a high ridge of foaming wave under their cut-water, while white currents parted off from the sides, and they were much careened over to leeward by the force of the wind.

The America alone rode almost perfectly upright, hardly careening at all; her sails were even without any swell; there was hardly a ripple under her bow, and the white line on her sides was scarcely visible. It was obvious that her structure, equipment, and nautical management were very peculiar, and formed a striking contrast with those of the English yachts. The prize of one hundred guineas to be contested the next day, was at once and by acclamation awarded, in anticipation, to the America, by our English party. I was much struck with the hearty manner in which these proofs of naval superiority were received by all my companions; they seemed quite absorbed in admiration of this beautiful offspring of transatlantic naval architecture, and there was not the slightest expression of chagrin from any individual.

At five we arrived at the head of the pier of Ryde. Most of the passengers, including our friend, Rev. Mr. Kemble, went on shore, while Dr. Mantell and myself passed to Portsmouth, after a very delightful circumnavigation of sixty to seventy miles, which occupied five hours and a half, giving a speed of twelve miles to the hour. At Portsmouth, without stopping to look again at the place, we had just time to take some refreshments, and were at once off in the cars for Brighton. It was a lovely summer evening, and we rode through a beautiful country, beautiful from cultivation, but flat, and without picturesque features; some portions of the land near the coast had been redeemed from the sea by dykes and embankments. We passed near to Chichester, the ancient seat of the South Saxons; it has a grand cathedral.

The high chalk hills of the South Downs, on the main land of England, were in full view on our left, and evening had closed in upon us, when we passed through a tunnel and a deep cut in the chalk, and then the station-house received us, in a position quite above the town of Brighton, to which we descended rapidly, in a cab, and at the Gloucester Hotel found a comfortable home with good rooms and beds.

PALACE OF GEORGE IV, BRIGHTON *olim* BRIGHTHELMSTONE.—In the morning we visited the palace of George IV. Every one has heard that he took a fancy to build a palace in the pagoda style, something between Chinese and Hindu.

This palace has been recently purchased by the authorities of Brighton for sixty thousand dollars, although it cost a million of pounds sterling. It is to be used for public purposes, and my friend gave a lecture here last week, to a large audience, which filled the music room.

George IV. spent much time in this palace, but when he was there visitors were not allowed to approach nearer than to the iron fence which surrounded the premises. Queen Victoria made the experiment of living here, but the establishment being in the middle of the town, was quite too public for her taste. She could not go abroad without drawing a crowd after her, and she has exhibited her good judgment and taste in preferring the beautiful retirement of Osborn House, in the Isle of Wight.

We could not, at the time, obtain admission into the palace at Brighton, but I caught some partial views of several of the apartments by looking in at the windows; they were elegantly embellished, but were not as gorgeously adorned as some other palaces that we have seen. William IV., the sailor king, was fond of residing here, close by the sea.

GENERAL APPEARANCE OF BRIGHTON.—We passed the morning in driving around the streets and environs of Brighton, and along the shore. In the street immediately fronting the sea, the buildings stand upon a high terrace, secured by a  
and there being no intervening object, the tenants



of these dwellings have an extensive marine prospect, while the sea breezes arrive without contamination. A fine style of architecture prevails here, not only along the terrace, but throughout the town. The houses are lofty, and many of them large and grand; they are generally covered with a light fawn-colored cement, as at Ryde. The streets are wide, airy, clean, and quiet.

There are numerous squares and public places used for promenades, and the large area, in the midst of which the palace stands, is called by the old Anglo-Saxon name of *Steyne*. In this place there is a bronze statue of George IV., but, except that he was a king and the son of a king, it is not easy to discover his claim to the honor of a statue. Disgraced by the persecution of his Queen, injurious to the country by his immoral example, and without any useful act to signalize his long life and short reign, he should have been allowed to pass quietly into oblivion.

**CHAIN PIER.**—From the terrace on the sea shore, a suspension bridge with three arches passes off to the pier head; it is called the chain pier, and forms a beautiful promenade with the advantage of sea breezes and marine scenery; it is a favorite spot, and is one of the shows of Brighton.

*Peculiarities.*—Near the palace a gentleman, a friend of Dr. Mantell, met us, and in conversation allusion was made by me to a dry fountain then in view in the public square, when he added, "Yes, we have a fountain without water, a port without ships, and a city without business; most of the people who reside here are living upon their income."

As we wandered on the shore, I observed the bathing chairs or cars, in which invalids are drawn out from the shore until they attain a sufficient depth of water to enjoy sea bathing. This seems a safe and convenient arrangement, which we might copy to advantage. Indeed, I understand that something of the same kind exists at some of our watering places in America.

**GEOLOGICAL CHANGES.**—Brighton was in the  
sea beach, and so nearly on a level with

course of time the town was reached by the waves and washed away: it disappeared, finally, about 150 years ago. Modern Brighton is, therefore, a new town, as new as our older American cities, and it is as fresh and untarnished as the best of them.

As the sea forms the principal feature in the front of Brighton, so the rounded chalk hills compose the background of the picture. Although the city stands high in relation to the sea, it is actually situated in a deep depression between the chalk hills of the environs.

Indeed, I have never seen a more beautiful city, or one which appears more desirable to those who covet quiet, and fine air. It is a very healthy place, and is visited by great numbers, especially of the gentry; its appearance is so agreeable and genteel, and so superior to most other towns, that it must continue to be a favorite resort, although it has lost the attractions of a splendid court, which formerly resided here a part of the year, under the sway of George IV. and William IV.

Dr. Mantell's museum, afterwards purchased by the British Museum, was first opened to the public in Brighton, where its founder, for several years, enjoyed a lucrative professional practice.

Brighton is fifty-two miles from London, and has from seventy to eighty thousand inhabitants. It possesses public libraries, reading rooms, vapor baths, and baths of hot and cold and of sea water.

*August 22.*—Leaving Brighton at 11 A. M., on the rails, a ride of five miles brought us to

### Lewes.

A long inclined plane, cut in a deep section into the chalk, leads into this ancient shire town of the County of Sussex.

Lewes was a town of distinction in the time of the Saxons and Normans, and even the Romans had a fortress here; the ancient castle-gate which we passed, was successively

Roman, Saxon, and Norman. Two parallel gateways remain, the one Saxon, and the other Norman; and also two towers, all in good preservation. The Archæological Society of Sussex have now the control of these ruins, and therefore we may hope that they will be sacred from any other invasion than that of time. Their appearance, standing as they do on an eminence, and mantled with ivy, is still very imposing and highly picturesque.

From the top of one of the towers we enjoyed a magnificent prospect over the Lewes levels, and down to the port of New Haven on the coast, where, at the distance of six miles, the masts of ships could be seen. On several sides, were the rounded chalk hills, gracefully sweeping down into deep valleys, and by their juxtapositions, forming also those peculiar retreating, winding vales, here called combs, of which there are effective sketches in Dr. Mantell's works. He has admirably portrayed all the physical and mineral features, and figured and described the organic contents of this region, in his various volumes, nor has he forgotten the historical antiquities of this memorable part of England. His little volume, entitled "A Day's Ramble in and about Lewes," describes admirably well the peculiarities of this country. From the ancient tower we looked down upon his former residence, near the foot of the castle, once the hospitable home of the eminent geologists, Sir Charles Lyell, Dr. Buckland, Sir R. J. Murchison, and others, who were drawn to Lewes by Dr. Mantell's beautiful researches and discoveries in the local geology of this region. In the tower we found ancient British sepulchral urns, containing calcined human bones; also, various Saxon and Roman remains, and among the latter, two balls or globes of about two feet in diameter, and very regularly formed from sandstone; they were wrought by the Romans to be projected as missiles from their catapults, when employed to batter down walls.

TOWNS.—We visited the ruins of the priory **anciently existing** here, and also the restored tomb of Gr **king**

of William the Conqueror, and wife of William, Earl of Warren. Dr. Mantell has told the story of the discovery of her remains, and of other bones, probably those of her husband, and of the infant which caused her death: they were discovered by the cutting made for the railroad, which passed through the site of the ancient priory, long since destroyed, except some ruins that still remain on one side of the road. Two leaden coffins were found containing the bones, as was believed, both of the mother and her infant, and a neat mausoleum has been erected by the inhabitants; it is annexed to a neighboring church, standing on the site of the priory.

On the grave is placed the original marble slab, curiously carved and containing a commemorative inscription; it had been purloined very long ago and carried to another church. Dr. Mantell has also told the story of its recovery, and has given a copy of the inscription in the little book to which I have referred.

CHALK PITS.—The geology of this remarkable region is rich in geological antiquities, that interested me still more than the historical. I had never before visited a chalk pit or quarry, and my kind friend took me to several of those in which he made his early observations, and which are still full of interest and instruction. In one quarry or pit, there was a vertical section in the white chalk of 300 to 350 feet in height: this section was very satisfactory as regards the stratification of the chalk, which is here as distinct in its horizontal arrangement as that of a pile of books. This pit is not at present wrought, and its sloping ruins are in part covered with grass.

The hill in whose side it is excavated is so steep, that a few years since a slide of snow, descending from it as an avalanche, buried several houses, and killed some of the inhabitants at the foot of the hill.

We visited another quarry, wrought chiefly for the lime obtained by igniting the chalk. The kilns were near at hand, and had been recently in operation, the fuel being mineral

It takes from 24 to 36 hours to convert the chalk into

quick-lime. A sketch of this deep excavation forms the frontispiece to the *Geology of Sussex*, published by Dr. Mantell in 1822. A third pit showed the chalk marl—that is, chalk mixed, more or less, with clay. Deeper down there is a mixture of sand, and then the rock acquires the name of fire-stone, having been sometimes used for hearth-stones and for other uses where fire is employed.

A chalk pit is a very striking object, such as we never see in the United States; \* its white color is so much in contrast with the short but vividly green coat of grass which covers the unbroken ground, that, the pit being usually on the side of a hill, is conspicuous at a great distance.

The most remarkable foreign body in the chalk is the flint. This is usually in distinct nodules, but is arranged both in juxtaposition and in general correspondence with the layers or strata. It is found also in thin sheets, stretched along in continuity, and sometimes for a considerable distance. The eruption through the bottom of the chalk ocean of hot volcanic water, holding silica in solution, when this material was very abundant, has evidently sheeted over the chalk in some places, and when it was ejected in jets, and by fits and starts, it then, we may believe, formed nodules. In both cases it attached itself, in preference, to organized bodies existing in the sea, and hence we often find it copying and inclosing corals, sponges, shells, echini, and other marine beings. It includes also myriads of infinitesimal perforated shells (foraminifera), whose forms are brought to light when thin slices of the flint are exposed in a powerful microscope. The chalk also itself abounds in these infinitesimal beings, as becomes apparent when its dust is viewed microscopically. The same cretaceous seas were replete also with larger forms of existence—fishes, molluscs, and radiata.

\* Professor Reaumer, at Bonn, assured us that he had found in Texas an extensive formation of chalk or of incoherent *limestones*, which was evidently the equivalent of chalk, as it contained shells of the same era; he will publish his views in a forthcoming

All these things and many more are stereotyped by nature in these quarries, which are to be regarded merely as parts of vast formations, which, with their contents, occupy no small portion of England, as well as of several countries of continental Europe.

Lewes is a plain old English town of about 10,000 inhabitants, and has lost much of its former importance. Once it was before Brighton; formerly the phraseology was Brighton near to Lewes, but now it is Lewes near to Brighton.

On a hill near this city, in 1267, was fought a great battle between Henry III. and the Barons, in which the latter prevailed; in consequence, the king was brought to terms, and thus the foundation of English constitutional liberty was laid.

### Lewes to London.

At three o'clock, we were in the cars for London, where we arrived at six P. M. The country through which we passed was extremely picturesque and beautiful. We soon left behind the hills of chalk of the South Downs, and at the distance of nine miles from Lewes we entered on the Wealden formation, before mentioned on the Isle of Wight, bounded in the distance by the chalk hills of the North Downs. The Wealden region is here 25 miles wide and stretched at right angles to our course.

**GEOLOGY OF THE WEALDEN.**—Our rapid progress over this region precluded any other observations than those connected with the general appearance of the strata. The chalk had disappeared, and in its place we had the sandstone and clays of the Wealden of fresh-water origin.

It has been *ascertained* by the researches of Dr. Mantell and others, *the Wealden is an extensive formation, abundant in plants and animal productions of the land formation have been found*

those astonishing colossal bones of the ancient reptiles, which prove that the then existing surface was peopled by beings which have long ceased to exist, although there are beings at present on the earth of analogous character, but in no known instance attaining the size or peculiar structure of the reptilian animals of the Wealden, which are of high and unknown antiquity.

Its strata collectively are nearly 2000 feet thick. There can be no reasonable doubt that the chalk, beneath whose lower members the Wealden is seen to pass, once covered it entirely, and has been removed by denudation. The elegant curvature of the chalk hills and valleys, sweeping upward and downward, and onward, by the most graceful flexions, is due to water. The chalk formation is altogether marine, as is fully proved by its organic remains; it was therefore deposited in a salt sea, and as its strata were long in the course of elevation, the washing of the tidal waves as well as of the storm billows, must have hollowed out and rounded the masses of so incoherent a material, and the rains and snow floods finished the work, which, however, could not become entirely stationary until the green sward had been formed over the surface as a protecting shield.\*

The Wealden formation being below the chalk, was of course formed before it, with its terrestrial and fresh-water animals and plants.

The oolite again was anterior to the Wealden, and its animals are, with a single exception, marine or amphibious. It was of course anterior to both the Wealden and the chalk.

\* I have seen in the southwest of England, earth-works of the ancient Britons, about 2000 years old, which being protected by green sward, have not been worn away perceptibly in 20 centuries; and the earth-works of North America are probably of much higher antiquity.

## Arrival in London.

August 23.

Upon the road on which we were travelling, the approach to this colossal city is indicated for many miles by an increased number of houses; for seven or eight miles, there is hardly any interruption, and carriages and moving vehicles of every description increase in the same proportion. Soon, on our right, we descried the forest of masts marking the position of the Thames; towers, manufactories, railroads, and moving trains increased in number, and almost before we were aware of it we came to a pause at the station house in Southwark. A multitude of carriages were ready for our service; we chose one, and that, as we soon found, was driven by a drunken coachman,\* who could hardly sit upon his box. He jerked the reins violently, belaboring his poor horse unmercifully, and thus we were hurried on under the railroad upon which we had passed in our exit; a road which, as then mentioned, is built over the tops of the houses.

We were driven a long distance, it appeared to me two or three miles, through the borough of Southwark, over Westminster Bridge, by the Parliament House, and the Abbey, and we were happy to find ourselves at last safely landed in Chester Square. The journey had been most instructive and delightful to me, and was rendered at once peculiarly useful by the sage observations of my learned friend, and most agreeable by his vivacity and exhaustless powers of entertainment.

Many objects claim attention during the short time we are to remain in England. London itself is a world; and no small portion of time is requisite to study it thoroughly, as I endeavored to do in my youth. Some institutions are closed on particular days. Such is the fact with

\* The only instance we had met with in Europe among very many whom we had employed.





architecture, agriculture, metallurgy, pottery, vitrification, and other arts. It embraces also, as far as practicable, the results obtained in the manufactured articles; for example, glass, pottery, iron, cast and wrought, and steel; also the various metals, as reduced from their ores, and, of course, the ores themselves; and the machines or models of them for dressing ores, are included. An analytical laboratory is annexed, which for convenient access to light and air, and perhaps for other reasons, is in the attic, and lighted from the roof. The lecture-room for geology and the connected sciences is in the basement, and will contain about 500 persons. It is entirely lighted by a glass floor over a part of the museum.

As I have done in other and similar cases, I will now mention a few objects contained in the collection.

In the basement there are magnificent fossil trees—two silicified trunks are twenty-eight inches in diameter. The attendant said they were from New Holland, but one of the professors thought they were from North America; as they arrived only two days ago, the facts had not been fully ascertained. There was also a grand silicified trunk from the Portland forest of England; it is about twenty inches in diameter, and four feet high. This fossil forest is peculiarly interesting in geology, and has been fully explained by Dr. Mantell and other English geologists.

There are here in the museum very grand vases; one of red granite is from Aberdeen, and almost equals some of those magnificent things of the same kind which we saw at Rome, and elsewhere on the Continent. I did not measure this vase; but from recollection and estimation, I should think it was four feet across. There is also a similar vase made of Scotch marble.

The tables of polished Derbyshire encrinital marble are superb; as regards the exhibition of the sections of the crinoidal stems and their divisions, nothing can be finer.

The bed slate of Irish serpentine forming the panels  
is beautiful. In the centre, is a large

imitation of Pompeian mosaic; it is composed of inlaid pieces of colored pottery. The building materials are in cubes, from four to six inches in diameter, and are laid away in glass cases. Granite, sienite, oolite, marble, serpentine, sandstone, and, in a word, all the architectural materials afforded by these islands, are here exhibited. Here also are the feldspar and feldspathic clays that form porcelain; common clays for bricks; of course all the ores of the metals; metallic and other manufactured and natural paints; glass and pottery, ancient and modern, and many similar things which I cannot even name.

There is also arranged, as if incidentally, a large collection of simple minerals, although elementary mineralogy is not a prime object of the establishment.

Geology is the leading thing in view, and consequently fossils are anxiously sought for. Two of the galleries are filled principally with fossils, among which are many fine specimens, with many more that are ordinary. But I will desist from more particular enumeration. A school of mines is to be added to the Institution, which, in a country having so many mines of metals and coal, and so many minerals, cannot fail to be useful.

It is to be hoped that the American general and state Governments will follow the European example in affairs of science, and especially as regards science applied to the arts. It is certainly a duty of the several States to establish mining and trade schools, and it will be done as soon as the people understand their value.

THE ROYAL EXCHANGE.—I have been led to the Royal Exchange on business, connected with Life Insurance, and have had agreeable intercourse with several gentlemen connected with similar institutions here; with Mr. Brown, King-street; Mr. Hardy, in the Exchange, and Mr. Morgan, in Bridge-street, Black Friars' Bridge. From them I have experienced liberal treatment, have received much kindness, and have been able to obtain all the books and information which I sired.

The Royal Exchange which was here in 1805, erected by Sir Thomas Gresham in the reign of Queen Elizabeth, was burned down some years since, with all its statues of the monarchs. It has been rebuilt in the reign of Queen Victoria. It is a large and grand building, in the form of a Grecian temple, with a colonnade in front looking down Cheapside and Fleet-street. The frieze is crowded with large figures in relief. In front, in the midst of the open area, is a colossal equestrian statue in bronze of Lord Wellington. There is a similar one over the gateway of the Park in Picadilly. The Iron Duke and his horse are both eagerly looking as if towards the foe; the horse, with outstretched head and neck, and expanded nostrils, appears to snuff the battle from afar, and already to hear the shouting of the captains.

ST. PAUL'S.—Walking from the Exchange along that great river of human life which flows through Cheapside, Fleet-street, Ludgate Hill, and the Strand, and returns like an eddying current, I could not resist the temptation again to enter St. Paul's Cathedral. It is a solemn place, a Christian temple, over which nearly two centuries have shed the hoary guise of antiquity. It is solemn, also, as containing the sepulchral monuments and statues of eminent men, who have enjoyed their day of human applause, and of whom the sculptured marble now tells their story to posterity. I confess that I have more pleasure in looking at the monuments of Sir Christopher Wren, the architect\* of the church, of Dr. Samuel Johnson, the great English moralist, of John Howard, the philanthropist, of Sir Astley Cooper, the great surgeon, and others who have labored in the peaceful walks of life, than I find in contemplating the statues and allegorical figures which are placed in St. Paul's in honor of great military and naval commanders. As I have already remarked regarding Westminster Abbey, Christian temples seem to me not to be the proper places for fighting heroes, not

\* "*Si monumentum queris circumspice,*" is the beautiful and appropriate termination of the inscription to his memory.

a few of whom have died amid scenes of slaughter. Here are the monuments of Nelson, of St. Vincent, of Abercrombie, of Picton, of Cornwallis, of Collingwood, of Sir John Moore, of Admiral Lord Duncan, and of many more great commanders, whose memory their country delights to honor. The word "*glorious*" is usually attached to their labors and achievements, and when it happened that they died in battle, they died fighting "*gloriously*" for their country. This language is not peculiar to the English; it is common in all countries. Generals Pakenham and Gibbs, who fell before the lines at New-Orleans, January 8, 1815, are represented in one monument by two almost youthful figures standing side by side, and one leaning his arm upon the shoulder of the other. The monument is touching; it cannot be seen without emotion; and still, although they fell in a disastrous and bloody defeat, they are recorded as fighting *gloriously*. Such language seems excessive in this case, and ill accords generally with man's humble position in this world.

The impression made on me now by St. Paul's was very different from that produced 46 years ago. Probably familiarity on the continent with the splendor of vast and magnificent temples such as those at Genoa, Milan, Florence, Venice, Rome, Cologne, Strasburgh, caused St. Paul's to appear now quite plain, and not so grand in magnitude as before. There is also an appearance of neglect, which is not in harmony with the tasteful neatness so characteristic of England. The statues, and the still more numerous allegorical figures which accompany them, appear very sad in their foul drapery of long accumulated dust. On every part where dust will lie, even on sloping arms and limbs, it reposes in a thick and offensive coating, giving to these memorable monuments, many of which are grand and beautiful, a very revolting appearance. I have no recollection of any thing similar, as seen in numerous visits in my youth both in St. Paul's Cathedral and in Westminster Abbey. I believe the monuments were then clean; and surely they might be dusted a few times in the course of a year. It is regrettable that it would re-

quire not only dusting, but thorough cleaning by water, to restore the purity of those in St. Paul's, which are not yet so numerous as to make the labor great. The dome still appears very grand, both within and without, and I am assured that the whispering gallery still retains its tell-tale garrulity. I did not ascend to it on this occasion, although formerly acquainted with it.

WESTMINSTER ABBEY. *Sabbath, August 24, 1851.*—I divided my time between the Chapel in White Hall and Westminster Abbey. In the latter there was such a crowd of people that it was difficult to move even edgewise, and of course all the seats were filled. But as I remarked when here in March, nothing can be worse contrived for hearing than such a Cathedral. I heard very little more of the sermon than the often reiterated expression, "Thou art Peter, and upon this rock I will build my Church;" but as I could not discover what use the preacher made of this declaration of our Saviour, I will not indulge in conjecture.

In casting my eyes around upon the monuments, I was struck with the contrast between them and those in St. Paul's. The monuments in Westminster Abbey are all clean almost as newly chiselled marble, although they are vastly more numerous and ancient than those in St. Paul's, and they are often complex with drapery and ornaments. I am told that Dr. Buckland, Dean of Westminster, was, before his hopeless illness, at great pains and expense to place every thing in the venerable abbey in fine order, and the result is much to his honor. I looked around with pleasure, and could not discern a cobweb or film of dust. Even Lord Mansfield's old-fashioned curled wig, which I remembered well, from the time of my early visits here, is clean and bright in all its multitudinous curls, as becomes a head from which justice flows. On the Continent, too, in a multitude of temples and museums, and palaces where we saw a very great number of statues, all was in perfect order. Even the colossal popes and cardinals in St. Peter's, with all their immense folds of sacerdotal vestments, with their tiaras,

and crosiers, and gems, presented their mute statues as pure as the originals ought to have been. I must, therefore, hold the officials of St. Paul's as entirely inexcusable for the offensive state of the statuary, so incongruous with the elevated character of those who there speak to posterity through their marble forms, and so entirely at variance with the habits of the country.

On the sabbath it is forbidden to linger in St. Paul's, even among the monuments of the illustrious dead, although the meditations that would naturally arise are in harmony both with the place and the day. But it was not left at our option, for the vergers, and other attendants, pressed the people to retire. They were decent, although persevering, in their urgency; but the full crowd lingered and lingered to gaze, and with such an example I was in no haste to retire, and had leisure to observe that time had registered in Westminster Abbey, as I had seen also in St. Paul's, men who were in activity and power when I was here before. Mr. Pitt, whose voice I heard in the House of Commons, now appears in his mute statue, with outstretched arms, as if about to speak from his high position over the south door of the Cathedral. I hope again to visit Westminster Abbey, and of a week day, for it is both pleasing and profitable to linger there among the monuments of departed time.

CHAPEL OF WHITE HALL.—The palace of White Hall has a touching association with the tragical fate of Charles I., who suffered death on a scaffold in the rear of this building, out of one of whose windows he walked, in obedience to the stern mandate of the Parliament. This palace stands on Parliament-street, very near to the Parliament House, and the banqueting hall of Charles's time is now used as a chapel. It is a splendid room, long and lofty, and the ceiling is adorned with pictures of his time. The pulpit is contiguous to the window out of which, it is said, the doomed monarch stepped to meet his death.

BRITISH GALLERY OF PICTURES.—

to the pul

I walked through the rooms this morning; it occupies a large building, called the National Gallery, on Trafalgar Square, and comprises, with some good pictures, many very ordinary ones. After what we have seen on the continent, this gallery did not appear to me to be in general very superior. In my hasty walk, among throngs of people whom the Great Exhibition has brought to London, I saw, however, a few very beautiful pictures. All the landscapes of Claude Lorraine, and there were several, have that peculiar soft and golden light, which is so characteristic of his pictures and of Italian skies. There is a head of the Saviour, by Corregio, which has ineffable dignity and benevolence. A large picture of the Holy Family, by Murillo, is so admirable that I could hardly take my eyes from it. Joseph sits in calmness, and with an expression of deep seriousness. Mary is the *beau ideal* of a lovely youthful mother, looking fondly upon her son, who, a bright child of three or four years, stands on a pedestal with a heavenly expression. A picture of Lot and his daughters is very fine. They are walking with their father, and one of them carries a goblet of wine, with which she intends to seduce him. With more leisure I might very probably have seen other pictures to admire.

THE CRYSTAL PALACE.—Although I have walked many hours, and I presume ten miles in this immense structure, I seem only to have begun to see it. In despair of my ability to convey any adequate idea of it, I am almost disposed to pass it in silence, but this would disappoint those for whom I write. Pictures and descriptions of the building had reached America before I left home, and it is known that its front extends more than one-third of a mile, besides its branches. The area which it covers is eighteen acres, and under its vaulted transept are included some large and lofty trees that were growing in the park. So many accounts of its contents, and so many views of its form, both within and without, have been since published, that a better idea of both can be obtained from numerous sources, than from any thing that



I can write. I shall, therefore, attempt nothing more than some general remarks and will mention a few examples. When we were here in March, I expressed my admiration of the general design. So far as I know it is novel.

Exhibitions of the productions, whether in nature or art, of particular countries, have often been made, and in some countries they are annual, as in France, England, and in the United States; but I believe it was reserved for Prince Albert to originate the design of inviting all nations to bring to one place the results of their industry and skill, and specimens of their physical resources. For obvious reasons, no place was so proper as London, the commercial metropolis of the world, and I suppose now containing a greater population, and certainly more wealth, and exerting more influence on mankind than any other city. The invitation was a pledge of universal good-will, and it has evidently tended to produce kind feelings among the nations. The Temple of Janus was shut, and may God so overrule the passions of men, that it may never be opened again! Instead of new fortresses of stone and iron, instead of walls and battlements to protect this immense city from invasion, there rises \* in its grand domain of Hyde Park, a Crystal Palace, the Temple of Arts and Industry. It rose like an exhalation, a magical illusion of the senses. The framework of iron, although strong enough to sustain the weight and to resist the winds, is so little apparent to the eye, that the Crystal Palace appears a sea of glass, as in the Revelations, "A sea of glass like unto crystal." One might dream, as in the Arabian Nights, of such a creation, "in the visions of the night, when deep sleep falleth upon men," and might find on waking that it was all an illusion, when it would vanish like the fabric of a dream, and leave not a wreck behind. But there it stands, a splendid reality, and with its widely extended transepts, wings, and galleries, has proved

\* I preserve the present time although the Palace is now removed.

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sufficient to receive and protect the gathered riches of mankind. *Stat, stet*, and I wish I could add *stabit*, but rumor says that it will come down. How desirable it would seem to have it remain as a grand vegetable conservatory, where palms might grow in their full altitude, and the cedar of Lebanon might spread wide its princely branches. Or, it might be a fine equestrian arena, in which there would be room enough for all evolutions of speed and skill—albeit, the mettlesome steed should not mistake the transparent sides for thin air, and dash through the brittle walls. I fear, however, that the monumental inscription of the Crystal Palace will soon be *fuit, sic transit gloria Palatii*.

[August 1, 1853. Since the above was written, we are informed that the Crystal Palace again rears its stately transepts in a new and more beautiful situation at Sydenham, and with many important additions and improvements. It now stands in the midst of a magnificent undulating park of 300 acres, surrounded with rural delights, fountains, shaded walks and sylvan temples, while within it has been converted into a great permanent museum of arts, antiquities, and science, with living groves of palms, enlivened by singing birds and sparkling fountains. For eighteen pence the London artisan can visit it, including the ride out and back upon the railway. This is being done by a private association at a cost of near \$4,000,000. For a more extended notice of the new Crystal Palace see Putnam's Illustrated Record of the N. Y. Exhibition, p. 18.]

I mentioned that in my late passage from Boulogne, I was in company with a large number of French people coming over to see the Crystal Palace. Crowds of all nations throng this palace; 50,000 or 60,000, sometimes 70,000 in a day; probably 60,000 may be the average number on the shilling days. On Friday and Saturday the admission fee is half a crown, and this has an obvious effect in thinning the numbers, as I had occasion twice to observe. As you walk about, or thread your way through the great masses of human beings that ~~crowd~~ the avenues, you may hear half the languages of Europe,

and some of those of the Orient. I imagined that before our return from the continent the deluge of nations would have subsided, and this consideration was not without weight in inducing us to prefer a late inspection of the splendid wonder, but in this particular we have been disappointed. The numbers who daily resort to the Crystal Palace are undiminished; it may be that there are fewer foreigners, but since the price has been reduced to a shilling, the country people come in, parents and children, and mothers with their infants; steamboats and cars are crowded, and it seems as if the rural population of the kingdom were all rushing into London. The fares of the vehicles are reduced to accommodate them, and as many of them bring their own bread and cheese (literally), and eat their repast in the palace, they appear to think little of the loss of time. It affords a good opportunity to see the commonalty of England. They are all tidily but plainly dressed; an average, however, of coarse people is now flowing into the exhibition, and they seem to have dropped, in a good measure, the deferential manners, which were formerly a marked characteristic of the common people of England. The same persons might very possibly be respectful now, if one were to see them at their own homes; but here, so excited and engrossed are they by the glorious scenes around them, that they appear not to regard any one else, and push and crowd along in a manner that is not consistent either with good manners or with comfort.

CONTENTS OF THE PALACE.—These it is impossible to enumerate. A mere catalogue, with the most brief descriptive notices, would fill a large volume. I can only mention groups of things, with here and there a particular instance. The collection embraces the useful as well as the fine arts. All kinds of agricultural machines are here to be seen, and there are seeds, and specimens of crops, all duly arranged and labelled. The American department has been somewhat undervalued, because it was not so splendid, and was less full than the collections from some other countries, but even *the Times*, which has generally an unfriendly bearing in relation to our country,

has commended the American department on the score of utility. Indeed it was not reasonable to expect that a country occupied but two centuries by civilized people, should be able fully to compete with nations who have been civilized for a thousand years, and that our great distance, and the difficulty and expense of transporting articles across the ocean, and of coming over to look after them, must have prevented our appearing as we do at home, in the great industrial exhibitions of New-York, Philadelphia, and Boston. I have seen such gatherings at Niblo's and the Castle Garden, in New-York, and in Boston, not only of useful, but of elegant things, as I should feel proud to see in the American department in the Crystal Palace. Two agricultural instruments are, however, spoken of as giving the palm to America above all competition. I refer to the plough and the reaping machine of American manufacture. The plough is said to have attained the perfection of form, and the reaping machine to be recommended by its great utility.

The late yacht race around the Isle of Wight, has given great reputation to American naval architecture and seamanship. The contest which I mentioned as appointed for Friday, 22d instant, took place on that day, with eighteen yachts selected for their sailing qualities, while about one hundred were assembled on the Solent Sea, and the brotherhood of seamen, the nobility and gentry, and the Queen herself, with her consort, were interested spectators of the friendly strife. It ended favorably to the America, as all the world knows, which won the prize cup of one hundred guineas. The affair has been honorably treated by the English, who have manifested entire good humor and liberality on this occasion. Commodore Stevens and his people have conducted themselves with modesty, and promptly showed the proper marks of respect to the Queen when she visited the successful little vessel; on which occasion she manifested much satisfaction in observing her skilful construction, her fine accommodations and tasteful embellishments.

This victory, although not obtained in the Crystal Palace, comes fortunately in time to help out the American exhibitors.

IRON, as it is the material which, more than others (wood excepted), contributes indispensable aid to the arts of life, occupies a conspicuous place in the Exhibition. Its ores and its castings, and its wrought articles, whether in a locomotive, or the hair-spring of a chronometer, whether in chain-cables or a cambric needle, are displayed in endless variety of useful and beautiful forms, and in this department, England justly claims, and fully proves her pre-eminence. Iron, lead, copper, bismuth, zinc, antimony, and silver, gold, and platinum, are conspicuous here.

England glories in her tin, lead, and copper; in the two latter, we can compete with her; our lead is inexhaustible, and our native copper of Lake Superior is unequalled for abundance. A large mass of it has been brought over for the exhibition, weighing many thousand pounds.

Nothing can exceed the beauty of the articles of silver, whether utensils or ornaments, which are exposed to view in the gallery of the Crystal Palace. The most graceful forms both of peaceful men, and of warriors, armed cap-a-pie; and of woman in the very beau ideal of her loveliness, are here in profusion; and if England excels in these articles in silver, France is not behind her, both in them and in gilded furniture, and bronze, as seen in all the splendor and elegance of the show windows of the Palais Royal.

The silver extracted from lead by Pattinson's process is here seen in piles so rich, with a perfect purity of whiteness, and in scaly pyramids, a kind of flaky mound, that the observer looks on with delight, as also upon the same metal cast in ponderous ingots. Here is the gold of California, one brilliant mass weighs in value £800, equivalent to nearly 4000 dollars; there are three masses of native Siberian, or Russian platinum, weighing respectively 21, 23, and 25 lbs., and many wrought articles of the same metal. The copper of Russia, in the form of malachite, here makes a great figure. The same material which we saw in the Vatican, and in the palace of the King of Prussia, in the form of magnificent vases,

is here seen wrought into innumerable forms of beauty. There is even a large panelled door fabricated entirely of malachite. Of course many pieces are united to afford the requisite mass. There are tables, vases, urns, chairs, settees, &c., mounted with the same rich material. The gems form a conspicuous ornament of the collection. Queen Victoria has loaned her largest diamond, with several smaller ones, to be exhibited, and here also are some of the most precious of the diamonds, rubies, sapphires, topazes, emeralds, chrysoberyls, opals, and pearls of the regalia of Russia, Spain, and India.

The Duke of Devonshire has an emerald deposited by Mr. Tenant nearly two inches in the diagonal diameter, and two to three inches in length; it is of surpassing beauty, being perfectly crystallized, and of the most intense and uniform grass-green color. There is no end to the *bijouterie* of the French. A case in the gallery is composed of four pieces of plate glass, each between five and six feet long, and four to five broad. This case is entirely filled with elegant ornamental articles.

I cannot pretend to enumerate the marbles, granites, porphyries, serpentines, and other architectural materials, nor the piles of mineral coal, and anthracite, nor the perfect imitations of beautiful and useful mineral compositions, such as serpentines, verd-antique, porphyry, and verd-antique marbles, &c. The *chemical products* too, of great beauty, are numerous. The crystallizations of carbonate and bi-carbonate of soda, of alum, of the prussiates, yellow and red, of the sulphate of iron, and the sulphate of copper, and sal-ammoniac are splendid, and evince that the chemical arts are not behind the mechanical. Large cakes of metallic antimony are crystallized in beautiful fern-like radiations.

France, Belgium, Holland, Austria, Germany, Prussia, Turkey, the Barbary States, Egypt, Bermuda, the East Indies, Canada, Australia, and other countries have conspired to decorate the Crystal Palace. Superb silks have come from the East, and pictured stuffs, shawls, carpets, &c., from Germany; the antipodes have conspired to crown the glorious spectacle; plain and

useful materials, leather, hemp, ropes of manilla grass and of other fibrous vegetables, and glass and pottery in their varieties are not omitted. To give animation to the scene, steam generated out of doors is brought in through concealed tubes and applied to machinery. Cotton gins and paper-making machines are at work, and the Palace resounds with the noise of actual and productive labor.

Ship models are presented in many forms, especially ships of war, in sections longitudinal and transverse, with all their interior structure. Life-boats and life-preservers, and in harmony with them, mirrors for light-houses; but in contrast, swords, pistols, revolvers, guns, dirks and daggers, and multi-form contrivances to do the work of killing the greatest number of men in the shortest time; such are man's inconsistencies!

But time would fail to tell of the furniture, the carriages, the musical instruments, the ceramic wares, and all the countless and indescribable throng of articles which contribute their effect in the *tout ensemble* of this vast store-house of the nations.

The statuary arranged along the naves is a conspicuous and interesting feature. Many of the prominent and more meritorious of these marbles, have since become so familiar from the engravings in the *Art Journal* and other illustrated works, that it is needless at this late day to call attention to them individually. The famous Amazon of Kiss, the same which was in London, is now the most remarkable artistic object in the American Crystal Palace.

The most interesting view is obtained from the galleries of the moving masses of human life below. It is a panorama where multitudes are passing to and fro, and soon are seen no more, fleeting as the jets-d'eau which sport among them from living fountains, that curl over and descend in graceful sweeps, and seem to enliven the stately palms and other living plants and trees which grace the scene.

ZOOLOGICAL GARDENS.—My late companions and friends in travel who lingered in Paris eight days after I left it, having

yesterday returned to London, we made an excursion to the Zoological Gardens, which are quite out of the city, on the northwest, and contiguous to Regent's Park, a tract of 450 acres, which, some years since, was added to the rural attractions of the metropolis.

The Zoological Gardens are, as regards living animals, the counterpart of the Garden of Plants at Paris. The tract occupies 30 acres. The enterprise is not, like that of the Garden of Plants, under the patronage of government; it is an affair of individuals, and the gardens have been opened only a few years. The number of animals, including birds, is about 1500, and 15 or 16 persons are employed in the care of the gardens. The public are admitted on paying a shilling for each individual; on Mondays, sixpence. I was glad to learn that the institution more than supports itself, and that the resort to it is increasing. Every thing here is in fine condition. The entire area is clean and in good order. The stables and lairs of the wild beasts, and the pens of the animals that enjoy some liberty, as well as the cages of the birds, and the houses of the quadrumana (monkeys), and of reptiles, are kept in good order, and there is nothing to give unnecessary offence. We saw the attendants cleaning out the dens, and using a solution of chloride of lime for purification.

In the bears' den, Bruin seemed to have a chemical fancy, as he was sedulously licking up the suffocating fluid, attracted perhaps by its subsaline taste.

The animals and the birds appear to be in perfect health, and as happy as prisoners can be. The tropical and other animals from hot climates, are in general fine specimens of their respective races. The camels are large, and do not appear to be suffering in a climate so different from their own. The lions and royal tigers are grand animals, and the leopards are numerous and very beautiful, several of them being natives of the gardens; the black leopard was very restless and fierce, traversing his cage with incessant motion, in his hopeless efforts to escape from his prison. The rhinoceros was very



active, walking freely about his large yard, and was not at all afraid of man, as he approached the grating, thrust his nose through, and received eagerly biscuits and cakes from the hands of the spectators. His thick heavy skin, folded so as to represent a robe, secured by harness, dotted also with tubercles, and serving as a real coat of mail, forms his defence against insults and vermin, especially when smeared, as now, with mud, while his nasal horn makes him formidable even to the elephant.

Four magnificent giraffes are here in perfect health; a young one of a few months, a native of the place, was six feet high when he was born; he was kept in the stable and was nibbling its hay, which he readily reached 12 or 15 feet from the floor; the other three were walking in a very ample barn-yard, their prison limits, and seemed like some awkward people, quite at a loss how to dispose of their long necks and limbs. They are tame, and readily place their slender horse-like heads over the high fence, and seem disposed to be a little sociable with their visitors. In their native forests and in large droves, they must present a grand spectacle, when, on being alarmed, they move off with more than the speed of a race-horse; bearing their slender heads and vigilant eyes 20 feet or more from the ground, and then they appear beautiful, graceful, and grand; while they have the general air and form of the equine family, although with prodigious disproportion between the length of the neck and that of the body, they have the divided hoof of the ruminants, and are regarded by naturalists as most nearly allied to the deer.

The elephants are not of the largest size, but a mother with her calf showed her natural affection by nursing her pet, about the size of a large donkey; which had well learned that the suction of the proboscis, applied to the fountains situated between the fore legs, would produce the desired flow of milk.

The stupid hippopotamus is here for the first time, since the days of Charles II. He seemed an immense and unwieldy mass of fat, and rendered more torpid to-day by the

chill of a storm of cold wind and rain; he was hardly roused from his sleep except to raise his short neck, and open his small but brilliant eyes, as if to convince the gazers that he was really alive. He and the giraffes are attended by a Nubian, a compatriot of these animals. He dresses in his national costume; red cap, and blue jacket, buttoned beneath his ample red breeches, which might inclose two or three such individuals.

The bears seemed in great good humor; a huge brown Bruin, by means of small cleats nailed on to the wood, clambered to the top of a mast, where he exhibited his clumsy form; and two smaller black bears from Abyssinia, indulged in their own gymnastics, by wrestling and tumbling over each other, while they showed their white teeth. There are two grand arctic bears of full size, with their ample white fur quite clean, as if washed in the fountain to which they have free access.

A large and active ourang-outang seemed very harmless. As he clambered up the sides of his glazed wire prison, he showed the palms of his almost human hands, white and hairless like ours. When the keeper opened the door he manifested no disposition to escape or to annoy his master. Strange that such a mimic man, with many of man's vicious propensities, should have been created, and be still a brute.

The beautiful zebras, with their elegant stripes; other animals, quaggas I believe, of the equine family, and of about the size of the zebras, attracted our attention, as did the reindeer with their branching antlers, the hyenas, foxes, and smaller quadrupeds; and the noble bovine races that were grazing at large in the meadows.

At the head of the birds, almost wingless although they be, are the ostriches, of which family there are here very capital specimens. Here is the cassowary with three toes, and the African ostrich with two. Three of these are in their pens, and capital birds they are. Their splendid plumage mantles over them in rich layers, and the flowing and much coveted plumes of their rudimentary wings and tails are splendid enough for the crest of the warrior, or the head-attire of a gentler con-

queror. Two of them are black, and the other gray or lead-colored. The birds are numerous and various. Geese, with long spoon bills; cranes, always awkward, here display every variety of ungraceful form and movement; ducks swimming in pools of water; pigeons, ever elegant in figure and plumage; parrots, dressed in superb colors; mocking, and other talking birds, emulating the parrots in loquacity; and last, and least in bulk, but first in beauty, the incomparable humming-birds; most of the 450 known species, and more than 2000 individuals, are here in the collection of the celebrated Dr. Gould, the delicacy and splendor of whose plumage, and the gracefulness of whose form is unequalled among birds, and, I may add, among flowers.

I must not forget the warrior birds, the condor, chief of vultures; eagles, hawks, in all their variety, and all others that lead a barbarian life in rapine and murder.

The reptiles, unsightly, unlovely, often hideous and revolting, are here fully represented in the protean lizard family of alligators, crocodiles, iguanas, chameleons, &c.; and among snakes are the gigantic boas and pythons, dormant, and apparently lifeless. The harmless creatures of this family are strongly contrasted with the terrible cobra di capello, the adder, asp, and rattle-snake, dispensing poison and death, for reasons which to us must ever appear mysterious. Such are the unaccountable contrarieties of creation!

MADAME TUSSEAU'S MUSEUM.—From the zoological gardens I went with one of the ladies to this celebrated museum of wax figures, the only one of the kind from which I have ever received any pleasure; but this collection enjoys a high and deserved reputation.

There are three successive rooms, in which are seen a great number of personages in costume, and in natural and characteristic positions in relation to each another. In the vestibule the visitor passes through groups of marble statues, such as may be seen in many other places. On entering the first room of the museum, exactly at the door and sitting in a chair, a pleasant young Chinese, a door-keeper, as I supposed, almost

spoke to me, and I did quite speak to him, so lifelike was he, but as he seemed not to understand English we passed on. The next personage, in the right corner of the room, was a well-dressed gentleman, whom I for the moment mistook for a living Englishman; he looked so very affable, that I took him for an official, and was about to make an inquiry of him, when I perceived that he too belonged to the deaf-mutes. Next came those to whom I must not speak, the Queen with Prince Albert, and four of their sweet children, mounted on an elevated platform. The likenesses are so striking, judging from pictures, statues, and information (for I have not seen them), that the royal personages might be readily recognized by one who knew them; for, as seen here, they are all but speaking, and moving, and breathing.

Although no figures in these rooms spoke, three gave signs of life. One, a Chinese lady in a rich oriental dress, was standing on her little feet, by her husband, while he, a Hong merchant in splendid attire, was listening to some communication from her; and although we could not hear what she said, she gave effect to her address by an earnest look and by a gentle movement of her head. Another lady, Madame ———, afterwards a victim of Robespierre's cruelty, because she indignantly refused to become the victim of his lust, lies asleep on her couch in her day dress, probably in prison prior to her execution. She breathes, and her bust, with her dress, rises and falls so naturally with the respiration, that you instinctively move softly, lest she should be disturbed in her slumber.

In these rooms are seen imposing occasions of state. The queen, in another scene than which has been named, with her family, is surrounded by her ministers, bishops, and lords and ladies, and by courtiers, and generals, and foreign ambassadors (I blend two of these scenes into one); all are in full court dress, in magnificent robes, and sparkling with factitious diamonds. The illusion is so complete, that were an observer introduced suddenly into the scene, without an intimation of the deception, he would be startled at finding himself in such company.

Hundreds of the most eminent persons, both of the living and the dead, are here, and the likenesses are so good that I readily recognized several, either of those whom I had seen when living (*e. g.*, George III., Pitt, and Fox) or whose pictures or busts were familiar (Voltaire, Sir W. Scott, and Washington). Calvin, Luther, and John Knox are in one group, and the latter is addressing Queen Mary of Scotland, on whom he seems not likely to make any more impression now than he did of yore. I might multiply these instances. Napoleon and his marshals; Louis XVI. and his children and sister; Louis Philippe and his family; Queen Elizabeth and her courtiers; Ann Boleyn and her bloody husband; Charles I. and II., the former listening to a talk from Cromwell; James I. and II.; the royal dukes, sons of George III.; Lord Wellington; Lord John Russell; Admiral Napier, of Acre memory; and many, many more.

Pictures of eminent persons and of interesting scenes are hung all around the lofty rooms, which are gilded and adorned in the manner of a palace. A throng of visitors were in the apartments, but from their dress and appearance, it was obvious that they belonged not to the upper ten thousand, but to the lower million, and most of them were probably of that class, who, having been drawn to London by the great exhibition, take the opportunity to see other wonders of the great metropolis, and we were pleased that they could be thus gratified.

Passing the Room of *Horrors*,\* where an additional sixpence is demanded for the pleasure of seeing what all should desire to avoid, we entered a room called the HALL OF NAPOLEON, occupied chiefly by relics of that great captain and emperor, who made such an impression on the age in which he lived, that his name and his deeds—the deeds of more than twenty years of sanguinary conflict, with only short interludes of repose—are now enrolled in history, and will go down to the end of time. The relics here preserved are personal articles, which once belonged to

\* Murders and executions.

nim. His own hair is inclosed in the same locket with that of his son, the Duke of Reichstadt. There is the sword of the Egyptian campaign, which was waved in many a bloody battle. Here are the more harmless utensils of his table; but the most conspicuous things are his carriages, three in number. In one of these he made his excursions from Longwood, in St. Helena, to the boundaries of that small island, rough with volcanic rocks.

This carriage is a plain yellow barouche, with nothing peculiar in its appearance. His common or usual travelling carriage was in the post-chaise form, with inside seats for only two persons, and there is a low division between them. His iron bedstead was folded like the legs of a grasshopper, packed in a case, and hung beneath the coachman's seat. Inside of the carriage is a writing-desk, which can be drawn out at pleasure, to accommodate the traveller, and it still retained its connection with the front of the carriage. There is a movable board, which answered for a table; and a door opens in front, beneath the writing-desk, to afford room for the limbs when the traveller wishes to sleep. The bedstead might perhaps admit of a partial contraction, so as to be placed in the carriage, in front of the seat, as a support, or there might have been some other contrivance for this purpose. This carriage is said to be lined with concealed iron plates, to afford protection against the bullets of assassins. That found on the field of Waterloo is yellow, and the paint and varnish have come off in certain places, so that it is defaced in appearance. This latter carriage is a common coach with two seats, the front seat, as usual, reversed; but there is nothing peculiar in its appearance or conveniences, and it was probably taken in haste after the return from Elba; for the 100 days included Napoleon's *Hegira*—his brief sway in Paris, and his downfall at Waterloo—and to that fatal field he rode in this carriage. But the most interesting relic is the bed on which the fallen emperor died. We were assured that it was the very bed and bedstead of St. Helena, and that it was the camp establishment of his campaigns. His figure and face in wax are seen in the

bed. It will be remembered that, in the death scene, he was fully dressed in a marshal's uniform, with boots and cocked hat, as he is here seen, thus sustaining to the last the unity of his military life.

Our guide book for Berlin mentioned that Napoleon's Waterloo carriage was preserved in the town palace of that city. We did not see it. It appears, however, improbable that the English army should relinquish this trophy of their sanguinary day's work, since the field of battle was theirs. Napoleon's station was on the right of the English army, and the Prussians arrived only at evening on the English left wing.

**BRITISH MUSEUM.**—We made a brief visit to this noble institution when here in March, and I have made another to-day; but being limited to two hours by other engagements, I therefore confined my attention to a single department. I walked rapidly through the long rooms below, that are occupied by statuary, and by the more than colossal sculptures of Egypt and Nineveh; nor did I suffer my course to be impeded by the winged bull and the winged lion, nor by the stupendous heads of the Sphinx and of the Egyptian kings, or by the black basaltic statues of ancient Egyptian idolatry. Hastening to the flat above, I there, by appointment, met my son and our fellow-traveller, Mr. Brush. Our first object was to survey the very extensive and rich collection of minerals in the forming of which no expense has been spared. It would be in vain to attempt to enumerate particulars where there is so much to claim attention. The collection is arranged in sixty cases, contained in four rooms.

**Fossil Woman.**—The Fossil Woman of Gaudaloupe I had never seen. The skeleton is headless and footless; but ribs, spine, ilium, and limbs, leave no doubt that it once belonged to a living woman. It presents, however, no difficulty, historical or geological, because it is inclosed in a very recent limestone, such as is now daily forming in the seas of the Antilles; and there were numerous other human bodies found in the same place, as well as utensils, rude weapons, &c. It was probably

a place of sepulture on a battle field of the Aborigines.\* The island may have subsided sufficiently to allow of the formation of this limestone around this skeleton, as well as others, and then been elevated again, such oscillations having evidently been of frequent occurrence in the crust of the earth; or more probably, as the sepulchre was on the sea-shore, the dashing of the waves may have incrustated the bodies with carbonate of lime, enveloping shell-fish and corals thrown up by the tides.

The principal subjects of our observations this morning were the remains of the enormous lizards of geological antiquity.

THE FOSSIL SAURIANS, in the collection of Mr. Hawkins, purchased by the museum, were skeletons of ichthyosauri, plesiosauri, and other forms of reptilian life. There is a perfect fossil skeleton of the ichthyosaurus, which I measured. It is fully twenty feet long; and there is beneath it a series of vertebræ of another individual, doubly cup-shaped, like the vertebræ of fishes. They seem to be all present, and must have belonged to an animal still larger than the one which I have named. The figures of these ancient distinct races are now familiar in our elementary books, and I shall not enter into any minute details.

Most of the fossil saurians were marine. They appeared soon after the period of the coal formation, and were continued to that of the chalk. A miniature lizard has been recently found in the old red sandstone.

The collection in the British Museum is appalling. It fills one with astonishment, as we here contemplate the indubitable remains of an age gone by, never to return. Still more astonishing are the reptilian remains, brought to light chiefly by the researches of Dr. Mantell, aided by Dr. Buckland and other coadjutors. But to Dr. Mantell solely belongs the credit of having established the existence of several families of land lizards, whose magnitude far exceeds that of the marine saurians.

\* Dating only 150 years ago (Mantell).



The bones of the iguanodon, of the hylæosaurus, and pelorosaurus, are colossal—equal to those of the largest elephants, and in some individuals even surpassing them, while their length, in some instances, was equal to that of the longest whales. The form of their teeth, and the hollow condition of their bones, with a large canal for marrow, prove that their habits were those of terrestrial animals; while the form of the teeth, and the solid condition of the bones of the saurians, before named, adapt them to a marine life; since the buoyancy derived from the sustaining power of the water would enable them to swim with this additional weight. The bones of these land lizards discovered by Dr. Mantell, and now in the museum, with those in his own house, studied and disposed of anatomically, by his skill in comparative anatomy, and in the general principles of physiology, prove the existence of these giants of antiquity, which were not carnivorous, but were vegetable eaters, in a climate capable of producing a tropical vegetation, which then existed both in England and on the European continent, and probably pervaded, more or less, the entire planet. Dr. Mantell's original memoirs and published volumes must be consulted for the proofs of these positions, and for the details of anatomical structure. He was with me in my last visit to the museum, and gave additional explanations on the grand fossils deposited there, especially those of his own gathering, and also on those obtained by Mr. Hawkins, of Gloucester. Both collections relate chiefly to the extinct colossal lizards of the gone-by geological ages. The immense collection of fossils from the Himalaya Mountains also passed under review. They have added much to our knowledge of zoological antiquity. Dr. Buckland discovered near Oxford the bones of a large carnivorous reptile, the megalosaurus, which approximated toward the magnitude of the lizards of Dr. Mantell.\*

\* One principal object of my last visit to the museum with Dr. Mantell, was from a wish which he kindly expressed to introduce me

MUSEUM OF THE COLLEGE OF SURGEONS.—We were conducted through this most interesting institution by Professor Owen, whose reputation is known to the whole scientific world. He was particularly kind and attentive, and we spent three hours there in a very interesting manner. This museum was founded by the celebrated John Hunter. After his death, in 1793, it was purchased by government, and removed from the vicinity of Leicester Square, where it had been arranged by Dr. Hunter, to the large building which it now occupies in Lincoln's Inn fields. I saw it in the early state, as the Hunterian Museum, in Windmill-street, when I was in London in 1805. Its leading objects are comparative anatomy and physiology. Here is a complete skeleton of the ancient Irish Elk, larger than that in the British Museum. It measures six feet high to the top of the withers. The tips of the antlers are nine or ten feet apart, along the curve not less than twelve feet; and the entire length of the animal, from his nose along the head, neck, and spine, could not have been less, without including the horns. I have elsewhere remarked, that, when alive, this must have been a magnificent deer, far surpassing any similar animal now on the earth. I mentioned, in connection with the Liverpool Museum, Professor Owen's opinion that this fossil elk was extinct before the creation of man, although approximating to the human era. He says, that all the stories stating that the bones of this megalosaurus have been found in the Irish bogs with those of man are fabulous, and that the bones of the fossil elk are found in the shell marl below the peat. The skeleton of the American elk, placed side by side with that of the megalosaurus, appears of diminutive size.

ELEPHANT.—Here also is the skeleton of the great elephant,

to the venerable curator, Mr. Koenig; but at the threshold of the institution we were pained to hear that this excellent man, having just returned from a refreshing tour to his native Valley of the Rhine, had, a few hours before, fallen dead by apoplexy; and early in the following year, my invaluable friend and guide followed him to the grave!

Chunee, formerly exhibited in Exeter 'Change. I was acquainted with this elephant when living. She has taken things from my hand, and from my pocket, and has picked up my keys and pieces of money, dropped among the straw, and returned them to me at the instance of her keeper. I was once in her den with a gentleman, and his wife and child, when the keeper said she would tell our ages by grunting once for every year; with me she stopped at 25, which was my age at that time, and the gentleman said she had grunted correctly for himself and his family. How the keeper guessed so well, or how he communicated with the elephant, we could not tell. Many years afterwards, this noble animal became furiously mad, as it is now believed from an intense tooth-ache. They then brought up platoons of soldiers to shoot her down; but they had little effect until she had received 100 balls, when she yielded up her life, tenacious as it was of its tenement. Although mad, she was still so far obedient to her keeper as to kneel at his word of command to receive the fire of the soldiers! It seemed like murder in cold blood! Many carts were in requisition to transport the body when cut up, weighing probably, bones, skin, muscles, and all, 10,000 pounds. The dry mastodon skeleton of Dr. Warren, now in Boston, New England, weighs 1000 pounds.

CHIMPANZEE.—We found the distinguished Hunterian Professor occupied in examining the skull of the Chimpanzee, that most powerful of the animals of the ape family. It was described in the American Journal of Science, from the testimony of Dr. Savage, an American missionary in Africa, and afterwards by Dr. Wyman, of Boston. This skull exhibited marks of great strength, especially in the jaws and teeth, and in the ample provision for powerful muscles to move them. Their full height is between five and six feet; and they are objects of great terror to the negroes, who have no hope of contending with them, unless they can shoot them, so as to kill them outright, or effectually disable them. They are not, like many wild animals, timid and retiring at the approach of

man: on the contrary, they attack him; and so strong are they that they can crush him with their foul embrace—can tear his flesh from his bones by their terrible incisors, and wring his head to strangulation with their powerful hands. They are peculiarly irritable. If a negro approaches a tree in which a chimpanzee is ensconced, with his wife and children, he then darts down, fierce with rage, wages war, and gives no quarter. We must not inquire why such savage brutes were created, in the near resemblance, but in caricature of man's noble form.

MOA.—The bones of the moa are here, and there is a plaster cast representing a restored skeleton, of which, since the mandibles have been discovered, few of the parts are now wanting. Even the shells of the eggs have been found, far exceeding in size those of the ostrich. This extinct race of birds of New Zealand was first brought to light by an English missionary, Colenzo,\* who sent out some of the bones to London; and afterwards Mr. Walter Mantell, eldest son of Dr. Mantell obtained, by great exertions, and at no small hazard, a large collection of the bones of the moa. He sent them to his father, who, with great liberality, submitted them all to the critical examination of Professor Owen; and he was thus enabled to draw up his masterly reports on this subject. The moa, when living, must have stood ten to twelve feet high. It was a wingless bird, probably approximating to the ostrich family. It is remarkable that Mr. W. Mantell has also obtained, and transmitted to his father, the only known living individual of a bird, whose fossil bones have been found associated with those of the moa, and, therefore, they were probably contemporaries. This bird is nearly as large as a domestic turkey. It is very handsome, with its variegated plumage, red bill, and red legs. It is named *notornis*, a bird of the South. There are also three other species of wingless birds (*Apteryx*), of which Dr. Mantell has two. It is a pleasing result of the comparative anatomy of the present age, that Professor Owen

\* See Dr. Mantell's work on the British Museum.

was able, from a hollow bone of a few inches in length, belonging to the limbs of the then unknown dinosaur, to ascertain not only that the bone was that of a bird, a fact which was in the traditions of the natives, but also the family to which it belonged; and the ample supply of the bones which afterwards arrived, enabled him fully to establish his conclusions. This bird may have been coeval with man. The natives have some traditions that seem to look that way. The geological era of the bird was certainly very recent, as the bones are found under peat, and drift, and volcanic sand.\*

Among eighteen thousand specimens catalogued in this museum I can name only here and there one, and must pass by the rest.

MYLODON.—The mylodon, a great extinct fossil animal, was allied to the sloth, and a real skeleton is here, in the British Museum. I had already seen a large model in plaster of the megatherium, a fossil animal of the same family. Both are colossal; and it is obvious that the locomotive power of such an animal must have been very limited, and his progress very slow. His feet were astonishingly large, and his fingers and toes were furnished with long nails. Professor Owen infers, from his great strength, and the peculiar form of his hind feet, which enabled him to throw his weight back upon them when in a half-erect posture, and from the form of his hands and arms, which enabled him to grasp a tree, that therefore it is probable his living was obtained in part by embracing trees, and wringing them one way and another, until he brought them down; and that then he would feed upon their leaves and soft succulent branches. He thinks also that a fracture in the occiput (back part of the skull), in the cranium of the individual, whose skeleton is in the museum, favors the idea that a tree, or a portion of it, fell upon his head, and thus produced the fracture, which the double

\* And among human bones, probably relics of cannibal feasts.

plate of his cranium enabled him to sustain without fatal injury.

This museum is rich in preparations illustrative of physiology and morbid anatomy; but I will not enter this professional field, rich as it is, and rich too in preparations made by the celebrated John Hunter himself.

EXCURSION TO HAMPTON COURT PALACE, &c.—This little journey I made twice when I was here in 1805, and now went again for the gratification of our friends and travelling companions. I shall be more brief, because I have already said something of Hampton Court in my youthful journal. A railroad gave us a transit, but not a very rapid one. Although it is but twelve miles from London, we were an hour upon the road, as the cars stopped frequently for accommodation of the people. Hampton Court Palace is of red brick. It was begun by Cardinal Woolsey, who made it the principal theatre of his luxury and splendor; but his tyrannical master, Henry VIII., becoming jealous of him, Woolsey made him a present of it, A. D. 1526. It was finished and enlarged by William III., and it was, more or less, the residence of all the monarchs down to George II. The palace includes three large quadrangles, and a great multitude of apartments. There is no grandeur in its appearance, except what is derived from magnitude. The gardens and grounds are very beautiful, being kept in fine order; and there are grand forests, with deer running at large. The country being entirely flat, there is nothing picturesque in the scenery. It has not been a royal residence for nearly a century, but a number of families are permitted to reside in the palace. They are chiefly of the decayed aristocratic class. There is a guard of soldiers stationed here, evidently to take care of the place. The suite of public rooms is extensive, and as they are open to all classes of people without fee, the resort to this palace is very great. We passed through these apartments in company with a great throng, among whom were many of the continental people, who have come over to see the Exhibition. Most of the rooms in

Hampton Court are plain, being finished in English oak, without paint, but with much handsome carved work. The grand staircase and several of the rooms have frescoed ceilings, in the Italian style; and if one could see them without twisting his neck awry, and could comprehend their obscure and often absurd allegories and fables of mythology, they would impart more pleasure.

The pictures in these apartments are more remarkable for their number than for their excellence. There are more than 1000, the greater part of which are indifferent productions, but still may possess a degree of interest in the history of the art. The pictures painted by the late Mr. West are good. There is one large room devoted chiefly to the family of his great patron, George III., and all the pictures there are by him. The cartoons of Raphael are contained in a splendid room devoted to them; and all regard them as *chefs-d'œuvre* of the art. They are seven in number, and the subjects are—

1. The Death of Ananias.
2. Elymas the Sorcerer Struck Blind.
3. The Miraculous Draught of Fishes.
4. Healing the Lame Man at the Beautiful Gate of the Temple.
5. Paul and Barnabas at Lystra.
6. Paul Preaching at Athens.
7. Christ's Charge to Peter.

In King William's bed-chamber are nineteen portraits of the most beautiful women of the court of King Charles II. These are chiefly from the hand of Sir Peter Lilly. There is reason to believe that many of the pictures, which in these apartments are attributed to eminent artists, are copies, as they are not at all in harmony with their beautiful works which we have seen on the Continent.

Among the apartments, the royal bed-rooms are memorable, with their bed-furniture remaining. The bed-rooms of William and Mary, and of Queen Anne and Queen Caroline, are particularly memorable. There is a splendid and large

hall, which was built by Cardinal Woolsey for banquets and fêtes, and for theatrical exhibitions. This has been restored to its former splendor, and is a grand and beautiful room.

There are many historical facts connected with Hampton Court; one of the most interesting is the final flight of Charles I., which took place from this palace. He fled to the Isle of Wight, and from Carisbrooke Castle was brought back to London, where he was executed.

From Hampton Court we passed, by water, in a row boat, to Richmond, nine miles, in the course of the river, whose banks are flat, but beautiful with verdure and villas. We passed the house in which Louis Philippe lived as a private individual, when he was an exile in his youth. Our time did not permit us to ascend Richmond Hill, to the Star and Garter tavern, as I did in 1805, to see the splendid scenery of the Valley of the Thames. We passed on in an omnibus, to Kew, where are the extensive Botanical Gardens. They now inclose seventy-five acres, field, forest, gardens proper, and extensive and numerous conservatories. Unfortunately we were so near the time of closing the gates that we could only pass rapidly through the principal hot-houses. The most interesting of these is that containing the tropical plants and trees. The temperature within, especially when contrasted with that without, in a cool evening, was delightful; and we found ourselves in the midst of a tropical forest, of palms, bananas, tree-ferns, and a multitude more of the natives of warm climates. The glass house is so high as to admit palm-trees full grown. There was one conservatory devoted to the heaths. We returned to London in a small steamer, stopping at all the places on the river, which I formerly described. We disembarked at Hungerford Bridge, on which our friend Reginald Mantell was so long employed, under his distinguished master Brunell.

AFRICAN TROPHIES.—Mr. Roualyn Gordon Cumming, who passed five years of a hunter's life in the far interior of Southern Africa, and whose book was regarded by many as a romance, has accumulated a vast museum of trophies



of his slaughtered animals, and this collection we have this day seen. The walls of a room, as I suppose, sixty or seventy feet long, and twenty-five feet high, are entirely covered with the spoils of the African forests and desert wilds. It is an exhibition which is almost terrific; as one can hardly fail to transport himself to those untamed regions where these animals roam at large. The skins of lions of both sexes and of various ages, are numerous in this museum. There are among them the hides of very old lions, with shaggy manes, long and dark, sometimes almost black, which fully answer to the pictures of the noble lion, as drawn by artists and naturalists. The orifices for the eyes, and the bullet-holes, by which the monarch of the forest fell, are also visible. The elephant makes a conspicuous figure, and especially his tusks, which are numerous, and some of them very large. I measured a pair, which were ten feet long. The foot of the elephant is inclosed in a horny shoe which exhibits merely the rudiments of toes, projecting a little in outline. When this shoe or sock is detached, it presents a cavity which being all around quite tight, is made use of by the natives as a containing vessel for their food. I measured one, which was five feet in circumference. The heads of the elephant are numerous, retaining the teeth and tusks. The value of the ivory in this collection is very great. The tusks on view here vary in value, from 40 to 80 pounds each, little short of 200 to 400 dollars a tusk. They are often very much worn by friction with the bushes. In old male elephants they are polished down at the end into a wedge or section. There are many spoils of the rhinoceros and hippopotamus; and their skulls and bones make a great figure here. The heads of the hippopotamus are of enormous size, and their teeth, too, are very much worn. The two-horned rhinoceros is of frequent occurrence; and the longer horn is always on the end of the nose. It is a very formidable weapon to every beast of the forest. I measured some of them, which were thirty-three inches long, and sharp at the vertex. There are heads and limb bones of giraffes. I measured a leg bone,

which was fifty-two and a half inches long. The buffalo heads and horns are numerous, and also those of the African ox, with broad spreading horns. There are, for comparison, heads of the American bison, as well as of other members of the bos family, from various countries. Antelopes are very numerous, and of many varieties. When living, they are not only fleet, but some of them are formidable, from their long, pointed, strong, and often twisted, horns. There are also many other animals from different regions. The room is hung all around with skins, and many of them are in the form of robes, or ornaments worn by the natives. The wagon used by Mr. Cumming in his hazardous adventures, is in the room, with his arms, and the bullets, some of them very large and hard, used on the occasion. A Hottentot boy, who speaks English well, was in the room to give explanations. He is intelligent, and knows much of the history of the animals, and of the adventures in which they were killed. He said, in answer, to my inquiries, that he belonged to the christianized Hottentots, but we judged from the odor of gin about him, that he did not very closely observe all the teachings of the gospel. Something of the character of the barbarian still adhered to him; for although small in stature, and not robust, he resented some freedoms that were taken with him by a young man who was present; and, following him around the room, with menaces, he could not be easily appeased.

Mr. Cumming has published two volumes containing the narrative of his perilous warfare against the wild animals. There is a high degree of romance in African scenes, among the forests and desert wilds, and we find our enthusiasm kindled by our sympathy with the amateur hunter. In my youth I read the travels of Vaillant in Southern Africa, and my imagination was then so warmed and excited by his adventures, and the fascinating manner in which he described them, that I accompanied Mr. Cumming with somewhat of the spirit of earlier years. He appears, however, to have had no ulterior object in view, and we, after all, are disposed to take sides with the poor

persecuted animals, and to feel that they were consigned to destruction for the sake of indulging a spirit of reckless adventure; although some additions have been made to their natural history by a long continued acquaintance with them in their native haunts.

The next day we attended divine service, it being the Sabbath, in the Scotch Presbyterian Church of Rev. Mr Hamilton, an eloquent and fervent preacher, of deep-toned piety, and much esteemed. It was interesting and gratifying to be again associated with a Christian people in worship, not only in our language, but in forms so similar to those in which we have been educated.

At evening I rode over to Clapham with Dr. Mantell, and while he visited his patient I remained in the carriage and took my last view of that beautiful village, which is associated with so many interesting recollections.

My residence in the house of my distinguished friend, has been rendered very agreeable to me by his kindness, and that of his household, all of whom have been zealously devoted to my service.

Last evening I left his hospitable mansion, when he came up with me to the hotel (Morley's in Trafalgar Square) to bid farewell to the family, and we parted affectionately at nine o'clock P. M.

### Departure from London.

At ten, we rode to the station of the Western Railway, expecting to proceed on our journey by a night train; but, owing to a change of arrangement, it was already gone. We found, however, at the place an excellent hotel, the Victoria, where we had comfortable beds, and the next morning we were in the cars at half-past six o'clock.

In leaving London, many interesting reflections rushed upon my mind, but they soon gave place to the sensible impressions

produced by the splendid country, one of the most fertile regions of England, through which we made our rapid transit. No towns of importance lay in our route; but at mid-day, we found ourselves at Rugby, a place rendered somewhat famous by the labors of the late Dr. Arnold, now well known in America; but we had no opportunity even to see the town, as the station-house was not in the populous part. Here my son left us, and proceeded with the baggage to Liverpool, while the rest of the party remained to visit some interesting objects in the vicinity.

WARWICK CASTLE.—A lateral railroad brought us, in half an hour, to Leamington, a mile or more from the castle, and we took a carriage to be at our command.

When I was in England in 1805, and on my way to Scotland, I visited Alnwick, the Percy Castle of Northumberland. That fine example of the strongholds of the old barons of England, was maintained in dignity and in full repair. I saw Windsor Castle also, in 1805. It has never, I believe, been neglected, but has been in all reigns a royal abode. We had seen Chirk Castle, in Wales, early in our present tour, and that castle we had found in perfect order and inhabited; and it is very probable that there may be other castles that are sustained, of which I have not heard. I was very anxious to see Warwick Castle also, and the opportunity was now favorable. Warwick Castle is in fine condition, and is still a perfect example of the castles of the feudal ages. I have not time to go into its history, which is involved in that of the wars of England, but I will say something of its present appearance.

The ground is only moderately elevated, but the height of the towers gives command of all the neighboring country. We ascended one of them, on the right of the entrance; it is 128 feet high; the steps are much worn by the friction of many thousands of feet, during the long course of centuries, and some of the steps have been replaced by wood. The base of the tower is 30 feet in diameter, and the walls are 10 feet thick. On the right is (the so called) Caesar's tower, coeval

with the Norman conquest, and therefore almost 800 years old; it is firm, as if it were one mass of rock; its height is 147 feet.

There are other towers; and battlemented walls connect them all around into a continued line of defence, which, as usual, includes a large area of ground. One portcullis still remains, and in entering the castle we pass beneath its ponderous bars pointed downward and connected into squares. The present earl is 73 years of age, and his son, Lord Brook, is the heir apparent; the countess has recently died at the age of 65.

The dwellings of the family are included within the limits of the castle. We were conducted civilly, but rapidly, through them, in company with other visitors, and I found it difficult to make those inquiries which such scenes naturally prompt. In all the nine apartments which we saw, there was beautiful simplicity, combined with rich and tasteful elegance, far more agreeable than the gorgeous display of excessive ornament which we have seen in some palaces. Every thing was in the most perfect order, no mutilation or defacement, and less of the marks of time than I remember ever to have observed in any establishment which has seen many centuries and many generations pass away. Most of the pictures are very good, and after having seen on the Continent many of the productions of the great masters, we entertained no doubt that numbers of the pictures, which we saw here, are truly attributed to the names which they bear. In the hall there is an admirable picture of the unfortunate Charles I. on horseback, by Vandyck. Most of the palaces on the Continent contain his portrait. This surpasses them all. The horse is bearing his rider directly towards you, but so excellent is the foreshortening, that both horse and rider are fully seen. In the great hall are hung many suits of ancient armor; and among them, we were assured that a helmet studded with brass, and a shield studded with silver, were used by Oliver Cromwell. "Near the middle window is the doublet in which Lord Brook

was killed at Lichfield in 1643." It is a jacket of thick buckskin. In my published travels in England, I have mentioned, that the Hon. Charles Greville, son of the Earl of Warwick, stated to me at his own house (Paddington Green), that Lord Brook, who was his ancestor, was killed by a single shot, by a man named Dyot. The battle was over, and Lord Brook, standing at the door of a house, had raised his visor, when Dyot, who was a sure marksman, fired at the distance of half a mile (?) and shot him through the eye. Lord Brook and Lord Say, as joint patentees, gave name to Saybrook in Connecticut.

Among the trophies in the great hall are the horns of deer, and a magnificent head of the great extinct Irish elk; of all those which I have seen, this appears the largest. The horns are so disproportionate to the head which carried them, that it appears astonishing they could ever have been sustained, and still more that they should have been reproduced annually.

There are splendid tables of Florentine mosaic, and one that belonged to Marie Antoinette, the Queen of France. There is also a full-length portrait, by Rubens, of Ignatius Loyola, the founder of the Jesuits. The apartments are rich in beautiful antique furniture, in the most perfect condition, with innumerable other productions of art. In contrast with all this elegance and splendor, is the horrid, damp, and dark dungeon beneath Cæsar's tower, where state prisoners were confined, under privations such as we should not inflict upon brutes.

We did not forget the famous Warwick vase contained in the green-house. It was dug out of a lake at Hadrian's Villa near Tivoli, where so many other magnificent things were found, and was obtained from the late Sir William Hamilton, British ambassador to Naples. A Latin inscription commemorates its discovery and transfer. The vase is circular, and its capacity is more than four barrels. It is of white marble, and has two large handles inwrought with vines. It stands on a high pedestal at such an elevation, that when mounted on a stool I could not see into it.

The view in front of the green-house is most beautiful—it is an English park scene; trees stand about in irregular positions as they grew, and the green sward, mown and trimmed into perfect smoothness, looks like green velvet. The place is rich in trees, and among them the cedar of Lebanon is conspicuous; there are six or eight of these grand trees in perfect vigor, spreading their wide branches all around, so that any two, to have abundant room, should be 100 feet apart. The branches are so thick as to exclude the sun; they shoot out almost horizontally and depend with a gentle inclination. It is a rich sight indeed, and enables one to realize, in some degree, the appearance of glorious old Lebanon, at the period when her cedars were felled for the temple of Solomon. We have not seen any cedars of Lebanon so fine anywhere else.

The river Avon flows by the castle, and adds much to the picturesque effect. A relative of Lord Bagot, while rowing on this river, was drowned here, January 10th, 1800, and there is a brass tablet on the rock commemorating the sad event.

Who could leave this castle without inquiring for the renowned giant Guy, Earl of Warwick? At the porter's lodge, a gude dame gives notices of his history, and points out appendages of his person. If we admit the statement, that he was eight feet eleven inches high, then it may appear credible that the armor there exhibited was his, or, at least, that it was fabricated for a man of his volume and stature. I placed the enormous iron helmet on my own head, which was lost in it, and the weight would soon have been insupportable: the rest of the armor is in proportion, including that for the horse. In addition to the helmet, here are the shield, the breastplate, the walking-staff, and tilting-pole, all of enormous size. There is here also an immense brass caldron, called Guy's porridge pot, holding perhaps two barrels, with a flesh fork to correspond. The two-handed sword was here, all rusty with age. We have seen many of these ponderous weapons, which must have required a giant's strength to wield them. The height attributed to Guy is not without precedent. An Irish giant was

exhibited, when I was in London in 1805, whose height approached nine feet, and a few days since I saw his skeleton prepared and exhibited in the museum of the College of Surgeons, where his bones were finally lodged, in spite of his having given a friend a retainer to carry him after death out to sea and sink his body, for fear that Dr. Hunter would get him.

KENILWORTH CASTLE.—Scott has hung a web of fascination around this castle, and who that has perused the story would not wish to see this splendid ruin! The carriage, which we had retained, took us five miles to Kenilworth. On our way, we passed a seat called Guy's Cliff; the house appears through a long avenue of trees; it is memorable as having been a residence of Guy, Earl of Warwick, and the place where he died. Strangers are not admitted while the family are there, which is the case at present.

At Kenilworth we were very much gratified by the sight of the highly interesting ruin of a magnificent castle. The exterior walls, which are to a considerable extent still remaining, originally inclosed seven acres, with several gates, moat, draw-bridge, portcullis, and all the appendages of a strong feudal castle. There was also a place for a tournament, and a considerable lake, long since dry. The country, for twenty miles around, was a forest for deer; hunting, next to war, being the most favorite amusement of barons and kings. This splendid castle remained perfect until it was taken by Cromwell in the civil wars, when it was despoiled, broken down, and reduced to the condition of a ruin.

The grand portal was given by Cromwell to two of his officers, who converted it into a dwelling; they stopped the entrance, which remains closed to this day, and we now passed into the premises by a side passage. This building is the most perfect portion of Kenilworth; it is still very handsome, and even grand. Cromwell "gave the whole manor to several of his officers, who dismantled the towers, drained the lake, cut down the woods, destroyed the park and chase, and divided the land into farms among themselves, which they



continued to hold till the restoration." The present proprietor of Kenilworth is Lord Clarendon. There is much previous history regarding this castle, especially in relation to the war of Henry III. with the Earl of Leicester, and the other revolted barons, but I have not time or room for these details.

I must not, however, omit to mention the famous visit of Queen Elizabeth to the Earl of Leicester in August, 1572, which is described with great minuteness by authors of that time. Here the Queen passed 17 days with a grand retinue, and attended by the highest lords and ladies. The expenses of the host were £1000 a day, a vast sum in those times; during the whole visit, "the great clock was stopped, and the hand kept constantly pointing to two, the hour of dinner, implying that it was one perpetual banquet." Teetotalism seems not to have been fashionable in those days, for they drank 320 hogsheads of beer, besides a daily consumption of 16 hogsheads of wine, and ten oxen were slaughtered every morning. Every species of amusement was introduced on that occasion, tournaments, plays, music, mock fights, bear-baiting, fireworks, fooleries of clowns and tumblers, and rural sports of the peasantry. But the pageant and the actors passed away, and almost three centuries have succeeded.

In its days of glory Kenilworth Castle included an interior court, three sides of which are distinctly traced by the remaining towers and battlements, which have a very imposing appearance; but one side has been broken down and removed so effectually, that no trace of it can be found, except in the mounds of earth by which the ruins are in part covered; the greater portion has been carried away to be used in building.

I will not attempt to describe the ruins of Kenilworth, except by a few very general remarks. Several of the apartments can be distinctly traced; the great hall in which the banquets were held has its walls nearly entire, as are also the rooms which were more especially the private accommodations of the Earl of Leicester, and they even designate those occupied by Queen Elizabeth. Some of the towers are still nearly of full

height. The entire structure is of red sandstone, chiselled and sculptured in a very beautiful manner. Even the delicate tracery in some of the windows is in a good degree preserved, and the stone has endured remarkably well; time has done little, and man has done much to mutilate and destroy; had not wanton injuries been inflicted, Kenilworth, like Alnwick, Warwick, Chirk, and Windsor, would have remained in its pristine grandeur and beauty, the admiration and wonder of succeeding generations.

### Ride to Liverpool.

After retiring from Kenilworth, we drove a mile to the station-house, and had time to snatch a hasty lunch before we were off for Liverpool. Our rapid ride of about 100 miles precluded any very exact observations of this part of the country, through which I travelled in my former visit to England.

We passed near to Coventry, and through Birmingham, where we lingered half an hour, but it added nothing to the impressions received in two other hasty transits, unless it were to make even more conspicuous the dense volumes of black smoke vomited forth by innumerable chimneys, and which formed a dark cloud that hovered over the city. This annoyance is a part of the price which Birmingham pays for its immense metallic manufactures, while, as I remarked in March, it is not behind the other provincial cities of the empire, in fine public buildings and in sumptuous private dwellings.

Birmingham has been honored as the place where the steam engine received its finish of perfection in the hands of Watt and Bolton; and it has a still higher honor in possessing the Rev. Angel James, whose talents and benevolence, as manifested in his excellent works and in his most useful life, are known to the whole Protestant Christian world.\* The truest

\* He has recently retired from his labors as pastor, having sustained them more than 60 years.

honor of a nation resides in its great and good minds, more than in physical structures, but the latter may result from the former, and then there is a double honor.

ARRIVAL AT LIVERPOOL.—The way trains of England, making even more frequent stops than they do in our country, are not more rapid than with us, and it was nearly ten o'clock before we were again at our old home, the Stork Hotel in Queen's Square, where we found my son safely arrived with the luggage. Again we occupied our former comfortable apartments, and were, I trust, grateful that we had returned in safety and without the slightest accident, to the city and the house from which we first departed on our long and diversified tour five and a half months ago. In the mean time we had traversed many countries, and been conversant with nations of various languages, habits and institutions; we had never been embarrassed in our progress, or met with any disaster, or with any thing but kind treatment.

We had interviews with our few friends in Liverpool—few, but warm-hearted and kind in action. Mr. Taylor, Mr. Washington Jackson and family, and Mr. Clare, a young gentleman, some years ago at my house, are gratefully remembered.

EXCURSION TO MANCHESTER AND NORCLIFFE HALL.—The morning was occupied by arrangements having immediate reference to our departure on the morrow for our beloved country. Boxes which had been forwarded from Paris and London having arrived, and being safe on board the Pacific, nothing remained but to transfer ourselves and our personal baggage to the good ship. In her list of passengers our names were enrolled two or three months ago, by correspondence from Italy, that we might not only secure our rooms, but have a choice among the first, especially at a period when we might expect that our returning countrymen, unprecedented numbers of whom have been in Europe this summer, would be flocking to our now favorite Collins line of steamers. These matters being all arranged, we had a few hours to spare, and appropriated them to a visit to Norcliffe Hall, the seat of a private

gentleman, Mr. Robert Grey, whose residence is 15 miles beyond Manchester. Our object was to inspect his collection of minerals, arrangements for which purpose had been kindly made for us by Mr. Letsom, formerly resident at Washington, in connection with the British embassy. I was desirous also to have a glance at Manchester, and two transits, although rapid, would serve to give me some idea of the relative growth of this city since I saw it in 1805.

This purpose was answered, and the more effectually, because the railroad enters and passes Manchester at a level higher than the tops of the houses, and from the cars we could see a good part of the city. It is indeed immensely extended on all sides: its population instead of being, as then, less than 100,000, is now, including Salford, between three and four hundred thousand. A view from above rarely presents a city in an agreeable aspect; and Manchester does not appear to advantage when we look down upon its numerous small houses, crowded on narrow streets, roofed with tiles, and presenting chimneys innumerable. But when we took a carriage and rode through the city, ample amends were made by the wide and handsome streets through which we passed, containing numerous large houses, and several grand public establishments. One of these was the Infirmary. It has a very extensive front and wings; and I was pleased to hear that the benevolent Jenny Lind had erected one of them. On our return from our excursion to Norcliffe Hall, as we then travelled in a private carriage, we had opportunity to admire the numerous, ample, and beautiful country-seats, which adorn the environs of Manchester. While they prove the accumulation of wealth by many individuals, they equally evince architectural skill in the buildings, and rural taste in the laying out and embellishment of the grounds.

NORCLIFFE HALL.—The villages through which we passed were in a state of excitement on account of races in the vicinity, still a favorite amusement with the English, and we were not favorably impressed with the effect upon the population. As

we were standing at the door of a miserable dirty ale-house, waiting for the return of a carriage which had gone to carry people to the races, an old man thrust his hand into the coat pocket of Mr. B., who instantly hurled him into the street: he staggered but did not fall; he seemed too drunk to be offended, and perhaps was hardly conscious of what he did.

Although doubtless many such instances might have been found on the race-course, it is but justice to say that this is only the second instance of drunkenness which I have met with in England,\* although faces red with beer-blossoms are not uncommon among the cab and coachmen, and in such cases I have generally observed that the men were ragged, their carriages worn and dirty, and their horses poor.

Arrived at Norcliffe Hall, we had to regret that Mr. Grey was not at home; but his steward treated us very kindly, gave us a lunch, and opened for us the mineralogical cabinets, to see which had been the object of our visit. The minerals are arranged in drawers, and we inspected them with interest and pleasure; the cabinet contains a choice collection of specimens, and formerly belonged to the late Mr. Allan of Edinburgh.

It appeared that Mr. Grey had expected us to stay over the night, which explains his absence in Manchester, where he has an office, and was to arrive at an hour later than we could wait consistently with our returning in the cars from Manchester to Liverpool. After passing nearly three hours, we left notes of apology and took our departure; not, however, without looking at the beautiful territory of Mr. Grey, which is laid out and embellished with the tasteful elegance of English rural scenes. The house is completely in the country, and surrounded by trees, groves, and green banks in the most perfect order.

The appearance of the fields, between London and Liverpool, demands a few remarks. The russet brown of Autumn is beginning to appear, especially in the fields of wheat and oats, the harvesting of which, and of the crop of horse beans,

\* None on the Continent.

is now drawing near to a close. The hay is also, to a great extent, mown, and although the meadows still retain their verdure, it is not the fresh vernal green, which we saw in our transit through England and Wales, in the early spring. I have more than once mentioned the abundance of the crop of wheat on the Continent; it is also abundant in England, whose fields are rich with an exuberant harvest.

We have every where met the wheat harvest coming to maturity, progressively as we have travelled north. The harvest was mature in Sicily in May; and now, in England, we have found it ripe for gathering in, during August; near Liverpool and in the north, in the last days of that month or in the first of those of September.

The country is still beautiful with an intense verdure in the pastures, parks, and pleasure grounds, and in fact it does not cease even in winter. The trees are numerous in England; the hedge-rows and divisions of fields are generally adorned with rows of trees; and clusters, and even groves, are not very uncommon. Indeed in looking across a wide range of country, the trees in the divisions of fields are so grouped in the perspective, that the country appears almost as if in forest. Some fields are neglected, when bushes spring up in them, as with us, and the hedge-rows in some districts are suffered to shoot in wild exuberance, effectually indeed as regards protection against cattle, but without that finished beauty which in the best cultivated parts of England presents a perfect picture of rural elegance.

We were delighted with the fine herds of cattle and sheep, which we saw in great numbers grazing in the fields. In some parts the cattle were black, but more generally white and black, or white and red, occasionally entirely white. I have been struck with the more extended cultivation of England since my former visit. Still common lands are found, protected, I suppose, by prescriptive rights. Clapham Common still shows a wide extent of land covered with furze and fern, and on the road to Manchester we saw very extensive tracts, red with the

beautiful heath in full blossom, and apparently almost to the exclusion of other plants.

REGRETS on leaving Europe, must of course be many with every intelligent traveller, especially if an American; for unless he has years at his disposal, he will be compelled to make painful sacrifices.

Some of my readers may be disappointed to find that I have, although necessarily, omitted a large class of institutions intimately connected with the interests of humanity. I allude to hospitals, asylums for the insane, for the blind, for the deaf and dumb, and for orphans; refuges for the poor, houses of reform, prisons and penitentiaries.\*

Among the omissions relating to science, which I had the most cause to regret, was the exploration of the tertiary basin of Paris, especially Mont Matre, and the volcanic district of Auvergne.

These places and many more were included in our plan of travelling, but we were compelled to pass them by. My last and greatest source of regret was Scotland, and especially Edinburgh, which is, in my memory, associated with very interesting recollections of my youth. Almost to the last I cherished the hope of revisiting Scotland, but the Continent had detained us too long. Imperative duties and engagements at home alone prevented my waiting for the next steamer, that good old Scotland might have been seen again, but it is still loved as of yore; I was compelled most reluctantly to submit to imperious necessity.

### Liverpool to New-York.

*September 2 to 14.*—The peculiarities of ocean steam navigation having been recorded in the outward passage, only a very brief notice of the return voyage will be given.

\* Amply illustrated by Mrs. Fry, William Allen, Sir Thomas Buxton, and my late friend, John Griscom.

The *PACIFIC*, another Collins mail-ship, lay in the mouth of the Mersey, and we boarded her in a small steamer crowded by passengers and their friends, the latter going out for a take-leave. Already the people of the ship were in active preparation for our immediate departure, and there was hardly time for a hasty adieu before, at half-past two o'clock, *p. m.*, our noble ship was in motion. Soon Liverpool, with its spires and forest of masts rapidly receding from view, sunk beneath the horizon, while evening was upon us before we had rounded the Isle of Anglesea. A quiet night, in the Irish Channel, was followed by a pleasant morning; the coast of green Erin was on our right, and ere noon, we passed again the ever memorable and ever mournful head of Old Kinsale. The *Pacific* bore along about 400 persons, of whom one half were passengers.

CAPTAIN EZRA NYE, an able seaman, and a courteous gentleman, was our commander. Our second night found us on the broad Atlantic, pushing bravely onward, under the united force of steam upon our wheels and of a fair wind in our canvas. Delightful weather, a smooth sea, and a log of 300 miles for twenty-four hours, favored the willing delusion that, as we had begun, so we should go on, and thus shun the rough and tumble of the ocean. But, vain hope! The next morning, all on a sudden, the wind chopped around, and came exactly ahead. All sails were furled, and a heavy sea soon filled our before cheerful saloons with sad faces, and the sofas and settees with disconsolate patients. For four successive days and three nights we encountered an unrelenting storm. The wind blew an adverse gale, and the waves ran high; but our strong ship, with able management, despite of the tremendous opposing forces, kept steadily on her course, and made more than 200 miles in every twenty-four hours. Like a sea-gull, she rode, with graceful ease, upon the billows, and plunged down into their yawning valleys, only to rise again upon the crest of the succeeding wave. She never dipped her bow, or shipped a sea, although the dashing spray often showered her decks.



To those who were well, it was a sublime and beautiful sight, but to most of the passengers it was a scene of severe suffering. Some of the ladies reclined upon the sofas, while the greater number kept their beds; and many a strong man was prostrated. Among the exempts were three gentlemen of our party. For myself, I was not disturbed even for a moment, but walked the deck with a firm step, and was never absent from my place at the table, where there were long rows of vacant seats.

But on the evening of the fourth day the sea went down, and the howling wind was lulled to a gentle breeze, while a splendid sky, with richly-colored clouds in the west, and a bow of promise in the east, gave us assurance of a happy coming morning.

Our languid invalids were assisted to the upper deck, when their faces began to glow in sympathy with the beautiful heavens, and to catch responsive smiles of gratulation.

A quiet night followed; and the next day, September 10, was one of positive enjoyment. Many of the ladies returned to the almost deserted tables; their features resumed their wonted lustre, and, leaning upon a stronger arm, they were able to walk the upper deck. Before evening of this reviving day we were alongside of Newfoundland, coasted for twenty leagues within a mile or two of its bleak and rock-bound coast, passed Cape Race, and at night left behind its last headland, Cape Pine, from which a brilliant revolving light, ever grateful to the mariner, threw its cheerful beams over the ocean. The coast is bounded by a barrier of apparently primary slaty rocks, which dip at a high angle beneath the waves, form a bold shore, with deep water, and in good weather afford safe navigation.

All around, upon the vast bosom of the deep, and in the very verge of the horizon, we saw innumerable vessels fishing for cod—fishing on the long-celebrated shoals, the Banks of Newfoundland. The shores were verdant on the slopes of the hills, but the country was without trees, and we descried only

here and there a house or two, in some sheltered cove, doubtless the abodes of fishermen. The island contains 100,000 inhabitants; and 150 miles to the north is St. Johns, its largest town.

Our rapid progress continued, and our greatest log was 326 miles in twenty-four hours. In a thick fog, on the 12th, while under fearful headway, we just missed, and only missed, a collision with a large ship sailing on the opposite course. The crash, had we met, would have been fatal; but God preserved us!

This very ship, the Pacific, only one day out from New-York, on her last passage to Liverpool, ran over a brig, which went down; but her people were all saved, and are now on board, having sailed to England as the only way of returning home. Collision is one of the greatest dangers encountered in navigation; it is, indeed, not peculiar to steamers, but is more to be dreaded in them, on account of their greater speed and their ceaseless progress, whether in storms or calms, in dense fogs or under a starry sky, or amid tempests of snow, and in impenetrable darkness.

In the absence of amusement—for even the sea-birds, porpoises, and whales have rarely visited us—the passengers have resorted to a very rational source of entertainment.

AN OCEAN CONCERT.—Among our intelligent and agreeable passengers was Miss Catherine Hayes, with her friends, and a corps of performers. She is not only an accomplished vocalist, but a polished and estimable lady; and she cheerfully agreed to the proposal for a concert, with the assistance of a part of her own fine band, and several volunteer singers.

The large saloon was our orchestra; and while we heard without the hoarse roar of the billows, and the sighing of the winds, within we had a full burst of vocal and instrumental harmony, which attracted not the passengers only, but many of the ship's company, who, as if spell-bound, hung around the companion way. Our concert produced two hun-

dred dollars, which Miss Hayes generously relinquished as a present to the seamen.

A cheerful day followed, with a brilliant sky; and our recovered invalids, the more happy for having been ill, were bright and joyous.

As we passed along the ocean-shore of Long Island, with a smooth sea, the promenade deck was so steady that at the approach of evening all our happy passengers were assembled there, as if for a review; but it was a review of a splendid celestial display by which our prosperous voyage was to be terminated.

A heavy thunder-storm was just breaking up; and as its black clouds were rolling away west and south, the lightning played among their dense masses with intense splendor; now darting zig-zag, in forked lines, now shooting out in fiery arrows, and now blazing in one universal illumination.

Evening twilight was upon us, when the sun, partially veiled, presented a well-defined orb of fire, while his setting rays, slanting upward, painted the clouds with azure, crimson, green and gold—colors delicately beautiful, and splendidly gorgeous, but every moment changing their hues. The double illumination of the sun and the lightning produced a scene which was most magnificent, as if light effulgent from the Throne of God had burst out in overwhelming splendor upon this lower world.

To the European voyagers emigrating to our country, and who now, for the first time, beheld the glorious illumination of an American sky, it was intensely exciting and delightful, and their expressions of surprise and admiration knew no bounds.

When the sun's upper limb, reduced at last to a line of glowing yellow light, shining like an ingot of burnished gold, sunk beneath the horizon, the whole company, as if by a simultaneous impulse, gave the retiring monarch of day three hearty cheers *for good night*.

It was not quite fully dark when we arrived at Sandy Hook, and we looked in vain for a boat; for, with the aid of a

pilot, we might have been moored in the dock in season to sleep on shore. Again and again blue lights were burned, and rockets shot off, and cannon fired, but no pilot came; and we dropped anchor for the night, safe and happy, however, in a quiet ship, while we were lulled to sleep by the music of the surf breaking on the shores, which now closed in all around us.

It was early on a Sabbath morning, September 14, when the pilot arrived, and our anchors were again heaved. As we passed the Narrows, our eyes were delighted by the green shores of Long and Staten Islands. Soon we entered the great expanded bay, adorned by villas, villages, and cities, by a wilderness of masts, and by sailing ships, and dashing steamers, which imparted life to the scene.

Our gallant Pacific being moored at the dock, we hastened to bid farewell to our fellow-passengers. With several refined and lovely people, gentlemen and ladies, with whom we had become intimate, we exchanged a *warm adieu*, and our own harmonious little family now separated to the abodes of our friends.

For myself, I resorted to Brooklyn, to the house of that brother to whom the narrative of my early travels was addressed, and who was permitted now to witness the happy conclusion of another foreign tour, performed in the evening, as the early one was in the morning, of life.

Being in season for divine service, I was glad to resort once more, in my own land, to the temple of Jehovah, and with a heart grateful for our preservation, I was delighted to unite in a spiritual worship with my near relatives and fellow-Christians. The next day restored me to my own house in New Haven, to the warm welcome of many friends, and the affectionate embraces of my children.



### ADDITIONAL NOTE ON ST. PETERS.

ST. PETER'S is beyond the Tiber, on the extreme west of the modern city, quite out of the limits of the Rome of the Cæsars, and is not included within the ancient walls, although it is surrounded by the modern defences.

The apparent magnitude of the great temple is, perhaps, rather diminished than increased, by the vast double colonnade, which nearly incloses the extensive area in front of the church.

Each colonnade is composed of four rows of columns, arranged in the form of a bow, bending outward. Near the temple, the colonnades form a right angle, thus bringing the opposite rows parallel, and in that way they proceed to the building.

The number of columns in the two colonnades is 284, besides 64 pilasters. They are crowned with colossal statues, which, with those standing on pedestals in this immense court, are about 200 in number, and, as well as those on the temple itself, they seem like warriors posted there in sleepless vigilance.

To the summit of the temple we ascended up the inclined plane, circling around within the building, with an acclivity so gentle that we mounted without fatigue, even to the gallery, which, at the elevation of 400 feet, encircles the vast dome. The ball is still higher, and some persons ascend even to that. The prospect from both is very extensive and magnificent. It is the counterpart of that from the tower of the capitol, and both

conspire to afford a complete view of the Eternal City, and of its environs.

All of Rome, both ancient and modern, the full area both of the city of the Cæsars and the city of the Popes, was before us; and we reviewed at our leisure the seven hills, and the winding Tiber, visible from this position without impediment through its tortuous course. Within the walls of ancient Rome is included a large area, now almost in a state of desolation—an area twice or thrice as large as that covered by the Rome of the Popes, which, being very near, was most distinctly visible from our elevated position. Looking towards the city, the Janiculum hill was on our right, with its high walls battered into breaches by the French in their late invasion; and in the same region were the desolated parks and rural palaces, now in ruins, that once crowned these beautiful heights. Immediately before us was the frowning Castle of St. Angelo, being the tomb of Hadrian and of other emperors, but for many centuries the fortress of the Popes, and now the stronghold of the French army. On our left was the hill of Monte Mario, and the Flaminian Way, leading out of the Porta del Popolo to the north, as the Appian Way leads to the south. We saw also the distant mountains of Etruria, and Latium, Soracte on the north, and the Alban Hills, in the east, with many towns and villages upon them, beyond the intervening Campagna.

As we looked down upon the temple itself, we became the more sensible of the vast dimensions of this immense pile,\* and admired the talents and skill that could devise and combine all its parts into a harmonious whole, which may endure for ages beyond the three centuries that have already measured its existence.

We rested awhile in the gallery around the interior of the dome, where we were much impressed by the great height of the concave over our heads, and the still greater depth below. There, too, we saw how colossal are the figures which from be-

\* In length 613 feet. St. Paul's, in London, is 590 feet.

neath appear only of common dimensions. The little cherubs, when we approached them, became giants; and the fresco ornaments, which from the pavement seem so delicate, here appear coarse, and almost without beauty.

When we descended from the dome to the roof of the main building, we seemed to be walking on a solid mountain of stone, and so numerous are the balconies and various projections, that it appeared like a village; when we approached the balustrade we were inclosed by a high barrier of stone which we could hardly look over, and ultra-colossal figures, hewn from the solid rock, towered in majesty before us, three or four times the height of our own pigmy stature. Apostles, saints, and martyrs stand as sentries on the temple. Statues are also very numerous in the interior of St. Peter's. They are generally of marble, and sometimes of bronze. The statues of the Popes and their shrines are of great dimensions. The tiara and stiff robes of the Popes are any thing but agreeable in their effect. A hard and unnatural outline of the costume is in utter variance from the graceful curve of the human form. Not a few of the statues of seraphs, and tutelary saints, and imaginary beings, look down from giddy positions in friezes and cornices. The bronze statue of St. Peter is said to have been that of Jupiter Capitolinus, or to have been recast from it. The great toe of the projecting foot is polished into smoothness and lustre by the kisses of devout votaries.

There is a beautiful statue of Mary, supporting in her lap the dead body of her son. It is by Michael Angelo, whose name is engraved on the girdle\* of the mother.

In St. Peter's, pictures are still more numerous than statues. I have already mentioned the mosaics, and nearly all the pictures here, and especially the large ones, are executed in that manner. When from the floor we see the Transfiguration of Raphael, and the Last Communion of St. Jerome by Domenichino, done in mosaic, we should never imagine until we inspect

\* A solitary instance among the works of the great artist.









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