MISCELLANEOUS.

(For the Scientific American.)

Geology of the Lead Mines.---No. 3.

Lead has been found in its native or pure state; but this is rarely the case, and always when it does occur, in very small quantities. Although it is a metal found in a great variety of combinations with other ores, there is but one kind that is abundant. The others are chiefly known as objects of interest to the geologist and mineralogist, for analyzing, or for cabinet specimens. The common ore is usually a combination of lead, sulphur, and other substances. In analyzing good ore of this kind, we find lead 75, sulphur 15, other substances, lime, &c., 10 parts in 100. This ore is called galena, or sulphuret of lead. It is in this combination that it is found in the largest quantities in our mines. We have lead in connection with other metals, particularly zinc and carbonate, (Dry Bone) and sulphuret (Black Jack), are found rather abundant in many of our lodes. It is found associated with silver, copper, cobalt, or arsenic, &c., &c. When found in connection with silver, it is termed argentiferous galena. We have not as yet seen it in this combination in our mines; although it may be in the lower strata of the lead-bearing rocks, as it is in this location that it is most frequently met with in England, France, the Hartz in Germany, and in Norway and Siberia. In geological position, with the exception ot our mines, galena is most abundantly met with in the lower strata of the secondary deposits. It is also found in rocks laying still deeper than these, even in granite and trap, where they are in connection or associated with stratified rocks. It is also found in the coal measures; but in no instance as yet, in any country, has it been found in any strata above the coal. The chief mines in England are in North Wales, Cornwall, and Derbyshire. This last district is almost wholly composed of carboniferous limestone, the great deposit that lies under the coal strata. The beds of limestone are much disturbed in their stratification, and are intersected by dykes and beds of trap rocks. The mines of Scotland are very productive. The most important are those situated in the graywack, or slate rocks, composing the chain of hills which extend across the South of Scotland, from St. Abbs, north of Berwick. These mines were discovered in 1540, and have been worked profitably for three hundred years. Most of the lodes in this district run north and south. Galena has also been found at Tyndrum, in Argyleshire, where the ore is found in a bed of quartz, which is part of a series of strata or rock—mica slate. At Strontium, in the same county, the galena is found in gneiss, the oldest of the primary strata. The richest of the Spanish mines at Linares, occur in granite. The mines in the Sierra de Gadoe is in a limestone, classed by geologists, among the oldest transition rocks. In the Hartz mountains, lead ore occurs in graywack and slates, resting on granite. In Norway it occurs with silver in mica slate; and in France, galena, containing silver, runs through gneiss, mica slate, and granite. All of the mines we have enumerated are in deeper formations than any in our district; or in other words, we are much higher up in the scale of geological formations than a great majority, if not all of them. We have no rocks as old as any we have enumerated, short of Lake Superior; there, most if not all of them are found at or near the surface, and there also a magnesian limestone, supposed to be identical with our lower stratum, is found capping and overlaying the sandstone, 400 feet above the level of the lake. Taking, then, all these facts into consideration, we are only confirmed in the belief, "that the largest lodes of mineral in these mines are yet to be found far below us."

So long as we continue to discover lodes in the upper stratum, the magnesian limestone, at distances not over 100 feet from the surface, we see but little prospect of any effort being made to open the ground in the lower beds. Even now, we know of a number of rich lodes in various sections that have been abandoned, in consequence of running into water, at depths not over 75 or 80 feet; and all attempts to work them profitably on a small scale have proved abortive. Occasionally a steam engine has been erected, but so far, not one has been continued in operation after it has ceased to "pay its way." The scarcity and high price of fuel, not mineral, has been the chief obstacle. Mines, that under other circumstances, would prove profitable, are now unworked, and will so continue, until our upper beds are exhausted, or we have a supply of cheap fuel.

Shafts have been sunk in England,, 1,000 feet, without a dollar being realized in return. This "opening up" of the mine being considered not only a necessary but essential outlay, in order to derive ultimate profits. The following facts in relation to the "Consolidated Mine," the most extensive of any in Europe, are given, that some idea may be formed of the mode in which this branch of industry is carried on there:—The mine is situated in the parish of Gwinnap, in Cornwall; and they occupy an area of 800 acres; the site is 300 feet below the sea level, and the deepest shaft is 1,350 feet below it; thus giving a total depth, from the surface, of 1,650 feet. The vertical shafts, sunk upon the different lodes, exceed twenty miles of aggregate excavation, and the levels, drifts, &c., driven from the various shafts, extend forty-three miles. The machinery employed in this mine, principally for draining, consists of eight large steam engines employed in pumping—the cylinders varying from ninety to sixty-five inches in diameter, one engine of thirty inch cylinder, and eight engines of about twenty inch cylinders, are employed in draining ore, vein stuff, &c.—being seventeen steam engines, of which four are among the largest yet constructed for any use. There is also one water wheel, forty-two feet in diameter, employed in pumping. Another thirty feet, driving machinery, and four smaller ones, for stamping ore, &c.; altogether six in number. Several horse-powers are also in operation. This force that is constantly exerted by the combined operation of this accumulation of mechanical power, when working at a moderate rate, is estimated as being equivalent to the work of 4,000 horses, and if they wish to increase their engine power to its full effective force, it would equal the power of 7,000 horses. The amount of human labor is proportional to this vast accumulation of machinery; and the number of persons usually employed in the mine is about two thousand four hundred. This is entirely independent of outsiders. These mines have paid, in an average of ten years, over two thousand dollars annual profit.

We have given the above extract from the Penny Magazine, merely to contrast the difference in mining operations in England and our country. The question naturally arises, if mining can be made profitable when carried on thus extensively in one country, why not in another? Our answer to this is, "what man has done man may do." A writer on coal says, and truly, too, "That the coal mines of England have been a source of greater wealth to her than ever the gold mines of Peru were to Spain, because they are the means whereby man obtains a direct increase of power over materials which minister to his comfort." Situated as we are, directly upon the verge of a field, which, according to good authority, contains more coal than all the mines of Europe collectively; it needs no power of prophecy to predict that the day is not far distant, when we too will see the steam engine, not only employed in bringing us fuel, but also at work in our mines, developing resources of mineral wealth, that, under our present system of mining, we cannot profitably reach. E. H. B.

Galena, Ill.

The Coasting Trade of France.

The French Government has just published the usual statistical tables of the coasting trade of France during the year 1850. From these it appears that the number of vessels which cleared out from the various French ports, bound to other ports, amounted in 1850 to 71,853, carrying 2,069,851 tons of goods; showing, as compared with 1849, an increase of 78,282tons. Of the above 2,069,851 tons, 1,419,000 tons were conveyed from port to port on the Atlantic or Channel coasts; 457,000 from port to port on the Mediterranean coasts; and 194,000 from the Mediterranean to the Atlantic, or vice versa, by what is called grand cabotage, or the voyage through the Straits of Gibraltar. The total amount of tonnage representing the grand cabotage trade in 1845 was 236,000 tons, and the subsequent diminution may be ascribed to improved means of internal transport between the south and west coasts of France.

Naval.

The Pensacola Gazette states that the floating dock, basin, and railway, in course of construction at the Navy Yard at that place, are each and all advancing rapidly towards completion. A large mechanical force is employed. The steam engines and machinery for the powertul pumping apparatus of the dock are being placed in their respective positions; the stone walls are nearly built in three of the five sections in the basin, and the foundation of the ship railway is in progress. Several changes have been made lately among the officers and workmen at the yard. The United States sloop-of-war Decatur, Commander Green, sailed from Pensacola on Monday, the 2nd inst., for a cruise in the Gulf of Mexico and the Caribbean Sea. She will visit Nicaragua and other points.

The Earth's Bulk.

The bulk of our planet is so well adjusted, that were it increased or diminished, the greater number of plants would die, and the animals which did survive, would lead but a burdensome existence; were it greater or smaller, denser, or rarer, it would require a change in the structure of all the stalks of the flowers. Was our earth as large as Jupiter, motion would be oppressive to every living being; the deer would crawl like the sloth, and the eagle would have no higher flight than the chimney top. In such a case, too, the air would become so dense that no animal could breathe it—perhaps no animal could sustain its weight. And were the earth to be as small as Mercury, or the Moon, the animals would be exposed to the opposite inconvenience—all our motions would be unstable, like those of a drunken man, the air would be so thin as to be incapable ot supporting life.

Death of the Modern Discoverer of Embalming.

M. Gannal, who recently died in Paris, was the inventor of the new embalming system. His career was a singular one. Apprenticed to an apothecary in early life, he imbibed that taste for, and acquired that knowledge of chemistry which subsequently proved so serviceable to him for his favorite studies. In a short time he became attached to the medical corps of the French army in Germany, and was present at some of the great battles of Napoleon against Prussia and Austria, and formed part of the medical staff in the Russian campaign. In the disastrous retreat which followed, he was taken prisoner at Wilna; but on four occasions succeeded in making his escape, and was as often recaptured. After a thousand adventures by flood and field, in 1815 he returned to France, where his acquirements soon obtained for him a place at the School of Pharmacy, and he made several curious discoveries in chemistry, which, however, with the exception of a prize at the Academie des Sciences, procured him no real advantage; until his great discovery of embalming by means of an arsenical preparation, which in a few years made him master of a large fortune.

The Telegraph in Piedmont.

An engineer named Bouelli, Director of Electric Telegraphs in Piedmont, has conducted his wires over the Appenines, suspending them from mountain to mountain, at immense altitudes and in straight lines. The poles are placed from 800 to 1000 yards apart, and the wires pass through villages and towns under-ground, out of which it emerges to the mountains, dancing from crag to crag, then again sink below the streets of Genoa, till it reaches the station of the Ducal Palace.

Discovery in Sculpture.

A recent letter from Hiram Powers, the American sculptor, states that he has effected another very important improvement in modelling for sculpture, and has also made a discovery which will prove of universal mechanical importance, having been for ages an undiscovered desideratum. The Richmond Inquirer says that on being secured by letters patent here, as is being done in England, it will doubtless be made public.

Professors.

The title of professor is one of great dignity, and is held to be one of very great importance among the dignitaries of learning. We see that McCormick, who walks head downwards on the marble slab, is called Prof. McCormick. We have professors of gymnastics, professors of dancing, professors of flute-playing, card-playing, and we do not know how many other kind of professors, all are eminent in their line, from the Italian hurdy-gurdy man to the professor who learns the little boys to shoot peas at the target at three shots for only one cent.

The Eel.

The eel is evidently a link between the fish and serpent, but, unlike the former, it can exist a long time out of the water, which its nocturnal migrations prove, though probably a certain degree of moisture on the grass is necessary to enable it to do this. That they wander from one place to another is evident I have been informed, upon the authority of a nobleman well known for his attachment to field sports, that if an eel is found on land, its head is invariably turned towards the sea, for which it is always observed to make in the most direct line possible. If this information be correct, (and there seems to be no reason to doubt it) it shows that the eel, like the swallow, is possessed of a strong migratory instinct. May we not suppose that the swallow, like the eel, performs its migrations in the same undeviating course?—|Jesse.

Niagara Falls Falling.

Two weeks ago, on a Sunday afternoon, a portion of the precipice fell with a mighty crash. This portion extended from the edge of the island toward the tower, being about 125 feet long and about 60 feet wide, from the top to near the bottom of the fall. The next day another piece, triangular, with a base of about forty feet, broke off just below the tower. But the next great performance was the most remarkable. Between the two portions that had previously fallen stood a rectangular projection about thirty feet long and fifteen wide, extending from top to bottom of the precipice. This immense mass became loosened from the main body of rock, and settled perpendicularly about eight feet, where it now stands an enormous column two hundred feet high, by the dimensions named above.

Cotton from Oat Straw.

An English paper states that an amateur chemist, of Nottingham, while engaged in testing Claussen's process for making flax cotton, tried it upon oat straw, when, to his astonishment, after the silica was dissolved, he obtained a large quantity of good straw cotton; of this we have no doubt, as paper—very coarse to be sure—is made out of straw, and shows that it contains cloth-producing material.

Hudson River Railroad.

This railroad appears to be doing a most thriving business. During the past month the receipts amounted to $5,000 per day. High as these receipts are, they will soon be held to be small indeed, in comparison with the amount that will be received in a few years hence.

Great Feat.

A captain Tompkins, at New Orleans, concluded the feat of walking 60 consecutive hours without sleep or rest on Monday last week. He got $5,000 for performing it from the medical faculty of that city, by whom it was instituted to test the powers of human endurance.

Great Cotton Crop.

During the past season Col. Qurles, on Oyster Creek, Brazoria Co., Texas, raised four hundred bales ot cotton on one hundred and sixty acres of lands, with twelve hands; the average weight of each bale was 500 lbs.

It is stated that a company of spiritual rappers have found their way to the old dominion. We hope the good people of Virginia will commence a counter-rapping with them; that is what some of them require to rap good sense into them.