

fire is applied beneath, and a regular heat is maintained, which once more converts the oil into vapor. This vapor passes through iron pipes immersed in cold water, and is recondensed, passing into receiving tanks. The color of the oil is now a dark green, and its consistency much thinner than when it entered the still. The impurities are left behind in the still in the form of a compact lustrous coke, which makes an excellent fuel, and is used on the works. The oil, after the first purification is passed, into a series of cast-iron tanks, resembling a row of boilers, where strong sulphuric acid is added to it for the purpose of separating the remaining impurities from the oil. Each tank is fitted with a revolving stirrer which is worked by machinery and which violently agitates the liquor for four hours, causing the acid to act upon the whole of the oil. The color of the oil has now changed from a dark to a light green, and the organic impurities have settled to the bottom of the tank in the form of coarse tar, which is used as fuel. The third stage of purification is effected by an alkali which neutralizes any sulphuric acid that may remain in the oil, and further divests it of other impurities not acted on by the acid. After a thorough cleansing the liquor is allowed to settle; the refuse is then drawn off, and the oil is returned to the stills, where it undergoes a second distillation. From the receiving tanks it is again led to the cleansing tanks, where it is treated a second time with sulphuric acid and afterward with soda. The oil has now arrived at a state of comparative purity, and has assumed a pale yellow color. In this condition it embodies the elements of four different products, each of which has its own separate valve.—*Mechanics' Magazine.*

EDITORIAL CORRESPONDENCE.

Lake Maggiore and the Borromean Islands—Characteristics of Lombard Towns, Hotels, and People—The Simplon Pass—The Rhone Valley and its Inhabitants.

GENEVA, Sept. 20, 1867.

My last letter was written from Lake Maggiore, but I must go back just far enough to say a few words about the old town of Bellinzona, the first impressions of which were somewhat peculiar. It stands in the Valley of the Ticino near the borders of Lombardy, and naturally commands the passes that lead over the Great St. Bernard and St. Gothard—a line of embattled walls surmounted by three old feudal towers, stretches across the valley on the Swiss side and locks together the stupendous mountains that lie on either side, imparting to the place, externally, a most imposing appearance, but like many other things,

"Distance lends enchantment to the view."

for though one of the chief towns of a Swiss Canton, its characteristics are all Italian. The streets are narrow, and the houses are constructed to form an arcade over the sidewalks, which afford an agreeable shelter from the summer heat and the winter cold. The inhabitants are generally a slovenly, listless, lounging set, who appear to vegetate in a condition of dreamy unconcern about the present or the future.

The first view of the beautiful Lake Maggiore is obtained from the splendid highway that leads from Bellinzona over Mt. Cenere to Lake Lugano. It requires two hours to make this ascent, and owing to its steepness, three horses are required to drag up the carriage and two passengers; but no traveler can be impatient to complete this beautiful drive, affording as it does a succession of magnificent views of the upper end of Maggiore and its amphitheater of surrounding mountains, clothed in the richest garniture of luxuriant vines hanging in festoons; dark fir trees and noble chestnuts, the sight of which awakened the most pleasing recollections of the autumnal glories of our own country. Mt. Cenere, so fair and so beautiful, has, until recently, formed a safe cover for a band of Italian robbers, and is rendered comparatively safe only by the presence of a few guards—men who occupy rude cabins at the summit where the roadway winds through the denser forest.

The sun was just dropping behind the distant Alps, and the deep shadows of twilight had fallen upon the mountain top when we passed this gloomy spot, but we were kept in comfortable ignorance of all real or imaginary danger until we had safely reached a miserable village in the open country, which seemed fit only to shelter a band of brigands. Beyond Lugano, at the foot of the mountain, at a small place which bears the euphonic name of Fornasette, we passed the frontier into Lombardy, or Northern Italy, and here a few of Victor Emanuel's humble servants in blue waited upon us and examined our little effects, and informed us that we might depart in peace, which act of kindness we returned by polite bows and a few sous to a young, black-eyed mother who brought out her little baby—sans culottes—that we too might admire the object that charmed her heart.

Our Italian vetturino, anxious to get hold of the expected reward for the journey, drove us hurriedly down the sharp declivity, into and through the narrow streets of Luino, cracking his whip in the most vigorous manner to warn the inhabitants that we were actually coming, and thence wheeled us through the *porte cochere* of a singular looking building, which upon inspection, turned out to be a hotel of nondescript architecture. In answer to an inquiry, "could we have rooms?" the little landlady answered, with a half sigh, "that we could have our choice of all the rooms in the house," and I am willing to confess that she did all she could to make us comfortable—eager to show that her house stood high in public estimation, she brought us a little register which contained an autographic endorsement by Garibaldi, who here fought a sort of rough and tumble with the Austrians in 1849. He also seized the little steamers running on the lake, worried

the inhabitants, and levied contributions upon the numerous convents that exist in this region.

Garibaldi's name is still a wonderful power in Northern Italy and his call to arms, for the unity of Italy, which simply means the desecularization of the Pope, would rouse these seemingly dull people to heroic deeds. The inhabitants of Lombardy are thoroughly and almost superstitiously attached to the Church of Rome. They were born, baptized, and reared within its folds. It is their "Notre Dame," and yet, strange as it may seem, they are eager to take up arms and fight to overthrow the pope as a temporal sovereign—but as the spiritual head of the Church, they would cling to His Holiness with all the affection of loving children.

Lake Maggiore, about which so much has been written and said, is a beautiful sheet of water about fifty miles long and three miles wide, inclosed at its upper end by high mountains, on the sides of which stand numerous ancient square-towered Lombard churches, convents, fine villas, and remains of feudal castles which belonged to noble families now either partially or wholly extinct. More than six centuries ago, during the stormy times of the Italian Republics, noble families lived upon the borders of this lake, and struggled powerfully to maintain the mere semblance of a Republic which was simply a government of civil and ecclesiastical tyrants who robbed the people of their substance and stripped them of their rights; but the spirit of freedom was not extinguished, and Europe will know no repose till the nation, which in the dark ages lighted the torch of civilization with that of liberty, shall be permitted to enjoy the light which she created. The borders of the lake are studded with picturesque little villages which just now look seriously scared as if every one had fled from them. Byron's description of "The Last Man," would not inaptly apply to these places, so desolate do they appear at this moment through fear of the pestilence which has turned back the vast tide of summer travel that usually flows down the mountains to this interesting group of Italian lakes. One of the most interesting features of Lake Maggiore is the Borromean Islands which cluster within the little bay of Baveno, upon one of which stands the Castle of Count Borromeo, and the magnificent gardens, formed two centuries ago by the patient application of soil to a ledge of rocks that rise a hundred feet above the water, forming a sort of little fairy land upon whose artificial surface flourish, in open air, the cactus, the aloe, the orange, citron, myrtle, pomegranate, and the camphor tree, all natives of the tropics; but some fastidious writer, not admiring this forcible treatment of nature, within view of the Alpine snows, describes this garden as "a huge Perigord pie, stuck round with heads of woodcock and partridges."

Some few miles below the Borromean Islands we quitted the little steamer and landed at Arona, which is chiefly famous for having been the birthplace of St. Charles Borromeo, Archbishop of Milan, whose life was spent in acts of humanity, self-sacrifice, courage, and benevolence, a combination of rare virtues which are intended to be memorialized in a colossal though somewhat uncouth statue of the saint which mounts up sixty-six feet high, and stands upon an eminence above the town overlooking the lake. Persons entering the head of the statue are permitted to rest themselves by sitting down in a recess of the nose, which serves as a very comfortable arm chair, but inasmuch as a nest of bats have got possession of the head, it is much more comfortable to keep outside.

At Arona a railway runs to Milan, a place we were anxious to visit, but owing to the existence of cholera, we decided to return to Switzerland over the Simplon. Having made a written contract for our transportation—a precaution which should never be omitted in this region—and seated in a comfortable old carriage with armorial bearings on its panels, and which we were assured was once the property of a noble family, we journeyed for two hours over the terraced road that runs along the margin of the lake, until we reached the shore opposite to Feriolo, where we were ferried over a small bend in the lake upon a rough barge propelled by ropes. It occurred to us at the time, that this rude mode of transportation was an awkward link in the magnificent chain of roads that terminated at this little firth, and upon inquiry, we were informed that several months before the roadway that led across the spur of the mountain suddenly sank beneath the water, carrying with it a portion of the village, together with several of its inhabitants, who were hopelessly engulfed in this subterranean stream, which for ages has been gradually wearing away the under crust of the mountain. At this point there are immense deposits of beautiful gray marble, and hundreds of workmen are employed in quarrying it out for building purposes, and in cutting a new road which promises, when completed, to form a permanent stone bridge over this treacherous undercurrent of the mountain.

Our first night upon the Simplon road was spent in Domo d'Ossola, at a house which sports the title of "Hotel de Ville, or Ancienne Poste," a sort of barrack for the diligences that run over the pass. The landlord ushered us into apartments immediately above the horse-stables, and, according to a prevailing custom at European hotels, inquired at once if we would have anything to eat. Upon being told that we could not dine well amidst such "odoriferous concentrations," he seemed surprised, and ordered our luggage to be taken to a front room, where we found clean beds—a luxury never wanting in even the meanest looking European inns. There are no halls within the interior of some of the old Italian inns, therefore communication is had with the chambers, either from outside galleries, or through doors which open from one room into the other. I will not pretend to describe the architecture of the Hotel of the Ancient Post, but should think that it was a conglomerate of all styles since the time of the invasion of Barbarosa. Our exit in the morning was

across a triangular-shaped stone balcony, down a narrow flight of steps into the stable yard, and from thence into a dark breakfast room, where everything looked very uninviting except a few boiled eggs, which seemed to have escaped contamination.

The distinguishing characteristics of Domo d'Ossola, are houses with colonnade, awnings over the streets, shops with a choice assortment of sausages, macaroni, and garlic; stupid looking lazzaroni, in red night caps and bare, mahogany-colored legs; sleek looking, well fed priests; females of a dreamy, unwashed cast of countenance—these all go to make up a picture which may aptly apply to any of these Italian towns; but the country is grand and lovely in the extreme, and in the hands of an industrious and enterprising people, it would become the fairest of the earth. With the exception of the Ravine Gondo, which is wild and savage in the extreme, together with that portion of the roadway that runs along the gorge of the Schalbet and through a tunnel underneath the Kaltwasser which flows from an extensive glacier above, there is nothing in particular that distinguishes the Simplon above the other great passes of the Alps. Indeed, it is inferior, on the whole, to the St. Gothard, the scenery of which is sublime from beginning to end, a remark that cannot justly be ascribed to the Simplon. It is, however, a stupendous piece of engineering, and must forever stand a monument to the memory of the great Napoleon, who projected its construction, and to Ceard, the engineer, who planned and executed its gigantic details.

Another hard day's travel brought us from Domo, over the Simplon, to Brieg, a small Swiss village in the valley of the Rhone. In this valley the inhabitants are usually poor, simple, and wretched. They subsist upon the products of a cold, sterile soil, which supplies little else than scanty pasturage for cows and goats. They are also exposed to constant dangers from the overflow of the river, and from avalanches that sometimes slide down from the higher portions of the mountains, plowing their way through fields and villages, uprooting trees and rocks, presenting, often, a scene of savage desolation. In one of the little mountain villages we counted a flock of upwards of one hundred and fifty goats, with little bells jingling upon their necks, being driven through the streets by two boys, whose appearance indicated that they were strangers to the use of water as an external application. In passing through the streets, the goats were gradually taken in by families on the route, and the next morning the same unwashed boys gathered the flock together and drove them far away to the mountain pastures, where they tended them until the hour of the evening milking.

In the Rhone valley the inhabitants are, also, afflicted with the goitre, or swollen neck, in its most repulsive forms. A disease which has baffled all medical skill and research to discover its cause or to effect its cure. Here, also, we found the Cretans, or idiots, who, though bearing the human form, are always repulsive objects of commiseration. I cannot imagine any other reasons why people should try to live in this valley, except that they are ignorant of a better country beyond, or are too poor to get away.

We stopped an hour at the poor little village of Tourmagne, which was nearly overwhelmed by an earthquake in 1855. The postmaster very civilly explained to us that at the time of the earthquake, he was standing in the street, fronting the old hotel, which was at one time the residence of a Baron, who must have had a barren time indeed if his luxuries were supplied from the surrounding country. The postmaster, in order to give emphasis to his fearful situation, planted himself in the middle of the road and described the "Baronial Hotel" as about to pitch on to him, and that he thrust out his hands most vigorously to resent so uncomfortable an intruder. But the most singular feature of all was, that the adjacent mountains were thrown upward, and, during the upheaval, they were ripped open in several places, the evidences of which plainly appear in the form of deeply-cut fissures, extending from the base to their summit. A little further on there is an immense crater, called Il Graben, the jagged inerior walls of which resemble an extinct volcano; but it is not extinct for mischief, for, during high rains, and at springtime, large masses of dirt and stone have been forced down with such violence that a channel fifteen feet deep has been cut all the way down to the edge of the river.

In a few hours more we reached the active and picturesque old town of Sion, where we were glad to dismiss our Italian vehicle, and to get into a comfortable railway car, which safely landed us at Villeneuve at the head of Lake Geneva, one of the most lovely spots in Switzerland. S. H. W.

Correspondence.

The Editors are not responsible for the opinions expressed by their correspondents.

Conveying Steam through Long Pipes without Condensation.

MESSRS. EDITORS:—We notice in your answer to H. L. W., of Pa., you say: "If the steam pipe is of ample size and well protected there will be but little loss from condensation in carrying steam 1,000 feet." We think this answer is calculated somewhat to lead persons astray, as they might think the larger the pipe the less the condensation. We will give some of our experience in carrying steam and our reasons for using small pipe. We have a steam pump working in a mine slope 1,540 feet from the boilers. The steam cylinder is 14 inches diameter, 3 feet stroke, and we are carrying steam the whole distance in a 2-inch wrought iron pipe. We had some little trouble before the pipes were covered, but now experience no difficulty in working the pump up to its full speed. We also have two steam pumps in mine slopes 800 feet from the boilers; the steam cylinders being 25 in. diameter and 4 ft.