

MISCELLANEOUS.

(For the Scientific American.)

Geology of the Lead Mines.—No. 1.

We commence this week a series of articles on the lead mines. They will embrace but a few papers. They are from a gentleman in Galena, Ill., who has obtained the facts from personal observation and authentic sources, and they are the first articles of the kind which have ever been presented to our readers.

"Does the galena in the Northwestern Mines extend through the superficial stratum of rock, into the supposed limestone beneath, or has its greatest depth been already attained?"—Jeff.

The only answers that have yet been given to your question, are to be found in the Reports of D. D. Owen, M. D., who made a Geological Survey, under Instructions from the Department, in 1839, and again in 1848. Extending, as his Surveys did, over the whole Mineral Section, and characterized, as they are, for accuracy, we do not hesitate to place full reliance on his Surveys, nor hesitate to say, that they are founded upon facts that will fully bear him out in his conclusions. Speaking of the Lower Magnesian Lime Stone Stratum, he says:—

"It is not until the geology of the country has been clearly inspected, that one is able to discover that the hills which present themselves to view, below Turkey River, do not belong to the same geological era, as those which appear above the mouth of that stream. Nay, so uniform are they in their general aspect, that the miner himself, who has passed the best part of his days in excavating and exploring their recesses, is wont to regard them as identical. So they are, looking to their chemical composition. Both are limestones, highly magnesian, in heavy beds of great compactness and durability. But they are separated from each other by from one hundred and fifty to two hundred feet of other strata. The lower magnesian limestone, as it presents itself north of the Wisconsin, has many characteristics which indicate a metalliferous rock; it is seen in thick and solid walls; it is intersected by spars, crystallizations, and vein stones, such as usually accompany metallic ores. It has many points of analogy with the upper magnesian limestone of the Galena and Dubuque Districts.

The lower magnesian limestone may, in one respect, be considered more favorably situated than the upper, as a mineral bearing rock. It is an established fact in Geology, that all other things being equal, the older or lower a rock is, the more likely it is to be metalliferous; because nearer the sources from whence, experience indicates, that metallic materials find their way into its recesses; in other words, because in close proximity to granite and crystalline rocks. And it has been shown that the inferior beds of the lower magnesian limestone, of this section, lie at least two to four hundred feet below the lead bearing beds of the magnesia limestone, and are separated from the crystalline and igneous rocks by the lower sandstone only. There can now be little doubt that the whole mining region is based upon a sientific and granite platform, which would in all probability be reached by penetrating to the depth of from one to two thousand feet.

These facts, taken together, may be considered favorable to the metalliferous character of this formation. And I am able to bring several actual discoveries in corroboration of this inference. Near the base of the Bluff, composed of lower magnesian lime rock, on the west side of the Mississippi, some fifteen miles above the mouth of Turkey River, and just above the French village, from 7 to 10 pounds of lead ore was obtained from openings in the rock by Dr. Andros.

We need not, as we already have done, quote the exact words of Doctor Owen, in giving the details, in relation to other places where minerals have been discovered in this formation, but would mention localities only, viz:—Near the mouth of the Kickapoo—near the Great Bend of the Kickapoo—between the Yellow River and the Upper Iowa—on the Wazi Ojee, and at other places.

Dr. Owen continues:—"The above instances prove that the lower magnesian lime-

stone is lead bearing. But the facts before us at present are not sufficient to enable me to say whether it exists in productive quantities. At many of the above localities, the rock is exceedingly cherty, and is consequently hard, difficult and expensive to work; and near the surface the ore is much scattered and disseminated through the rock rather in horizontal openings than in vertical veins. But if this surface ore should be connected with deeper seated lodes, as there is reason to think it may be, then these would be well worthy the attention of the miner.

At the mouth of the Wisconsin, Doctor Owen has given us a diagram of the formations of that point, above the level of the Mississippi. The first 30 feet is of lower sandstone; next, lower magnesian limestone, two hundred and thirty feet thick; next, sand, blue and grey fossiliferous limestones, one hundred and fifty feet thick; then the upper magnesian limestone of this district, fifty feet thick; capped by ten feet of soil." We have thus given from the doctor's Report, and in his own language, a condensed sketch of this formation.

"The instructions given by the Secretary of the Treasury, in February, 1839, required Doctor Owen to proceed to Iowa, and undertake an exploration of all the lands in the Mineral Point and Galena districts, situated south of the Wisconsin and north of the Rock Rivers, and west of line dividing ranges eight and nine, east of the fourth Principle Meridian, together with all the surveyed lands in the Dubuque district, comprehending, in all, upwards of three hundred townships; and this exploration he was required to complete before winter should set in."

He commenced on the 17th of September, at the mouth of Rock River, and proceeded north and closed his work on the 24th of November; having completed his work in two months and six days.

It is to his Report that we are indebted for our facts; and we would here observe, that it is a matter of surprise that he could, as daily experience teaches us he has, have made the surveys and explorations in sixty days, with any thing like the accuracy with which it is performed. And we believe that there is no other instance where such a mass of information and facts, in relation to so large a district, has ever been collected in anything like the same time. His collection of fossils and minerals; his minuteness of detail in relation to the whole survey; prove conclusively his standing, as one of our best practical and scientific Geologists.

The extent and position of the lead region now under consideration lies chiefly in Wisconsin, including a strip of about eight townships in Iowa, ten townships in the northwestern corner of Illinois and about sixty-two townships in Wisconsin. The entire region, then, comprehends eighty townships. The extreme length of this lead and copper region, is, from east to west, eighty-seven miles; and its width from north to south, fifty-four miles. The highest points are the Blue Mounds, rising one thousand, and the Platte Mounds, six hundred feet above the level of the Wisconsin River. The principle formation throughout this district, is the upper magnesian limestone. It extends south to the northern boundary of the Great Illinois Coalfields, near the head of the Rock Island Rapids, where it disappears under the coal beds; thus giving us assurance that we are in a formation that underlies the coal. It extends north to a short distance above Prairie du Chien, where it is seen capping the hills. The next stratum underneath this is the blue limestone; under this is the upper sandstone, and underlying this is the lower magnesian limestone. It will thus be seen that all the mines now worked are in the upper bed of lead bearing rocks. Daily experience teaches us that the Doctor's observation was and is correct, as the blue limestone, that directly underlies the upper magnesian, has been struck at many points in our mines, at from 50 to 120 feet from the surface. Up to this time there have been no shafts sunk to any considerable depth in the blue limestone, consequently it is impossible to form an estimate of its thickness, or of the intervening strata of lime and sandstone, between the upper and lower magnesian lead bearing rocks. At Prairie du Chien, and at

points on the Wisconsin, these deposits are about 150 feet thick; still this is no sure indication that we might not have 150 feet, more or less, to penetrate, before we should reach the lower magnesia. E. H. B.

Francis' Life Boat.

A correspondent of the New York Daily Times states that there is not a metallic Life-Boat in the whole British service; he mentions this as a most extraordinary thing, because there are so many iron ships employed there. He believes that in cases like the burning of the unfortunate Amazon, they are far preferable to those made of wood. He recommends Francis' American Metallic Life Boats, and so do we: they are the best life-boats extant.

It appears the British authorities have made a rigid investigation into the causes of the burning of said vessel. All the survivors have been examined twice, and the most thorough cross-questioning has been undergone by every one of them. As yet, they cannot account for the accident, but a very singular fact has been brought to light, viz., that before the accident occurred, there was a fearful impression of some impending danger on the mind of every one, and for which they could not account. It was, as Campbell hath it, "coming events casting their shadows before."

British Metals.

The history of the combinations of copper with tin and zinc, proves of much interest from the circumstance of the probability that all the tin employed by the ancients, in the formation of their bronzes, was derived from these islands. The Celts, which are found in the bogs of Ireland, and also in the mines of Cornwall, are bronzes, containing, all of them, the same proportion of tin, and such as very generally characterizes all the bronzes, whether coins or specimens of useful or ornamental manufacture, of the Greeks and the Romans. This is a point which gives great probability to the statement that the Phœnician merchants visited these islands, especially the western part of them, for tin. The Cassiterides, or tin islands of the Greeks, there is every reason for believing, were those parts of the British Islands with which the mariners of the Mediterranean were acquainted.—[London Art Journal.

Bolt Heading Machine.

In last weeks Scientific American there was an advertisement of Dr. S. McLean, inviting persons to witness the operation of Van Brocklin's patent bolt heading machine, in the blacksmithing establishment at 45 Gold street, this city. We witnessed the operation of heading bolts by this machine, and were highly pleased with its performance. The machine is only about 3 feet long, and 1½ feet wide, yet it is adapted to cut bolts to their proper length, head them, cut screws on them, and also tap nuts. For blacksmiths shops it is a capital invention. It has a die box and die socket for the bolt. The cut rod for the bolt is made red-hot in the fire, then placed in the die socket with the tongs, one turn of a crank brings the die box on the top of the red-hot rod, then with a hammer two blows are struck on the head of the die box, which is of steel, and the head of the bolt is formed. By striking lightly on a step below, the bolt is thrown out of the socket in which it is retained while the head is being formed. The heads of bolts, according to the forms of the die, may be of various forms, and ornamented for use or fancy. It is adapted for copper as well as iron bolts.

Disinfecting Lamp.

The Boston Medical and Surgical Journal says:—

A note from a medical friend reminds us of a beautiful, simple, economical apparatus for overcoming bad odors and purifying any apartment where the air is loaded with noxious materials. A description of it has already appeared, but the reference, in the note alluded to, has unfortunately been mislaid. The whole matter, however, is simply this:—Take one of any of the various kinds of glass lamps—for burning camphene, for example—and fill it with caloric ether, and light the wick. In a few minutes the object will be accomplished. In dissecting rooms, in the

damp, deep vaults, where vegetables are sometimes stored, or where drains allow the escape of offensive gases, in out buildings, and in short, in any spot where it is desirable to purify the atmosphere, burn one of these lamps. One tube, charged with a wick is quite sufficient. This suggestion is really worth remembering for the comfort of a sick room, because it is easily accomplished, agreeable, and more economical for purifying than any process now known.

Middle Rail to Prevent Cars Running off the Track.

Judge Carpenter, of Rome, N. Y., has invented a means of preventing railroad trains from running off the track. This invention consists of a middle rail placed in the centre of, and raised considerably above the two outer rails, and fastened to the same cross-ties. A saddle is attached to the engine and cars at both ends, which sets over the middle rail, with friction rollers to play on both sides of it, thereby preventing the cars from rocking or running off. Whenever there is a tendency to run off, these friction rollers play against the middle rail, and bring them back to their place again. It costs \$500 a mile, and an adoption of it could be made to assist trains in ascending elevated planes.—[Exchange.

[It strikes us that we saw a model of a like invention, exactly, in 1840, exhibited before the New York Legislature at Albany.

The Age of Gold and Iron.

A short time ago, every body was saying this was the age of iron, and among the rest we said so too. It may be that we will soon have to change our tune. Since gold was discovered in California, we hear of but little else than gold, gold. Iron has become ruinously cheap, it is imported below par, for it is morally impossible for our iron manufacturers to make it at present prices. All our iron makers, we suppose, have gone, or are going to California, where, if they, want iron, they will be more able to exchange gold for it, than make it. Last week the Daniel Webster, steamship, took 600 passengers from this city bound for the gold regions. Some parts of Maine are now nearly depopulated, it is said; there is nobody left but women, children and old men. Australia too, is now pouring her gold into British coffers, and the end of new discoveries is not yet. Steel pens were once the only opponents to quills, but gold pens are now claiming attention. Silver is looking up, but as for iron, the gold seems to have fairly overclouded it.

Railroad Accidents.

The number of accidents continue to be as great, if not greater than ever, on the New York and Erie Railroad. Two accidents occurred last week—the one by a train running off the track into the Delaware river, and the other by a freight train running into the Express Train while the latter was standing still at Deposit, waiting for the passengers to dine. Seven deaths, we believe, were occasioned by these two accidents. There must have been gross neglect and bad management somewhere, but like all our explosions of steam boilers, nobody will be to blame. There is such a general sympathy exercised towards all people, now-a-days, whenever they are blamed for crimes and apprehended for the same, that we may soon expect to see subscription papers handed round to build monuments to some of the most noted murderers who have recently been executed.

New York Mechanics' Institute.

This institution, on the corner of Bowery and Division street, has had its rooms all repaired since the fire on the 27th of last December, and the second course of classes for drawing and modelling were formed on the 16th inst. There are twenty lessons in each course. Those of our young mechanics who have a desire to be something more than mere hewers and chippers, should become members of this institution.

Cement to Mend Earthen and Glass Ware.

This cement sold about the country as a great secret, is nothing more than shellac melted and drawn out into sticks. Heat the article a little above boiling water heat, and apply a thin coating on both surfaces of the broken vessel, and when cold it will be as strong as it was originally.