

AN ASCENT OF THE VOLCANO OF AGUA, CENTRAL AMERICA.

M. P. de Thiersant, *Chargé d'Affaires* of France at Guatemala, communicates to *La Nature* the following narrative of a recent ascent made by him of the celebrated volcano of Agua, which, within the historic period, has emitted only water, but that occasionally with disastrous consequences:

I started from Guatemala on the 16th of February, 1879, with my wife, Mr. Graham, the British *Chargé d'Affaires*, and Captain Gaillard, aid-de-camp to President Barrios.

After a night's rest we again took up our route, accompanied by an escort of 20 Indians. At half past 11 o'clock we entered the city of Antigua, the unfortunate victim of an earthquake in 1773, and which has never since risen from its ruins. There we found the provisions that we had ordered in advance, as well as a supply of horses and some new traveling companions—a French gentleman, M. Coupé, and a Guatemalan lieutenant. At 2 o'clock we mounted our horses and proceeded toward Santa Maria, following, as far as San Juan del Obispo, the valley of Antigua, which is covered with coffee and corn plantations. We then began the ascent by a road cut out of a mass of ashes and *lapille* (lava gravel), the numerous strata of which marked the ancient eruptions of the volcano. At 4 o'clock we perceived the ranchos of Santa Maria, a large town inhabited entirely by Cokchiquel Indians, who speak the Populuka language. The plain on which they have established themselves is 6,800 feet above the sea level, undulating in character, and covered with volcanic deposits, which are utilized in the culture of coffee, corn, and sugar cane.

As soon as our presence was known a large number of them, men, women, and children, ran to meet us, and accompanied us as far as the door of the *cabildo* (town house), the two halls of which were kindly put at our disposal by the alcade of the place. At half past 3 o'clock in the morning the caravan again moved, preceded by a drummer, a fifer, and a lantern bearer, the 20 Indians bringing up the rear. The night was quite dark, though starlight, and the air was filled with cold mists which covered the plain. After having got beyond the houses of the town we reached the side of the cone, the inclination of which allowed us to make our way easily, although slowly. Then, taking our steed by the bridle, we followed a path which led us to the clearing called *La Cruz* (The Cross), and which we reached at a quarter past 5 o'clock. The thermometer marked 58° C. (42° F.); we were at an altitude of 8,500 feet. To preserve us from the effects of the cold, which was quite acutely felt, the Indians lighted a large fire, and seated around this we patiently awaited the dawn of day. At thirty-five minutes past 5 we again took up our march, leaving our horses in charge of some of the Indians, and penetrated the forest by a path inclined at an angle of about 28 to 30 degrees. After walking for an hour we entered the region of conifers, and struck the boundary of the forest, which is at an altitude of about 10,000 feet. From this limit onward the ascent was really painful and difficult. The path ran through the midst of thickly tufted plants, 15 to 20 inches high, which are used by the Indians for covering their ranchos.

Walking was at first quite easy, although the soil was very slippery on account of its clayey nature; as yet the grade was only 30 to 35 degrees, but little by little it became steeper, until it was, if I am not mistaken, fully 45 degrees.

At an altitude of 10,170 feet we turned to the right, and for some time followed the ravine through which rushed the torrent of water that, in 1541, destroyed the city of Ciudad-Vieja. Afterward we turned again to the left, and proceeded directly northward toward the slope of the volcano, which seemed to recede in proportion as we approached it. At an altitude of 10,500 feet we began to meet, at various distances apart, small glaciers, called *neverias*, in the hollows of the mountains, and from which the Indians obtain the ice which they sell to the inhabitants of Antigua. One of the curious facts that we observed was that from the beginning of the forest as far as the volcano the surface of the soil, protected from the rays of the sun, was covered with ice some millimeters thick, and it remains in this state, although the mean temperature of 0° C. (32° F.) occurs at a much higher altitude than this.

Another fact observed was that, in proportion as we ascended, the pines became more stunted and less numerous, all those that we noticed being half charred and bearing the traces of lightning or of fire. The aspect of these blackened and leafless pines, scattered here and there about 30 feet apart, only added to the desolate appearance of the desert through which we were desirous of hastening. Unfortunately, this last part of the ascent was the most toilsome; the rarefaction of the air, added to the steepness of the mountain, obliged us to ascend slowly in order that we might breathe. Finally, after painful efforts, we reached the volcano at half past seven.

FORMER ERUPTIONS OF THE VOLCANO.

The volcano of Agua once destroyed an entire city, not with torrents of fire and lava, but with an avalanche of water which had gathered within its walls. This fearful catastrophe is thus narrated by the historian Juarros:

"The most awful calamity which had as yet afflicted this unfortunate city (Guatemala) took place on the morning of the 11th of September, 1541. During the three days preceding there had been an incessant and violent rain, particularly during the night of the 10th, and the water seemed to fall rather like a cataract than a mere rain. It is impossible to describe the fury of the wind, the perpetual

flashes of lightning, and the fearful roar of the thunder. On the morning of the 11th, at 2 o'clock, the quaking of the earth was so violent as to make it impossible for any one to remain standing; and the shocks were accompanied by subterranean noises which caused a general terror. Soon afterward an immense torrent of water was precipitated from the summit of the mountain, carrying along with it enormous quantities of rocks and gigantic trees. It descended exactly upon the unfortunate city, destroying almost all the houses, and burying a large number of the inhabitants beneath the ruins, and among others Doña Beatrice de la Cueva, the widow of Pedro Alvarado, the illustrious conqueror."

PRESENT ASPECT OF THE CRATER.

The crater which contained this volume of water, and which is to-day perfectly dry, is about circular in outline and funnel-shaped, its diameter at the top being 625 to 650 feet, and at the bottom 312 feet. Its depth does not exceed 312 feet. Its sides are composed of solid rock, in some places forming an unbroken wall, and at others piled up in immense blocks; they are inclined at a steep angle, especially at the east and west, and strewn with stunted pines. The bottom of the crater is level and composed of a clayey soil, overgrown with a small grass, along with which are found a few myrtaceous plants of a species which also grows on the sides of the mountain. At the base of the chasm are found, lying pell-mell, large blocks of stone that have fallen from the summit, and upon which are seen several names written, with the dates 1550, 1553, etc. At some parts of the walls and the upper edge are seen manifest traces of an ancient eruptive activity, which, with the enormous deposits of igneous dejections accumulated at the foot of the mountain, indicate that the volcano of Agua was formerly ignivomous, although there now exists neither history nor tradition of such eruptions.

After visiting the bottom of the crater, I ascended and made the tour of its summit. The ascent is quite difficult, and even dangerous. One is obliged to climb over blocks of rocks, and in certain places the passage is so narrow that great care is necessary. The highest point is at an altitude of 12,500 feet. M. M. Dolfus and Montferrat made it 12,300, Father Cornet 12,400, and Cervantes 13,800. It took us more than an hour to make the circuit of the edge of the volcano. But what a magnificent panorama we enjoyed from the top of this observatory, placed by nature at a very short distance from the summit line! In its entirety, the view embraced the whole Republic of Guatemala, a portion of that of Salvador, and extended to the Atlantic and Pacific, whose immense blue sheets were confounded with the horizon. As details of this splendid picture, probably unique in the world, we observed on one side the volcano of Fuego, with its immense plume of smoke; on the other, the green plains of Escuintla, whose tints, diminishing by imperceptible degrees, finally disappeared in the billows of the ocean; the great lake of Amatitlan, whose green shade was relieved by the sugar cane plantations which surrounded it; further off, the naked and ragged summits of the provinces of Altos, surrounding the picturesque lake of Aititlan like a crown; and, finally, shut off in the distance by the high mountains of Vera Paz, the laughing valleys of Antigua and Guatemala, with their fields of coffee and maize, and their collections of houses forming villages and cities. In the midst of these marvels of nature the only sad thing is to see that the hand of man has as yet done hardly anything to reap any benefit from them.

Russian Fairs at Nijni-Novgorod.

A cable telegram a few days ago announced that, during the annual fair at Nijni-Novgorod, a fire broke out which consumed several of the booths. Nijni is on the Volga, very near the center of European Russia, and has direct railway connection with Odessa, Moscow, and St. Petersburg, where merchants take an active interest in the annual fairs. The business in furs and skins forms an important part of the transactions at these gatherings. A correspondent writes to the *Shoe and Leather Reporter* as follows respecting the fair and the methods of doing business:

"At Nijni the summer days are generally hot, and the nights seldom darken into anything deeper than a silvery gray twilight. The sun rises early, and by five o'clock all the travelers are up and pouring into the public houses, where they breakfast off tea mixed with spirits, raw ham, cold sausages, and other such light trifles. Then the business of the day commences, to end virtually at eleven o'clock, for by that time all the important sales have been effected, and the rest of the day is given over to napping, dining, and festivities. The booths of Nijni may be counted by the thousand, stretching from the center of the town through all the principal streets in every direction, and out into the suburbs; but for the convenience of traders the different wares are classed together—the jewelers near the Starostat House, close under the eyes of the police; the silks and cloths a little further; then the hardware, and so on. Out into the suburbs, where their fragrant may blend with that of the country air, are the skinner's stalls, whose goods are of powerful perfume.

"The Russians haggle a good deal over their bargains—not with screams like the Greeks, nor with disdainful shrugs like the Turks, but with fawning and persuasive banter. The graver Russian merchants do their bargaining with a solemn brevity of speech, but they have none the less a reputation for being sly customers. Chroniclers are in doubt as to whether it is the Russian or the Chinese who is hardest to beat in business; at any rate, the Russian is so incredulous

of other men's honesty that he mostly keeps his own hidden like a precious coin, only to be exchanged for a full equivalent. There is no such thing as buying a pile of skins at sight and trust in Nijni; every skin must be overhauled, and if the slightest flaw be apparent it must be exchanged for a better one. This system, applied to other goods besides skins, makes business a little slow, and explains the fact that not much money changes hands, though there is much fussing in the booths."

Krupp of Essen.

The cast steel manufactory at Essen has existed since 1810. It has been conducted by the present owner, Herr Alfred Krupp, since 1826, and since 1848 for his sole account. The number of workmen at the close of 1877 amounted to 8,500. There are in these works 1,648 furnaces, 77 steam hammers, the largest of all weighing 50 tons, 18 trains of rolls, and 1,063 machine tools. One of the steam engines at Essen is 1,000 horse power. When all existing facilities are employed the works can produce in 24 hours 2,700 rails, which will lay 11½ miles of line, 350 tires, 150 locomotives and car axles, 180 car wheels, 1,000 railroad springs, 1,500 grenades, etc. In one month there can be produced 304 field guns and guns of large caliber. At the various works of Herr Krupp there were also employed 5,300 workmen in addition to those already enumerated. The mines attached to the works embrace 4 coal mines and 562 iron ore mines, including iron mines near Bilbao, in Spain. Four large steamers owned by the works, each of 1,700 tons burden, besides leased steamers, are engaged in the transportation of Spanish ores to Krupp's furnaces on the Rhine. Another steamer, of 1,000 tons burden, is being constructed.

Wheat Raising in the South.

The *Macon Telegraph* announces that for the first time in the history of Georgia the local mills find wheat in sufficient abundance to run them without drawing supplies of wheat from the North. There are, undoubtedly, parts of Central Georgia where wheat can be grown to perfection, for there the soil is a stiff clay loam, and is rich in the elements that wheat requires. But even upon the sandy soils of that State it appears that good wheat crops can be raised by the application of fertilizers, and if care be taken in the tillage. It seems to be a remarkable thing that in such soils wheat should be grown, as the *Telegraph* states, as far south in Georgia as the Florida line. This success has been achieved by the use of the drill. Nor is it only in Georgia that the cultivation of wheat is extending. In Northwestern South Carolina the Germans have demonstrated that excellent crops of both wheat and rye can be raised by deep drilling and manuring with the waste of the barnyard composted with muck and pine shatters.

How to Save Clover Seed.

One of our best clover seed savers is just at our elbow, and he says: "Tell them the second crop is for the seed, and is really fit for no other purpose, as it salivates the stock fed on it; that the best time to cut for seed is a very nice point to determine. It should be cut when a majority of the heads turn brown, and before any begin to shed off the little seed pods, each of which contains a seed. Cut the second crop of clover just as though it were for hay, rake it into windrows, and let it lie and take one or two showers; then put it into very small cocks while damp, about one good pitchforkful in a place, and when it is dry put into stacks and cap with something that will turn water; or what is still better, if you have a shed or barn, put it there and let it remain until you get a huller to take it out for you. There are hullers enough now in the State to hull all the seed needed for home use, and the owners of the hullers are willing and anxious to go to any section where work can be had. Let our farmers save all the clover seed they can, and thus help to make thousands of dollars for the State, now sent out each year for clover seed to sow."—*Rural Sun*.

Staining Pine.

The *Northeastern Lumberman* recommends the following manner of staining pine to represent black walnut: Put pulverized asphaltum into a bowl with about twice its bulk of turpentine and set where it is warm, shaking from time to time until dissolved; then strain and apply with either a cloth or a stiff brush. Try a little first, and if the stain be too dark, thin it with turpentine. If desirable to bring out the grain still more, give a coat of boiled oil and turpentine. When the wood is thoroughly dry, polish with a mixture of two parts shellac varnish and one part boiled oil. Apply by putting a few drops at a time on a cloth and rubbing briskly over the wood.

Pneumatic Cushion for Elevators.

An apparatus has been put into practical use in Chicago by the inventor, Colonel A. C. Ellithorpe, and subjected to serious tests in the Chamber of Commerce, where the elevator car, which itself weighed two tons, was loaded with 5,000 lb. of iron, and, to test the real merits of the invention, a basket of eggs and some glass globes; the car was then dropped from a height of forty feet, and was checked so gradually by the air at the bottom of the shaft that neither an egg nor a globe was broken. This encouraged two men to drop with the car, and they reached the bottom not only in safety, but almost unshaken.