Correspondence.

Fire Protection in Paris.

To the Editor of the SCIENTIFIC AMERICAN:

In a recent number of your estimable paper, the SCIENTIFIC AMERICAN, you published a very interesting article on "Fire Precautions in Paris," in which you rightly attribute the fewer disasters by fire in Paris to the manner in which the houses there are constructed. The information you give is, however, incomplete, for you speak only of the exterior of the houses, while it is the interior especially which gives the greatest guarantee against the rapid development of fires such as we see too often here. The architects who go to Paris in 1900 would do well to study the matter in order to apply the construction to American dwellings.

In America the motto is "build quickly." Thus we see houses of considerable importance rise from the earth and open their doors to their occupants scarcely a month after the laying of the first stone. The various materials—foundations, corner stones, doors, windows, cornices, etc.—are prepared in advance by different contractors, and all that is necessary is to add to these a large number of laborers working with the greatest celerity and superintended with discipline.

This system offers the advantage of making capital more quickly productive, but it offers a drawback as regards the solidity of the edifice and the security of the inhabitants, since wood forms the largest proportion of the materials used. Although the entire outside surface may be of brick, all the interior framework of the house is of wood. Floors and ceilings, staircases and closets, and the roof, covered with plates of tin or sheets of tarred paper, are all of wood. Wood is everywhere, and what wood? The most resinous kinds, such as fir and pitch pine, so that it needs only a small fire in a corner of the cellar for the whole house, which is all built of inflammable material, to be immediately enveloped in flames. In such a dwelling, the occupant may well ask himself each night if he will awake in the morning.

At Paris the scourge of flame proceeds less rapidly, and it is only in a provisional edifice built of wood, such as the Charity Bazar, or in an old theater like the Opera Comique, which has not the improvements required by the later building laws, that disasters have occurred similar to the recent fires in New York.

In France, the method of construction of a house differs completely from that employed here. The heavy work, that is to say the main walls, are all of dressed stone or rough blocks faced with mortar, the girders and cross beams are of iron, the ceilings are arched and of brick, the stairs of stone or marble, the floors of terra cotta tiling (diamond or hexagonal in shape), the interior walls are of hollow bricks placed edgewise, the roof of blocks of terra cotta covered with tiles or slate, the chimneys of marble, and finally, the doors and windows, the friezes, cornices, casings, baseboards, and other woodwork, are all of oak or walnut. It will readily be seen, therefore, that the proportion of inflammable material is relatively small in such a house, which makes it possible to confine a fire very easily to the place where it started. This is the reason that a fire often breaks out in the cellar of a building full of inflammable materials such as petroleum, oils, or varnish, without doing damage to the rest of the building.

There is another cause of disasters resulting from the tolerance of the building commissioners, who allow cellers to be extended under the street, with vent holes opening in the sidewalks. A single match dropped by a passer-by and falling through one of these vent holes into the cellar may cause one of the greatest conflagrations.

Finally I must mention, as a very good measure in France, the almost universal use of Swedish safety matches, which can only be lighted by scratching on the side of the box, so that a stray match is not capable of igniting by accident, and thus causing a fire.

Although America may be less favored than France with regard to the rapid development of fires, she is on the contrary far better organized to combat them. Her apparatus, machines, and fire engines have reached the greatest perfection, as has everything else which is connected with mechanics and the application of forces. The organization of her engine houses is perfect, and the start for a fire almost instantaneous. As the engines and men are distributed in numerous stations in the different parts of the city, it takes but a few minutes after the alarm has been given to have the pumps working at the fire.

From what precedes it will be noted that each country may get useful ideas from the other. It is by eclecticism that we approach perfection. The great international expositions, such as the World's Fair in America and the exposition at Paris next year, are the most efficacious means of obtaining the supreme degree of perfection in all things. ET. MICHEL.

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ONE-THIRD of the people who go mad are said to recover their senses.

Miscellaneous Notes and Receipts.

Safe Bengal Fire.—Bengal fire free from danger is produced from powdered aluminum 12 parts, barium nitrate 12 parts, saltpeter 12 parts, yellow dextrine 2 parts, sulphur 2 parts, and gum arabic 5 parts.—Neueste Erfindungen und Erfahrungen.

Waterproof Canvas.—The canvas is coated with a mixture of the three solutions named below:

1. Gelatine, 50 grammes, boiled in 3 liters of water free from lime. 2. Alum, 100 grammes, dissolved in 3 liters of water. 3. Soda soap dissolved in 2 liters of water.—Suddeutsche Apotheker Zeitung.

Hard Soldering with Acetylene.—The flame of acetylene is exceedingly useful for hard soldering, says Neueste Erfiudungen und Erfahrungen. Its temperature is as high as can otherwise be obtained only with a special blowing apparatus. The heating power of acetylene is likewise very great. The use of acetylene is particularly in place where no connection with a gas house or electric central station can be had.

Waterproof Lacquer or Glaze.—By making shellac into an emulsion in water by the aid of an alkali or alkaline salt, a solution is obtained which may be mixed with colors or used alone and provides paper, cardboard and wood with a waterproof coating that can be polished by means of friction or pressure. For maps, playing cards, cardboard boxes used for packing, etc., this varnish is exceedingly suitable. The same effect is produced by the use of certain phosphates. If an insoluble powder is mixed with a gelatinous phosphate, especially an alkaline earth, a substance is obtained which applied on paper or cardboard renders it watertight and can likewise be polished by friction or pressure.—Farben Zeitung.

Red Lakes from Coralline.—Dissolve 10 kilos of coralline soluble in alcohol in a solution of 6 kilos of caustic soda 70 to 72 per cent in about 60 liters of water and thin with water to about 300 liters. The dark red opaque solution is mixed with 120 kilos of finely ground heavy spar, and finally precipitated with a solution of 40 kilos of lead acetate in water. The quantity necessary for a complete precipitation varies according to a large or small percentage of impurities in the coralline. By making a dab-test on filtering paper it can be readily ascertained whether the liquid has become colorless. When the precipitated lake has settled well, it is washed three times, each time with 500 liters of water, whereupon the pigment is filtered and dried. About 160 to 165 kilos of dry, dark red lake is obtained. If larger quantities of heavy spar are used, the color becomes paler up to pink. By mixing with minium a handsome imitation vermilion is produced. Unfortunately these lakes cannot be employed for oil colors, because in that case they soon turn yellow. But they are excellent for printing on wall paper, and also endure direct sunlight well.—Svensk kemisk Tidskrift.

To Clean Brushes and Vessels of Dry Paint.—The cleaning of the brushes and vessels in which the varnish or oil paint has dried is usually done by boiling with soda solution. This frequently spoils the brushes or cracks the vessels if of glass; besides, the process is rather slow and dirty. A much more suitable remedy is amyl acetate, which is a liquid with a pleasant odor of fruit drops, used mainly for dissolving and cementing celluloid. If amyl acetate is poured over a resinfied oil paint brush the varnish dissolves almost immediately and, though ever so hard and dry, the brush is again rendered serviceable at once. If necessary, the process is repeated. For cleaning vessels shake the liquid about in them, which softens the paint so that it can be readily removed with paper. In this manner much labor can be saved. One kilo of pure amyl acetate costs 2 marks (50 cents), hence the method is cheap as well. The amyl acetate can be easily removed from the brushes, etc., by alcohol, oil of turpentine or varnish.—Farben Zeitung.

Process for Producing Gold-like Alloy from Copper and Antimony.—This invention, patented in Germany, covers a metallic alloy, to take the place of gold, which, even if exposed for some time to the action of ammoniacal and acid vapors, does not oxidize or lose its gold color. It can be rolled and worked like gold and has the appearance of genuine gold without containing the slightest admixture of that metal, besides being much cheaper than other precious and semi-precious metals, as well as the compounds and alloys used as substitutes for precious metals. The alloy consists of copper and antimony in the approximate ratio of 100 to 6 and is produced by adding to molten copper, as soon as it has reached a certain degree of heat, the said percentage of antimony. When the antimony has likewise melted and entered into intimate union with the copper, some charcoal ashes, magnesium and lime-spar are added to the mass when the latter is still in the crucible. Although the action of this material admixture of flux is not entirely explained, the alloy loses thereby a certain porosity otherwise present and an exceedingly great density of the cast metal is obtained. Same can now be rolled, wrought, hammered and soldered like gold, and when polished has the appearance of genuine gold, while being considerably firmer than the latter.—Journal der Goldschmiedekunst.

Science Notes.

Dr. Palisa has given the name "Slatin" to the small planet which was discovered by him on the 9th of March last.

It has been suggested that the hook and ladder companies of the New York fire department carry small tanks of pure oxygen for use in resuscitating people who have been partly asphyxiated by smoke or escaping gas.

The Edinburgh, Scotland, Corporation made an appeal to Parliament for power to deal with street advertising abominations, including the enforced illumination of wall spaces at night. Six other cities are seeking to obtain the same permission.

We have already noted the fact that a party of scientists was to go to Alaska to carry on investigations. They have now taken their departure, and among those in the party are Dr. C. Hart Merriam, biologist, Prof. Coville, of the Department of Agriculture, and Dr. B. E. Fernow, head of Cornell School of Forestry.

A new monument is to be erected at Eisenach, Germany, and over one thousand designs were sent in by no less than three hundred competitors. The committee selected three designs as being the best, and when the sealed envelopes were opened, it was found that all three selected were by the same sculptor, Herr Kreiss, of Dresden.

Jabez Hogg, who was well known in London as an ophthalmic surgeon, died recently aged eighty-two years. He wrote many books upon the eye, but he will be principally remembered by his "The Microscope: Its Construction and Applications," which is well known to every microscopist. At the time of his death this book was in its fifteenth edition.

Both Mexico and Japan propose to establish life saving and signal systems along their coasts and will employ the Coston night signals, which are now generally used by the army and lighthouse service. They were invented by the widow of Capt. Coston, of the American corps. It is said that she is the only woman who ever invented an article that could be adopted by the military or naval service.

Sir Robert Ball recently unveiled a bronze tablet at No. 19 New King Street, Bath, England, recording the fact that William Herschel, the great astronomer, resided there. Herschel discovered the planet Uranus from the back garden of that house. Sometimes he found it necessary to bring his telescope out into the street opposite that house, and many of the discoveries were made in the street.

Gen. A. R. Buffington recently made a visit to the Springfield arsenal and looked into the proposed improvements of the Krag-Jorgensen rifle. An important change that has been proposed is the adoption of a band clip which admits of the feeding of cartridges into the magazine of the gun in bunches of five, instead of singly, as soldiers are now compelled to do. Probably the most important change of all relates to the cartridges, which will allow of six cartridges to a magazine instead of five.

Sir Norman Lockyer has lately been experimenting with a flexible film with the idea of adapting it to spectroscopic photography, according to The Pharmaceutical Journal. The large concave Rowland grating which he is now using for his solar spectroscopic photographs is 21½ feet radius and has 20,000 lines to the inch ruled on its surface. It gives a spectrum 30 inches long. The focal plane of this grating is of necessity considerably curved; it is, therefore, impossible to get a sharp photograph of the whole spectrum on a glass plate; in fact, not more than 18 or 20 inches of the spectrum can be brought into focus on the same plate. The difficulty is gotten over by using a flexible film which is bent to the curvature of the field. The print of the photographs taken with this Rowland concave grating is the longest solar spectrum photographed at a single operation. It is 30 inches long.

Great damage was recently done in Philadelphia by the ignition of benzole vapor. The accident occurred in the chemical laboratory of a manufacturer of chewing gum. The building was badly damaged. The accident caused three deaths, and twelve or fifteen persons were seriously injured. The whole force of the explosion was upward and outward. At first it was thought that the boiler had exploded, but it was found intact. On the ground floor was a tank containing about seventy-five gallons of benzole. There was also a certain amount of other chemicals used in the manufacture of vanillin. On the second floor was another tank of benzole of about the same capacity. It was while mixing the benzole and certain other ingredients from which vanillin is made that the tank became overheated and overflowed. The inflammable vapor of benzole probably reached the engine room, where its ignition caused the explosion. We have many times pointed out the dangerous nature of the vapor of benzole, benzine, naphtha, and carbon bisulphide, and the serious nature of this accident shows that experimenters should be more cautious than ever in handling even small amounts of such inflammable chemicals.