

erning the velocipede, one lifts the leg that was on the ground and places it on the other pedal. Then cause the legs to regularly and alternately turn the pedals; speed of course is increased by quickening the action. After an hour or two one will certainly thus have acquired the means of attaining a medium speed. To get off, the feet are at once and simultaneously lifted off the two pedals, which diminishes the speed, upon which both feet are put at once to the ground.

"There is no danger, with a little caution, in using this machine in this way, even for a novice. The pedal is so constructed that the foot of the rider can at once leave it, and he has only to put the foot to the ground at the side upon which the machine inclines to gain a resisting point: one must not let the handles go; these serve to maintain and restore the balance of the machine when the rider has got off it.

Should the velocipede be too high to practice it in the mode above indicated, the learners should get some one to hold the machine, the hands on the extremity of the bar upon which the rider sits, so as in no way to impede the action of the fore wheel. It is well to choose a sloping ground to learn on.

So far, accidents have been neither numerous or serious, and the predictions that these machines would prove dangerous have not been verified. A Cincinnati paper gives the following account of a velocipede accident, resulting, however, from no defect in the machine:

A lad by the name of George Grier, having a desire to learn to ride the velocipede, engaged one of the machines at the velocipede school on Seventh street, and commenced his lesson in the fourth story of the building. He proved to be a very apt pupil, and having made the circuit of the large room several times with the assistance of his teacher, was anxious to try it alone. Mr. Miller acquiesced, and gave the novice a good start. The lad ran the machine eight or ten yards very skillfully, but after that distance had been gone over, the velocipede became unmanageable, and made for a large hatchway in the middle of the room. The machine going at full speed, ran against the wooden guard around the opening, crashed through the boarding, and precipitated the rider to the cellar of the building, four stories and a half beneath. His fall was somewhat broken by the velocipede, which it seems struck the ground first, with him clinging to it; but notwithstanding this favorable circumstance, he received injuries which it is feared may prove fatal.

The junior editor of the *Mauch Chunk Gazette* has been experimenting on the velocipede, and gives an amusing account of his experience. The difference between these new-fangled horses and the orthodox quadrupeds seems to be about this: In the case of the former, the animal has to be broken before it can be ridden, while with the latter it is the rider who must undergo the breaking process.

ABOUT EARTHQUAKES.

On the 13th of August last, and the three successive days, fearful earthquakes occurred on the coast of Peru and in the interior of Ecuador, extending from Ibarra, a town of Ecuador, fifty miles to the north of Quito, to Arica, Arequipo, and Iquique, along the coast for a distance of 1,200 miles, and over a wide, but as yet unascertained region of the interior. The particulars of the catastrophe are familiar to our readers. An English exchange, in discussing this disaster in connection with earthquakes in general, gives some interesting details, from which we condense the following:

"Of all the great and overwhelming evils to which men are exposed, there is no one so sudden, so terrible, and so destructive as that produced by earthquakes in those regions in which the great internal fires of the earth, or the vapors produced by chemical or other action, are still in full force. It is the opinion of the great Humboldt that if we could obtain daily intelligence of the condition of the whole surface of the earth, we should probably arrive at the conviction that the surface is almost always shaking at some point, and that it is incessantly affected by causes working at one point or other in the interior of the earth. Earthquakes probably owe their origin to the high temperature of deep-seated molten strata in the interior, and are quite independent of the nature of the rocks or of the earth near the surface. Earthquake shocks have been felt even in the loose alluvial soil of Holland; and the great earthquake which destroyed the city of Lisbon on the 1st of November, 1755, was felt as far north as the shores of the Baltic and the mountains of Scotland. But it is one great happiness which the natives of the British Islands and Northern Europe possess that they have long been free from earthquakes of destructive violence. The great internal fires or forces, of whatever nature they may be, by which destructive earthquakes are produced, seem to have exhausted their strength, at least for some hundred years now past, in Northern Europe. Yet our distance from these great centers of commotion is not so great as we generally suppose. The earthquake of Lisbon in 1755 was probably one of the greatest convulsions in modern times, and attended with the most terrible loss of life. That at Messina, in Sicily, in the year 1783, was scarcely less terrible or fatal, and nearly the whole of the south of Spain, of Italy, and of Greece have at various times been shaken and convulsed with earthquakes. Happily, however, they do not appear in modern times to have exercised any destructive influence north of the chain of the Alps, although tremblings of the earth were felt almost every hour, for months together, in the month of April, 1808, on the eastern declivity of Mont Cenis, a portion of the chain of the Alps at Fenestrelles, and Pignesol. Beyond that point these great internal forces, though often felt, have never produced any dangerous convulsion in modern times, and the natives of France, Germany, and the British Islands may regard it as one of the many great advantages for which they have reason to be thankful that they are now, and have been for many generations, free from destructive ravages of forces by which so many other portions of the earth are

periodically laid waste. The people of the United States have, to a great extent, the same reason for gratitude; for, although there were very destructive earthquakes in the valley of the Mississippi in the years 1810-11, there never yet has been an earthquake by which any considerable city of the United States has been destroyed.

"From the West Indies southward, over the greater part of South America, the causes by which the earthquakes are produced appear still to be in action. In the earthquake of Rio Banba, in the same district of country which has just been laid waste, the whole city of Rio Banba, with 30,000 or 40,000 inhabitants, was destroyed in a few minutes by a sudden explosion like the blowing up of a mine. Humboldt states that this terrible event was unaccompanied by any noise, but that a great subterranean detonation was heard twenty minutes after the catastrophe at Quito and Ibarra, one of the towns or cities destroyed in the recent earthquake in Peru. It was not, however, even heard at Tacunga, another of the places destroyed, although that place is (or rather was) nearer to the great convulsion of 1797. In the celebrated earthquake of Lima and Callao (Oct. 28, 1746), a noise resembling a subterranean thunderclap was heard a quarter of an hour later at Truxillo, but unaccompanied by movement. In like manner after the great earthquake of New Granada (Nov. 16, 1827), subterranean detonations were heard with great regularity at intervals of thirty seconds throughout the whole Cauca Valley, while at a distance of 633 miles to the north-east the crater of the volcano of St. Vincent, one of the small islands of the West Indies, was pouring forth a prodigious stream of lava. During the violent earthquake in New Granada, in February, 1835, subterranean thunder was heard as far north as the islands of Jamaica and Hayti, as well as the lake of Nicaragua. Wonderful as these distances are, they are not greater than the vibration produced by the great earthquake of Lisbon, which was felt over a space four times as large as the whole of Europe. In that great convulsion the sea rose at Cadiz, in consequence of the commotion of the earth, above sixty feet; and in the West India Islands, where it usually does not rise more than three feet, to an elevation of at least twenty feet. There is no manifestation of force yet known to us (including the murderous inventions of our own race) by which a greater number of human beings have been killed in the short space of a few seconds or minutes than in the case of earthquakes. Sixty thousand were destroyed in Sicily in 1693; 30,000 to 40,000 at Rio Banba, in South America, in 1797; and perhaps five times as many in Asia Minor and Syria, under Tiberius and the elder Justinian, in the years 19 and 526. We fear that this new calamity in Ecuador and Peru will prove, when all the results are known, nearly equal to some of the above."

New American Pigment.

The London *Mining Journal* in noticing some extraordinary puffs of a pigment, known here as "Bartlett's Lead," says: "The process described, and the resulting product, are alike improbable, if not impossible. The mine from which the raw material is derived was described as being first in New Jersey and then in North Carolina; yet the removal of the mine would be much more simple than the production of the pigment stated by the process described. An ore, which contains various metals—lead, silver, zinc, copper, gold, iron, and manganese—is treated so as to remove the silver, lead, and gold, and when the residuum has been subjected to a white-red heat, the powder becomes impalpable and delicately soft, and of a pinkish chocolate color—this seems to be a common impure iron paint. This powder is made into white lead by burning it with small hard coal in a closed furnace, from which the mineral is drawn off by large rotary fans in minute and delicate flakes, which prove upon analysis to be composed of lead and zinc, with a small percentage of cadmium. In this process, the transmutation of metals is an accomplished fact; and, assuming that it can be carried out in practice, it must be admitted that all existing chemical knowledge is absolutely worthless."

Editorial Summary.

A CURIOSITY.—At the dining rooms of Messrs. Crook, Fox, & Nash, Park Row, this city, we saw last week a curiosity in the form of a smelt inside the shell of an oyster. The oyster shell (lower valve) measured four and a half by three inches and the smelt was five inches long, lying curved to conform to the mouth of the shell and in a good state of preservation. As the food of the oyster consists of nothing larger than the animalcules of the salt water, it must therefore be inferred that the smelt was on an exploring expedition while the oyster had his shell open for an airing, and when that representative of the family *chupeide* intruded, the oyster imprisoned him for ransom.

THE PATENT SANDSTONE.—The recent fall of the church built of this material at Morrisania has set people to thinking what is likely to happen to the Freedman's Bureau buildings at Washington, built of the same worthless stuff at a cost of \$200,000. The material is the very last we should adopt for any structure required to be permanent, but perhaps permanency was not contemplated for the Freedman's Bureau.

It is said that contracts have been made with a French Company for opening a canal across the Isthmus in Nicaragua and with an American Company for an Isthmus railroad. Work on the latter is to begin in the spring, and the first thirty miles of the canal are to be finished in eighteen months. The contract price is ten millions of dollars.

INTERESTING EXPERIMENTS BY PROF. TYNDALL.—Dr. Tyndall has made some very surprising experiments by passing vapors of different chemical substances into an exhausted glass tube, and then sending through them a beam of electric light. The vapor is at first invisible, but after the light has shone through it for a few seconds, it forms clouds of a blue, green, red, or mauve color, which break up into the most fantastic and beautiful forms, endowed with a rotary motion, which adds greatly to their effect on the eye. In some instances, the cloud takes the shape of funnels overlapping each other, and, curiously enough, the inner ones can be seen through the outer ones. The most surprising of all is the vapor of hydriodic acid. The cloud is seen cone-shaped, supporting vases of exquisite form, and over the edges of these vases fall faint clouds, resembling spectral sheets of liquid. Afterwards, a change takes place—roses, tulips, and sunflowers appear; then come a series of beautifully shaped bottles, one within the other, and on one occasion there was seen the shape of a fish with eyes, gills, and feelers. What, it may be asked, is the use of all this fantastic beauty? The answer is, that Dr. Tyndall finds therein illustration of chemical decomposition, examples of molecular physics, and explanations of the formation of cloud and the blue color of the sky, whereof we shall hear more by-and-by, and by which science will be enriched.

TEST FOR THE STRENGTH OF ALCOHOL.—Alcohol dissolves chloroform, so that when a mixture of alcohol and water is shaken up with chloroform, the alcohol and chloroform unite, leaving the water separate. On this fact Basile Rakowitsch, of the Imperial Russian Navy, has founded his invention. The instrument he uses is a graduated glass tube into which a measured quantity of chloroform is poured, and to this is added a given quantity of the liquid to be tested; these are well mixed together and then left to subside; the chloroform takes up the alcohol and leaves the water, which being lighter than the chloroform will float on the top; and the quantity of water that has been mixed with the spirit will be at once seen.

N. F. BURNHAM, of York, Pa., in a recent letter, says: "I shall shortly send you an advertisement for my wheel; I have already received over one hundred letters from your description of it in your paper of the 9th Feb." This is a valuable endorsement of the *SCIENTIFIC AMERICAN* as an advertising medium.

THIS WINTER although a very mild one has been a very hard one on proprietors of Skating Rinks in New York and Brooklyn, who have only saved themselves from ruinous losses by adopting the velocipede.

MR. FRANK BUCKLAND states that the skin of the salmon will make leather as tough as wash-leather and about the thickness of dog-skin leather. The scale marks give a very neat pattern to the leather.

MANUFACTURING, MINING, AND RAILROAD ITEMS.

QUICKSILVER.—It is asserted that the increased production of the California quicksilver mines has stimulated the workings of the old Almaden mines in Spain, and the Austrian mines of Idria, and that the price of this metal has fallen in consequence in London, where it is fifteen per cent lower than it was four or five years ago. California now sends quicksilver to various places in the following order of their importance—the first mentioned taking the smallest quantity; British Columbia, Australia, South America, Great Britain, New York, Mexico, and, during the past year, China, which was the best customer.

The Central Pacific Railroad Company finds it exceedingly difficult to keep their employes from deserting, on account of the White Pine gold excitement. They ship car loads of workmen who get their ride for nothing, and strike for the gold region when they get as near as the road can carry them.

An item stating that the first cotton mill erected in New England was at Putnam, Conn., recently found its way into our manufacturing items by mistake. The first cotton mill erected in the United States was at Pawtucket, R. I., built by Samuel Slater in 1793.

The amount of petroleum remaining unsold in the United States on the first of January last is stated at 520,588 barrels; afloat and in Europe, 439,688 barrels; total 960,276, showing a decrease of 312,925 barrels as compared with the first of January, 1868.

St. Thomas' Church, in New York city, is to have a full chime of bells, the largest of which will weigh 5,500 pounds and be the heaviest harmonic bell ever cast in the country.

A valuable sulphur deposit has been found in Louisiana, near Lake Charles, 500 feet beneath the surface.

One thousand stationary engines are employed in the manufacturing establishments of Philadelphia.

The revolution in Cuba has raised the price of sugar and greatly depressed the hoop-pole business in Maine.

The first piano shipped to Japan was sent recently by a New Haven manufacturer.

One of the Oriental Powder Company's mills, in Gorham, Maine, blew up on Saturday. A Prussian named Shael had his leg broken. No one else was hurt.

A transparent agate inclosing a drop of water has been found in Willamette river, Oregon.

The product of the Nevada mines for 1868 is stated as being sixteen millions of dollars.

Seeds of the cork tree have been brought from Portugal to Florida with a view to test its cultivation there.

A seventy-five pound nugget one-third gold, is said to have been recently found in an Oregon mine.

Earth is stated to have been found frozen in a Colorado mine at a depth of 125 feet.

An Illinois beet sugar company uses fifty tons of beets a day, and will soon increase its consumption to sixty tons.

A world's fair, to be held in San Francisco in 1870, is talked of.

Gold diggings have been discovered in Scotland.

A canal across the State of Georgia is talked of.