

Correspondence.

New Exciting Fluid for Carbon Cylinder Cells.

To the Editor of the SCIENTIFIC AMERICAN:

I have recently been experimenting with the carbon cylinder battery, with a view to improving it. The exciting fluid now used is sal ammoniac (ammonium chloride), and from its being a salt it does not act with sufficient energy upon the zinc, and is only a moderate conductor of electricity, producing two results, internal resistance and low ampere discharge. The exciting fluid to a battery in order to make its use efficient must have the following properties: First of all, it must be cheap. Second, it must be a substance that can be easily transported. Third, it must have a good conducting power and not form corrosive fumes. Fourth, it must not attack the zinc on the open circuit.

The substance that I have found to answer all these requirements is potassium hydroxide (caustic potash). When a carbon cylinder cell is filled with a 75 per cent solution of caustic potash, and the circuit closed, the zinc forms zinc hydroxide, which is immediately dissolved in the excess of caustic potash in proportion to the amount of current used; the zinc hydroxide being soluble, the formation of any precipitate is prevented.

In practice I set up a cell as follows: Dissolve 1 pound of commercial caustic potash in 3 pounds of water. Pour this in the glass jar to about $\frac{3}{4}$ of its capacity, then place the cylinder in the jar and pour about 2 ounces of coal oil on top of the solution and then insert the zinc. The coal oil should not be omitted, as it prevents the formation of creeping salts and keeps the caustic potash from absorbing water and carbon dioxide from the air. A battery set up this way will work perfectly on open circuit without local action, and can be used on closed circuits from three to four hours where the external resistance is not less than 3 to 4 ohms. In summing up, you can be safe in using the cell on any intermittent circuit, where it can be trusted to remain in good condition as long as the zinc lasts, as there is no loss from evaporation.

One cell using caustic potash will give current equivalent to four using sal ammoniac, as the internal resistance is reduced to a small fraction of an ohm. The voltage remains about the same, but the ampere discharge is quadrupled.

RANDOLPH BOLLING.

Stokes, Va., April 10, 1899.

[The principal objection to this battery is the use of a strong caustic potash solution, which would necessitate careful handling, and placing the battery where the solution could not accidentally injure carpets or furniture.—EDS.]

Some Interesting Inventions.

An electric cellar torch has recently been patented by an Englishman, and it admits of many uses. He was the son of a physician, and quickly recognized that the principle of his father's laryngoscope might be very well applied to commercial purposes; and his experiments based on this idea resulted in the production of a clean, odorless, and reliable appliance for the thorough examination of brewers' casks and vats, cans, etc. It consists of an electric lamp covered with a long glass protector, and it is secured at the end of a handle through which the insulated wire is carried. A small mirror is provided; this folds inward when it touches the side of the cask or jar, and thus reflects the interior in such a way that it may be thoroughly examined.

That a drinking glass may communicate disease is now admitted by all sanitarians, and the persons who are compelled to make use of public drinking fountains may relieve their minds to a great extent of the fear of the infectious microbe by supplying themselves with the lip guard and protector which has recently been patented by a Boston inventor. It consists of a metal or rubber shell which slips over the edge of the drinking glass and is held in place by the natural spring of the material. This prevents one's lips from coming in contact with the edge of the glass and thereby avoids infection.

A Washington inventor has devised an ingenious attachment for a mail box. Every time that the door is opened by the collector of the mail a small movable sign is changed. This sign, which consists of a card, is visible from the outside, and shows when the next collection will be made. There is often considerable satisfaction to know when a letter which has been posted will be collected and started on its way. Mail boxes with small windows with a card showing the time of the next collection have been used for many years.

A Canadian inventor has devised what is termed "The Automatic Second," for use at prize fights. It is intended to simplify the work of the seconds in the two corners, and consists of a hollow iron pillar, to which are attached swinging brackets carrying a seat for the pugilist, a basin, and an electric fan. It is arranged so that all three can be swung outside the ropes when not wanted. The device is an ingenious one, and it is the last subject which one would naturally suppose would claim an inventor.

Miscellaneous Notes and Receipts.

Protecting Gelatine Capsules from Dampness.—According to an English patent by Valentine, they are, either before or after filling, treated with an alum solution, which is said to protect them from injury by moisture at ordinary temperatures.—Neueste Erfindungen und Erfahrungen.

Carbolic acid in the form of lozenges is prepared by melting on the water bath phenol 95 parts and stearine soap 5 parts. This mass is poured into cold moulds, and after solidifying, cut and divided as desired. The lozenges keep well and are readily soluble in water.—Neueste Erfindungen und Erfahrungen.

"**Brilliant Khelidophage**," a medium to clean, shine, and polish copper at the same time, consists of 1 part (by weight) of 40 per cent hydrochloric acid, 5 parts of finely powdered Venetian tripoli, and 4 parts of water. Another mixture is composed of tartaric acid 4 parts, tripoli 4 parts, and water 5 parts. With these agents the article to be cleaned is coated by means of a cloth rag, rubbing it with a dry cloth until it shines nicely. By reducing the quantity of water, the above composition can be made in the form of a paste.—Edelmetall Industrie.

Regenerating Vulcanized Soft Rubber.—The purpose of this process is to render rubber waste or old rubber articles of use again. This is accomplished by dissolving the material and separating it again from the solution. Suitable solvents have been found to be aniline, toluidine, xylylene and their higher homologues, at temperatures of 140° to 180° C. After the solution has taken place, dilute acid is added, whereby the organic bases remain dissolved as salts in the aqueous liquid, while the rubber is eliminated in the form of a tough mass. It is separated by decanting, washed and dried. The solvents employed may also be removed by the admixture of alcohol. According to Neueste Erfindungen und Erfahrungen, caoutchouc is recovered, neither devulcanized nor even only undissolved, by this process, which is patented in Germany by the Deutsche Gummi Gesellschaft.

Treating Maple to Imitate Rosewood.—To imitate rosewood, maple is best employed, since its texture approaches that of the rosewood the closest. According to Deutsche Drechsler Zeitung, the maple board must be carefully rubbed down, a handsome color being obtained only if this is attended to. For staining use anilic acids, a dark red one consisting of roseine 10 grammes, coralline 10 grammes and aniline brown 1.5 grammes dissolved in 1 liter of alcohol, and a pale red one which is obtained by dissolving roseine 10 grammes and coralline 10 grammes in 1 liter of alcohol. With this pale red liquid draw the veins on the maple plate in distances of about millimeters, using a repeatedly divided brush, and fill up the intervening spaces with the dark red mixture. Before drying is completed, blend the light and dark stripes with a soft brush, so that they do not appear too sharply defined.

Red Enamel Color.—The ordinary red vitrifiable color in various shades is obtained by an equally heated mixture of ferric oxide and any alumina compound. It is generally produced in factories, since it plays an important part in practical enameling. The different shades are obtained by changing the proportion of the two fundamental bodies; thus a mixture of 10 parts of green vitriol and 30 parts of alum gives a coloring agent which imparts a flesh tint to the enamel. In order to produce a purple color in the enamel (and all other vitreous pastes) gold chloride in various compounds is employed. The exceedingly high price which this coloring medium naturally commands is somewhat offset by its being uncommonly productive, hence it need only be employed in small quantities. Nevertheless, this purple pigment is, by far, the most expensive material of the enamer, a kilo of the purple-glass from Geneva costing about 350 florins. The preparation of this coloring agent is carried out in different ways, according to the admixture which is made to the gold chloride. Sodium gold chloride is produced by dissolving aukat gold in so-called aqua regia (mixture of nitric acid 1 part and hydrochloric acid 4 parts) in a lukewarm water bath. Evaporate the solution, which is carefully separated from any residues of silver chloride, in a porcelain dish to dryness. Mix the dried gold chloride with pure cooking salt ($\frac{1}{2}$ part by weight of the gold originally employed), dissolve the mixture in water and evaporate again. For tin chloride-gold chloride, the gold chloride procured by the above mentioned directions is again dissolved in water. Then add a solution of tin chloride, wash the resulting precipitate on the filter and dry. The so-called Cassius gold purple, formerly almost exclusively employed for giving enamels and other vitreous compositions a purple color, is prepared by making an admixture to the dissolved gold chloride, containing both tin protochloride and tin perchloride. Since the production of this coloring agent is difficult and laborious, we will abstain from giving the different receipts and refer to the special text books, such as the works of Randau and Ferd Luthmer.—Die Edelmetall Industrie.

Science Notes.

A 12-inch shell, fired from one of the American battleships during the blockade of Santiago, exploded recently while being handled at Santiago, demolishing a building and killing three persons.

A vineyard on the Moselle which contained only one acre of ground recently sold for \$60,000, which is the highest price ever paid for vine land in the Moselle territory or probably in the whole Rhine district.

Austria has profited by our experience in the Spanish war and now owns an ambulance ship named the "Graf Falkenbayn." It was fitted up and presented to the government by private gentlemen to commemorate Emperor Franz Josef's jubilee. It will be managed by the Austrian Red Cross Society.

The editor of the American Journal of Pharmacy, remarking upon the immunity of certain domestic animals against particular poisons, suggests that medicinal roots, fruits, and seeds, being rich in nutritive materials, may economically be turned to account as food for animals instead of being thrown away as being of no value after their medicinal constituents have been extracted.

In opening Great Marylebone Street, London, to lay electric cables, workmen came across several elm tree water pipes in a fine state of preservation, although they were only a few feet below the surface. These tree trunks bored through were over two hundred years old and must have been a part of an old water conduit. The pipes were blocked with silt, but otherwise were quite usable.

Prof. Marconi has invented an instrument for ascertaining a ship's position in a fog, when it is within range of one of the telegraph stations. It consists of a receiver which can be revolved and which, when pointing toward the transmitting station, sets off an electric bell, thus establishing the bearings as accurately as a compass can. The instrument is to be tried on the Channel steamers.

Philadelphia is to have a new park, to be entitled the League Island Park. It will consist of three hundred acres of low-lying land on the Delaware River, near League Island. The successful plan for the new park was drawn by Samuel Parsons, Jr., and includes lakes, meadows, ball grounds, gardens, footpaths, equestrian and carriage roads, arbors, bridges, and restaurants. The place is laid out most admirably.

A Springfield concern has recently built a number of traction engines for use in Cuba. One of these is said to have transported a paying load of sixty tons at the rate of five miles per hour upon the natural soil of the country. The engine has three high-pressure cylinders mounted on top of the boiler and drives the rear wheels by a single reduction gear. The wheels are composed of steel plate disks cut away so as to form spokes and having angle iron rings to which the broad steel tire is riveted.

According to The British Architect, the Thames Iron Company, who are now constructing the Cape Central Railway, have contracted to finish the line from Haifa to Damascus (some 120 miles), crossing the Jordan by a stone bridge and skirting Lake Tiberias. Damascus has about 300,000 inhabitants and lies in an oasis fed by two streams from Lebanon. The company will also construct a breakwater in the bay. The line will eventually go on to Bagdad and form part of a trunk route to India. A narrow gage line from Beyrout already reaches Damascus.

At the Geographical Congress at Berlin, this summer, the languages to be used will be limited to English, French, German and Italian. A writer in the review published by the Madrid Geographical Society protested against the exclusion of the Spanish language in view of the fact that it was spoken by most of the discoverers and colonists of a large part of the world. It says if more geographers were able to read Spanish they would not from time to time bring forth facts as new which were printed in Spanish books two or three centuries ago.

It seems pretty well authenticated that the human voice is capable of starting an avalanche. James Perchard, Clerk of the State Court of Appeals of one of our Western States, was mining some years ago in a mountainous region. The snow had fallen to an unusual depth, and miners moving from one cabin to another were warned to look out for slides. He stopped on one of his trips at the cabin of an acquaintance and took dinner with him and his wife. At the close of the meal his host urged him to stay awhile, but he felt nervous and started on his journey. Crossing the canyon, he looked back at the cabin where the man and his wife were standing at the door. He waved his hand and shouted goodbye. Hardly had the echo of his voice died away before a muffled noise struck his ear—a noise like the boom of a cannon—and in five seconds the cabin was buried under fifty feet of snow. Assistance was summoned, and finally the two dead bodies were taken out. There is little question that under certain conditions the vibrations of the human voice will produce an avalanche.