Scientific Museum.

(For the Scientific American.)

On the Trappean Rocks of Nova Scotia.

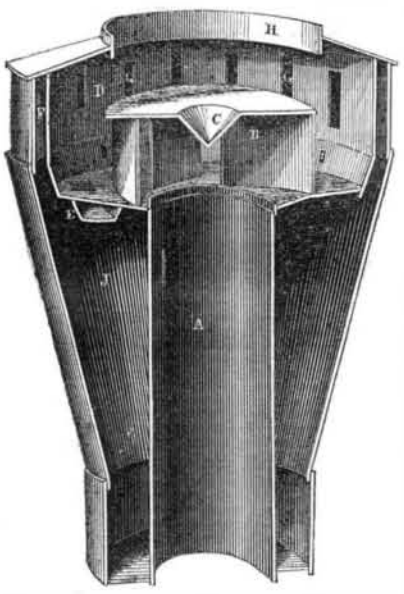
Having recently returned from a survey of this favored land of minerals, I purpose to lay before your readers some observations which may be of service to future explorers.

Trap (Swedish *trappa*, a "stair") derives its name from its terraced sides, and includes basalt, greenstone, trachyte, clinkstone, claystone, porphyry, and amygdaloid. It is an igneous unstratified rock, occurring along with the secondary and tertiary strata, and participating somewhat in the nature of the primary, but formed in all ages and under the cooling influence and pressure of the primitive ocean. It is very tough, is of a dark green or brown color, has a sp. gr. of 2·8–3·2, and is a mixture of feldspar and hornblende or augite. Perhaps in no region of the continent is this anomalous rock represented on so grand a scale as along the northern shore of Nova Scotia. There the formation extends over 150 miles in length, replete with objects of geological and mineralogical interest. For centuries this mural precipice has stood an insurmountable barrier to the mad waves ef the Bay of Fundy, which are continually dashing against it, driven on by tides and tornadoes, of which few have any adequate conception. The variety of trap most prevalent is columnar greenstone, resting on amygdaloid and red sandstone, and is sometimes found of cotemporaneous origin with the lower carboniferous strata.

After these general remarks I particularize. Brier Island, the western extremity of the range, is the sole property of Pluto. Crossing Grand Passage, we reach Long Island, where the trap is of a darker color than elsewhere, more irregular in form, and interspersed with veins of jaspar and chalcedony, and nodules of chlorite. Separated from this by Petit Passage is Digby Neck; here the trap occurs in regular prismatic columns of three, five, and nine sides. At Sandy Cove the mineralogist will find geodes of chalcedony lined with stilbite and mesotype, specular iron ore, laumonite, and rich agates—fortification, moss, and brecciated. Bowlders of jasper lie scattered along the shore. At Trout Cove, where the basaltic pillars are tumbled about in "confounded confusion," the geologist will find as much to interest him, as the antiquarian amid the fallen temples of Greece. Gulliver's Hole is another locality of fine agates, as also of stilbite and magnetic iron ore. At Nichol's Mount, the last occurs in hexahedral crystals, and yields about 80 per cent. of cast-iron. At the entrance of Digby Gut stands the Lighthouse on compact trap strengthened by jasper and chalcedonic veins. Snow's Head, on the opposite side, continues the columnar variety incumbent on amygdaloid. Here the traveler will find a harvest of thomsonite, and mammoth indentations and enormous fissures, which will fill him with wonder and bring to mind the days of Titanic power. Twenty miles easterly will bring him to Chute's Cove, presenting upright columns of greenstone; and the lofty precipices of St. Croix Cove—six miles further—will yield him beautiful heulandite and mesotype. Gathering the rich treasures of thomsonite, analcium, heulandite, and mesotype from the amygdaloidal rocks of Martial's Cove, and the Two Mountains, he must pause at Peter's Point, where, beneath its arches and overhanging precipices, he will meet with splendid apophyllite, mesotype, heulandite, laumonite, and thomsonite. At French Cross Cove the trap rises in tables and columns to the hight of 800 feet above the Bay. The lowest bed of amygdaloid abounds in zeolites. The next place interesting to the man of science is the dangerous but bold promontory of Cape Split—the turning point of that mighty tide of waters which rises to the hight of 70 feet—the highest in the world. Thence southward for a dozen miles, this wall of adamant gradually ascends till finally it culminates in the majestic Blomidon—500 feet above the level of the sea. Here the amateur will laugh to scorn his previous collections; amethystine geodes incrusted with cacholong, foliated, fibrous, and granular selenite, agates, and agatized hornstone, heliotrope, heulandite, jasper, analcime, stilbite, apophyllite, and needlestone, from the the talus at the base of this immense basaltic cliff.

Crossing the sheet of water before him at flood tide, let the traveler drop anchor at the Five Islands. Three are trappean; and two of sandstone and shale. The Leaning Tower is worthy of research; and on the main land opposite, carbonate of barytes and beautiful verd antique occur. A company has recently been formed in London for the exportation of the latter. On this side the shore, for a long distance, is fronted by a lofty bank of red sandstone capped with greenstone. The vesicular amygdaloid presents the usual zeolites, as also a peculiar mineral called silicious sinter—a light grayish white, cellular quartz. The Two Islands yield fine chabazite, analcime, and moss-agate. The next place worthy of notice is Patridge Island—a stupendous mass of trap several hundred feet high, surrounded by wild and picturesque scenery, and decked with those rich gems of nature which make up the *summum bonum* of the naturalist. He cannot leave without a cabinet. Next in order is Cape Sharp, a bluff of amorphous trap resting on sandstone and shale; but it is of no mineralogical interest. Fifteen miles to the west stands Cape D'Or. Here, too, the breccia, from the lashing of the angry billows, has given way to wide fissures and deep caverns, over which hang massive volcanic rocks spangled with native copper and brilliant representatives of the zeolite family. This is the last point in the trap formation, of interest to the scientific traveler—and here we leave him. J. O.

Cutting's Improved Spark Arrester.



The engraving herewith presented is a vertical section of James A Cutting's improved Spark Arrester for Locomotives, patented May 6, 1851.

At the top of the chimney, A, is placed an air-chamber, B, over which a small deflecting cone, C, is inverted. The smoke, as it passes out of this chamber by the openings seen, assumes a rotary motion, by which the sparks and cinders are thrown through the flues, G G, in the diaphragm, and fall down into the outer chamber, J. The current of steam and smoke passing upward tends to exhaust the chamber, J, of its air, by drawing it through the air flues, E E, and thus there is a tendency to draw the smoke and sparks through the flues, G G.

It is evident that at each pulsation of the exhaust steam there will be a draught of air from the spark chamber, J, and this will cause a contrary current during the intervals, which will will have a tendency to increase the draught of the fires.

This Spark Arrester has been assigned by the inventor to Cutting & Rehr, who manufacture them at 124 Arch street, Philadelphia, and to whom all orders should be addressed, or inquiries soliciting further information.

Atmospheric Railway for Broadway.

We have received two communications—one from T. M. Brennan, M. E., of Nashville, Tenn., and one from J. E. Holmes, Superintendent of the Machine Department in the Crystal Palace—upon the subject of an elevated railway for Broadway, in which it is proposed to propel the cars by condensed air. Mr. Brennan says,—"The atmospheric system presents itself as peculiarly adapted to the requirements of City railroads, from its complete absence of noise; its safety, and the lightness of track necessary." Mr, Holmes says,—"Sooner or later, according to the length of the reign of fogyism, there will be an elevated railroad up Broadway, the cars of which will be propelled by condensed air." It is remarkable that both of these gentlemen, living so far apart, should present nearly the same ideas, at the same time, upon the same subject. The means proposed in their letters, for carrying out the plan, are very similar, but do not require to be stated. We have no doubt but an elevated railroad, worked upon the atmospheric system could be successfully carried out for Broadway, but this never will be done without the consent of the owners of property in that street, and it will be a long time before this is obtained.

Atmospheric railways are well understood in all their phases; they are no "untried schemes," and when it is determined to build such a road in this city, the knowledge to carry it out in all its details, will be found ready furnished for application.

Baker's Furnace.

It will be recollected by our readers that we published on page 65 the economic results of Baker's furnace as tested at the Crystal Palace, in which it was stated that the amount of water evaporated was 11·457 lbs. of water by 1 lb. of coal. We also stated that this was the greatest amount of water evaporated by one pound of coal on record. We had been informed that the feed water used was taken cold from the Croton pipes; the statistics were furnished from the Crystal Palace. At that time we were aware that nearly 14½ lbs. of water from 212° had been set down as the theoretical evaporation of one pound of the best anthracite, and we referred to this in our remark. We therefore, with our usual caution, rather understated the results, because they appeared so extraordinary. Another trial of the furnace will be made in the Crystal Palace, and Mr. Holmes, the Superintendent has requested us to consider his opinion as suspended until then.

In reference to our article referred to, Samuel L. Dana, chemist of the Merrimack Print Works, at Lowell—good authority in himself—has published an answer in the "Lowell Journal and Courier," in which it would appear that he is in possession of furnace statistics of no ordinary value. In his article he states that in 1840 a locomotive boiler on board the steamer Anthracite, heated by Player's furnace evaporated 12·40 lbs. of water from 212° by 1 lb. of coal;" also that in 1841 "an upright boiler of J. B. Francis', C. E., at the Massachusetts Mills in Lowell, evaporated 13·015 lbs. of water from 212° by 1 lb. of coal,"—a four day's trial.—With two boilers, "Hayes' battery boiler," and an improved Cornish one, he (M. Dana) evaporated 13·69 and 13·60 lbs. of water by one lb. of coal—in each case—from 212°, for several days together. He presents a number of other cases, nearly as good as these, and says, he hopes the zeal of improvers of boiler furnaces will take its starting point from the goal long since established, and leave that point far behind them on their march." So say we; at the same time there is one interesting inquiry which we have to make here, of all those who send us statistics of boiler evaporation, namely, the time occupied in the evaporation, as well as the quantity of water, and weight of fuel.—It is quite possible that one furnace may consume double the amount of fuel another does, to evaporate the same quantity of water and be just as economical, for if the one evaporates the same quantity in one half the time of the other, although it may require twice as much fuel to do so, it is very evident that for many purposes it will be the most economical to its owner—time is as valuable as coal.

Death of a Venerable Lady.

Mrs. Elizabeth Ellicott, who died at Ellicott's Mills, Md., on the 29th ult., was in the 92nd year of her age, and two weeks previous, in a letter signed with her own hand, remitted in advance her fifty fourth year's subscription to the "National Intelligencer," a paper to the first number of which her husband, George Ellicott, Sr., was a subscriber, as he was also to the first number of the "Baltimore American." Mrs. Ellicott was the last survivor of the numerous family after whom Ellicott'sMills was named. The men were famous inventors and distinguished millwrights.

LITERARY NOTICES.

URE'S DICTIONARY OF ARTS, SCIENCES, AND MINES.—Reprinted from the fourth English edition, in two volumes, by D. Appleton & Co., New York. The fame of Dr. Ure, as a chemist and mechanical expert, is world-wide, and this work is a monument of his ability and great knowledge of every subject connected with the arts and sciences; it treats of almost every subject, not in vague and general descriptions, but in a full and general sense, and with a perfect understanding of the whole matter. It is illustrated with nearly 1600 explanatory engravings on wood. It would seem as if the old Doctor had engrossed all the knowledge of the world and daguerreotyped it in these two volumes, for it is a fact that they tell us something about EVERYTHING. The author has had excellent opportunities of being well acquainted with the machinery employed in various manufactures, and those who consult these volumes for any information, cannot fail to derive instruction. To this new edition many additions have been made, and former errors have been corrected. We heartily commend this work to our readers.

THE PEOPLE'S JOURNAL.—Our old friend, Alfred E. Beach, Esq., formerly of the New York "Sun," and recently one of the publishers of the "Illustrated News," has just started a new enterprise, in the form of a monthly illustrated periodical, which is designed to advocate ALL people's interests, as its title indicates, and illustrate every branch of industry. The two first (November and December) numbers are issued, and being illustrated with finely executed engravings, the paper looks remarkably well. We bespeak for the "People's Journal" a wide and influential circulation, and for the publisher well-lined pockets. Office of the "People's Journal," 86 Nassau st. Terms, 50 cents a Volume—six numbers.

DODGE'S LITERARY MUSEUM—One of the best literary papers which pays its weekly visits to our office, bears the caption above, and emanates from the Puritanical city of Boston: a new volume of the "Museum" commences this week, and leads off with a new title page almost as handsome in its design as the title page engraving which we had executed at an expense of $250 dollars and printed in the last number of the last volume of the "Scientific American." Any of our reader who may wish to subscribe for a literary paper of an unexceptionable character, to introduce into their families, cannot do better than to patronize Dodge's "Literary Museum." Terms $2 per annum; address Ossian E. Dodge, publisher, 12 School street, Boston, Mass.

LITTELL'S LIVING AGE—No. 36, new series, of this excellent weekly magazine contains two articles on the "Arctic Regions," a very interesting subject at present, which every person should read. There is also a singular article on the "Dauphin of France."

PETERSON'S MAGAZINE—For January, contains a number of fine illustrations, one hundred pages of matter and over forty original contributions, many of which are of superior literary merit. This magazine is under the editorial charge of Chas. J. Peterson, and Mrs. Ann S. Stephens, and is exceedingly well managed. Terms $2. Office of publication 102 Chestnut street Philadelphia.

SATURDAY EVENING POST—The advertisement of this far-famed and widely circulated paper appears in another column. It is carefully and ably edited, and embraces among its numerous contributors some of the best writers of the day.