Electricity and Lightning Rods.

MESSRS. EDITORS—That a pointed metallic rod will become illuminated at its point with fire when near a body of plus electricity, and that a metallic knob in the same position will receive a spark of electric fire, is not to be doubted, but these effects will only ensue when the distances between these media are within limited spheres of space. When an electrified cloud passes a thousand feet above the top of a house, and in passing over it explodes its electricity, and that house has a lightning rod projecting eight or ten feet above its apex, will said house be exempted from the electrical discharge by virtue of its rod? From the acknowledged science of electricity and its known effects it will not. There is a church-steeple two hundred feet high standing in this city, with a lightning rod from spire to the moist earth below, and twice has this steeple been struck with lightning, and on one of these occasions the lightning rod was fused some distance below its point, and twisted like a corkscrew.

That a kite elevated with a conducting cord and points will bring down a stream of electricity, or that a lightning rod will do the same, at times, does not prove that objects on the earth, where these conductors terminate or pass through, are free from thunderbolts. They would only be free from the contingency of an explosion occurring at the place where the kite rested, and where the rod point terminated above, taking in a sphere of protection in proportion to the amount of attracting surface presented by these points, which would be very limited indeed. At an hundred or five hundred feet from these points an electrical explosion may occur, and its bifurcations and zig-zags may drive right into the buildings whereon these lightning rods stand, as was the case in the church steeple, as also in the Rev. Mr. Thom's house in Carlisle, Pa., both of which I witnessed.

I have examined five buildings struck by lightning, three surmounted by lightning rods, and two without them, and those with rods fared no better than the others. In observations through Lancaster county I find that rod protection has no margin in its favor when fairly estimated; and so well aware of this fact are the sect of Menonists that they discard them altogether in their church discipline, in the belief, however, that if God chooses to send bolts, lightning rods are of no avail—a kind of doctrine you must not understand me to promulgate.

The nice little demonstration with the 'thunder house," in electrical experiments in schools, no more proves the exemption of buildings surmounted with rods from electrical discharges in the clouds than it proves that said "thunder house" electrical machine and gas bladder are correct representations of the condition of thunder cloud explosions and the objects struck by them. In the "thunder house" the explosion or spark upon the knob is a primary effect, while in the case of the thunder-bolt from the clouds it is a secondary effect. It is only where the point of the rod penetrates the opposing electrical mass that it can conduct and discharge silently into the earth the pending explosion; and in ordinary thunder storms the rod would have to pierce the cloud region to be a protection to the building. The rod cannot shield the building from the effects of a bolt any more than it could shield the building from a cannon-ball after it was in motion. The electrical cannon must be spiked to make it harmless. In all my observations I find that the most prominently projecting objects have been the recipients of electrical discharges, rod or no rod, where they have been in the vicinity of the descending shaft. JOHN WISE.

Lancaster, Pa., May, 1857.

[The tenor of Mr. Wise's communication is, that lightning rods do not afford protection to buildings from disruptive electrical discharges. Now there is certainly good evidence on record that they have protected buildings. The Dutch church in this city was twice struck with lightning—once in 1750, and again in 1763—damaging the building. In 1765 a conductor was applied; in that year there fell upon it a heavy stroke of lightning, but the building was not the least injured. The great tower of St. Mark at Venice, 340 feet high, was nine times struck by lightning, and nearly reduced to ashes on more than one occasion. A lightning rod was applied in 1766, since which time it has not suffered in the least. Numerous instances of the same kind might be given. We are aware that a number of houses provided with conductors have been struck with lightning, but we have been led to believe that their conductors were rendered ineffectual by some defect in their construction.

Product of Gold and Silver in the World.

Inventors, we know, have much at heart in their inventions regarding the benefit which will grow out of them for mankind. Gold and silver, however, are not in contempt with them; therefore the following statements may be of some interest, as they are of recent date:

Europe yields yearly, 26,805 kilogrammes of gold, 161,144 of silver, value, $25,000,000; America yields 169,834 kilogrammes of gold, 755,180 of silver, value, $146,000,000; Asia yields 27,000 kilogrammes of gold, 110,000 of silver, value $22,000,000; Africa yields 4,200, no silver, value, $2,600,000; Australia, yields 282,360 kilogrammes of gold, no silver, value, $200,000,000. Total of gold, 510,199 kilogrammes, silver, 1,026,224, total value of gold and silver, $395,600,000. The whole value of noble metals from olden times to the present day is $20,536,000,000. From the beginning of the world to the Christian era, $4,328,000,000. The amount of 1856 years, $16,204,000,000.

At the ratio of the present yield, it would require only forty years to reach the above amount. L. K. BEISSACH.

Lead Discoveries.

MESSRS. EDITORS—There has been discovered inexhaustible lodes of lead in this (Newton) county, and although the first discovery was made only about two years ago, there are already about 4,000 persons now at the mines seven miles east of this, and the quantity of mineral they are bringing to the surface of mother earth is truly astonishing. It is not unusual for two men to raise 10,000 lbs. per day; price of mineral at the furnace, $20 per thousand pounds. We have three furnaces now in operation, smelting about 15,000 lbs. of lead per day; two or three more are in course of erection, and will shortly be in blast. Capital is wanted very much, machinery is wanted, everything is wanted but lead—that we have an abundance of.

We are about two hundred miles from the river, and thousands of wagon loads of lead must be hauled there before our railroad is completed; this is a great drawback, but it cannot be helped. When the railroad is finished to this place it will be the garden-spot of the great West. H. S. CHENOWETH.

Neotho, Mo., May, 1857.

Cement Tan Vats.

MESSRS. EDITORS.—Hydraulic cement tan vats are used successfully in this section, when kept from freezing. They are soon coated with a sort of slime, which prevents the tannin from producing much effect on the cement. No bad effect is produced on leather.

R. B. ODELL.

Fulton, N. Y., April, 1856.

Adulterated Liquors.

Dr. Hiram Cox, chemical inspector of alcoholic liquors in Cincinnati, states, in an address to his fellow citizens, that during two years he has made 240 inspections of various kinds of liquors, and has found more than nine-tenths of them imitations, and a great portion of them poisonous concoctions. Of brandy he does not believe there is one gallon of pure in a hundred gallons, the imitations having corn whiskey for a basis, and various poisonous acids for the condiments. Of wines not a gallon in a thousand, purporting to be sherry, port, sweet Malaga, &c., is pure, but they are made of water, sulphuric acid, alum, Guinea pepper, horse radish, &c., and many of them without a single drop of alcoholic spirit. Dr. Cox warrants there are not ten gallons of genuine port wine in Cincinnati. In the inspections of whiskey he has found only from 17 to 20 per cent. of alcoholic spirit, when it should have 45 to 50, and some of it contains sulphuric acid.

Notes on Science and Foreign Inventions.

Mr. Mappin, of Birmingham, has patented a new panel for resisting burglarious attempts. It consists of a composition, inclosing a thin plate of steel. In making a full-sized panel he says, the steel would not be in one piece the size of the panel, but as a series of strips, 1 1-2 inch broad, inserted at intervals, leaving a space of three-quarters of an inch between each. The patentee considers that it affords a perfect resistance to sharp instruments used by burglars, that panels made of this material will never shrink or twist, and that it is well adapted for curved panels.—*London Builder.*

[Chilled cast iron wouid be as good as steel for such panels, and certainly much cheaper.

Iron and Steel.—A patent has been taken out by Robert Mushet, of Coleford, Eng., for the following improvement in the manufacture of the above-named metals:—

For the purpose of remedying or diminishing as much as practicable the defects observed in purified cast iron decarbonized, or partially decarbonized, by causing air to pass through [illegible] its particles whilst in a fluid state, and in order to convert it into iron or steel possessing such a degree of malleability, ductility, and tenacity as shall render it commercially valuable, the patentee proceeds in the manner following:—When he intends to produce malleable iron he purifies the cast iron, and decarbonizes it thoroughly, or nearly so; he then adds to it a quantity of metallic manganese, varying from one quarter of a pound to two pounds, by weight, for every 100 lbs. by weight of purified cast iron, and adds the metallic manganese to the molten purified iron. When he intends to produce cast steel he sometimes arrests the purifying process, so that the cast iron may not be wholly decarbonized, but merely decarbonized until it shall contain only such a proportion or percentage of carbon as to constitute cast steel, and he then proceeds to add the metallic manganese to the molten cast steel in the manner before described.

Lighting Mines with Gas.—Mr. A. Wright, England, has taken out a patent for an improvement in apparatus for lighting coal and other mines with gas, to supersede the use of oil, now used for this purpose. The gas is manufactured above ground at the summit of the mine, and is forced through pipes down the shaft into all the working rooms and along the roads, by pressure. Mr. Wright employs a governor on the main pipe of the gas reservoir, which regulates the flow of the gas to the mine, as required. In mines where there is no danger from fire-damp, each miner wears a small oil lamp hung on the front of his cap to give him light; these lamps are inconvenient and troublesome. If gas can be substituted with safety for them in any mine in our country, it ought to be done. We have been informed that some of the mines in England are already lighted with gas.

Electricity.—Pierre A. Le Comte de Fontaine Moreau, of Paris, has secured a patent for a novel arrangement of plates in a galvanic battery. He employs a solution of sulphate of potash as the exciting liquid, and places the copper plate partly in and partly out of it (the liquid) so as to be exposed to both the air and liquid, while the zinc plate is entirely immersed in the solution, and at a short distance from the bottom of the vessel. He asserts that by this arrangement of plates the tension of the current, as indicated by the galvanometer, is 34 degrees, while by immersing the copper plate entirely it is only ten degrees.

Anthracite Coal Coke.—The patented process of Mr. Tardieu, for the economic conversion of small (or slack) anthracite into a very superior coke, for locomotive and metallurgical purposes, is attracting considerable attention in France. Experiments to the extent of upwards of 400 tuns have been successfully made in different parts of France, the product being, in every case, an excellent coke, possessing more carbon and freer from earthy matter than that made from the bituminous coal. The process simply consists of the mechanical admixture, previous to coking, of small anthracite with pulverized bituminous coal, in the proportion of four-fifths of the former to one-fifth of the latter. The yield of coke is upwards of 80 per cent. while the average yield of that from common French bituminous coal is under 60 per cent. The superiority of this coke for metallurgical purposes has been conclusively established by a series of experiments at the important iron works of Commentry, and its availability for locomotive purposes is now being tested on the Western Railway of France.

To Make Berlin Fine Castings.

To produce such castings in iron, it is necessary in the first place to have a perfect pattern, brass being generally preferred for this purpose; in the next place, the pattern must be accurately molded. In order to accaccomplish this, a fine close sand is required, (perhaps Waterford sand would answer,) which must be partially dried and sifted through a fine sieve. When the pattern has been molded and withdrawn from the mold, the latter is dusted over with fine brick dust made from fresh burnt soft brick. The pattern is now dried, carefully returned to its place in the sand mold and rapped home with a wooden mallet, and again withdrawn. If the mold has been sufficiently dusted, it will have a [illegible] fine as the pattern. The mold or flask is now put [illegible] and dried. Before it is quite cold, it receives a coat of lamp black, by putting some oil in an open dish, and using a large wick so that it will burn with considerable smoke. The mold is now held over the smoking oil until it is sufficiently coated with lamp black; when this is accomplished, the flask is closed, clamped or screwed together, and is then ready for the molten metal. This is the way the fine Berlin castings are made. I have seen quite a number of these castings made in our country, by a Berlin workman, who was in my employ. A SUBSCRIBER.

Printing in China.

In Montgomery Martin's work on China, he says:—

"According to the best authorities, the art of printing was known in China upwards of 900 years ago. In the time of Confucius, B. C. 500, books were formed of slips of bamboo; and about 150 years after Christ, paper was first made; A. D. 745, books were bound into leaves; A. D. 900, printing was in general use. The process of printing is simple. The materials consist of a graver, blocks of wood, and a brush, which the printers carry with them from place to place. Without wheel, or wedge, or screw, a printer will throw off more than 2,500 impressions in one day. The paper (thin) can be bought for one-fourth the price in China that it can in any other country. The works of Confucius six volumes, 400 leaves octavo, can be bought for ninepence (18 cents)."

The "Red Sea" Green.

The general opinion respecting the color of this sea has been that it was of a red hue, but, like many other popular notions this has been a popular fallacy. Horatius Bonar, D.D., in his work on the Holy Land, says:—

"Blue I have called the sea, yet not strictly so, save in the far distance. It is neither a red nor a blue sea, but emphatically green—yes, green of the most brilliant kind I ever saw. This is produced by the immense tracts of shallow water, with yellow sand beneath, which always give this green to the sea, even in the absence of verdure on the shore or seaweeds beneath. The blue of the sky and the yellow of the sands meeting and intermingling in the water form the green of the sea, the water being the medium in which the mixing or fusing of the colors takes place."

Cure for Chronic Rheumatism.

The London *Lancet* contains the history of a series of cases of this disease treated successfully by Dr. O'Connor, one of the physicians of the Royal Free Hospital, in a number of cases under his care, by the use of sulphur and flannel bandaging.

Near Baton Rouge, La., a fissure has opened in the earth to the extent of several hundred yards in length, and about twenty feet in depth. Smoke, impregnated with a sulphurous smell, issues from the fissure in clouds.