line, made to operate on the needles of galvanometers, and the latter are by silk threads combined or connected with a delicately suspended ink tube, from which a minute stream of ink falls upon the strip of paper below it; the arrangement being such that the combined motions of the galvanometers so move the ink pen as to make it correspond to the motion of the stylus at the sending end. The apparatus is said to work very well, and it is expected that it will form a useful adjunct to the art of telegraphy. We present herewith a facsimile of writing done by this new instrument, which has been worked with success over a line of forty miles' length. It is hardly probable that it can compete in rapidity with some of the telegraph instruments now in use; but for many purposes it is likely to become important, while in point of ingenuity it is certainly a great achievement, and the author is deserving of the highest credit.—See page 217.

IMPERISHABLE WATER-COLORS.—A new and important discovery is asserted to have been made by M. Mery, a Frenchman, which, if it prove to be true, will be valuable to the painting arts and trades. He has been experimenting a great many years, and he claims now to have hit upon the means of making and applying imperishable water-colors. He does not explain what he uses as a vehicle for his pigments, but it is something which, while it will mix with water, is not soluble in it. Whatever it is, it renders the colors unalterable, and, as it becomes after a time as hard as cement or stone, they may be said to be indestructible. It can be applied to any surface suitable for ordinary oil or water painting, such as wood, paper, glass, stone, canvas, etc., and can be prepared so as to dry in a few minutes or remain moist for an indefinite length of time. It is suggested that possibly M. Mery has re-discovered the long lost art of encaustic painting, which is supposed to have been applied and fixed by means of heat. It seems almost incredible that a paint can be applied by means of water, and yet not be affected by it afterward, but our authority is excellent for saying that such is really the case.—*Exchange.*

COMMUNICATIONS WITH LIGHTHOUSES.—A new description of rocket, called the "buoyant rocket," has been produced by the Royal Laboratory Department, at the request of the Board of Trade. A rocket was required as a means of communication between the shore and lighthouses a few hundred yards from the main land during bad weather, and in circumstances under which the ordinary life-saving rock apparatus by which a line is conveyed to a wrecked vessel would be unavailable. The Laboratory have answered the demand by adapting the old-fashioned Congreve rocket to meet the required end. A small iron tube containing the composition is enclosed in a casing of cork, and fitted to a stick in primitive fashion, with a line made fast to the extremity, and the simple arrangement has admirably succeeded. Three of the rockets have been tried at Shoeburyness, being fired from a trough at the surface of the sea, and ploughing a direct course through the water with a strong line attached, by means of which an assistant or a boatload of provisions could be conveyed to the lighthouse keeper.

RED FIRE.—There are certain recipes which, though often published, are still continually called for; and among these is "red fire," so much used in fireworks, amateur theatricals, and the like. The following is commended as both safe and cheap: Take by weight one part of shellac and four of well-dried nitrate of strontia; mix thoroughly in an unpowdered coudition; heat in a tin dish to the melting point of the shellac; after cooling, the semi-fused mass is to be pulverized. This is not expensive, is safe, without tendency to explode, and burns quietly, slowly, even when strewed on damp ground, and produces a very good effect. The mixture for red fire is usually composed of nitrate of strontia, chlorate of potash and sulphur; this frequently takes fire spontaneously, especially when flowers of sulphur and imperfectly dried nitrate of strontia are employed.—*Boston Journal of Chemistry.*

BRINE AS A PRESERVATIVE.—At a recent meeting of the Geneva Society of Physics and Natural History, Prof. Alph. de Candolle presented a glass jar containing fruits of the coffee plant collected before maturity in Mexico, preserved in a liquid which chemical analysis proved to be salt water. It is fifty years since the jar thus filled was hermetically sealed, under the eye of Aug.-Pyr. de Candolle, and to-day the coffee-beans which it contains are in a thoroughly satisfactory state of preservation. The water contains a solution of chloride of sodium and very small quantities of other chlorides or salts. No gas was found in solution; the water must then have been boiled, and introduced while hot into the jar. This experiment may give valuable hints as to the substitution of salt water for alcohol (of which every one knows the inconvenience) for the preservation of organic substances.—*Nature.*

INDELIBLE INK FOR ZINC LABELS.—A correspondent of the London *Garden* says: "Many years ago a friend gave me a simple recipe for ink for writing on zinc, which I have constantly used since. It is 12 to 16 grains bichloride of platinum dissolved in one ounce distilled water. If kept corked a small bottle will last many years. The zinc labels must of course be cleaned before using. This is readily done by rubbing, either with fine emery paper or with very dilute oil of vitriol. Then simply write the name and allow the ink to dry. I have used labels of this description for years, and have never lost a name since adopting them. They have been found equally suitable for the house or the open air."

CHLORIDE OF LIME AS AN INSECTICIDE.—*Le Cultivateur* remarks that rats, mice and insects will at once desert ground on which a little chloride of lime has been sprinkled. Plants may be protected from insect plagues by brushing their stems with a solution of it. It has often been noticed that a patch of land which has been treated in this way remains religiously respected by grubs, while the unprotected beds round about are literally devastated. Fruit trees may be guarded from the attacks of grubs by attaching to their trunks pieces of tow smeared with a mixture of chloride of lime and hog's lard, and ants and grubs already in possession will rapidly vacate their position.

ANOTHER CURE FOR HYDROPHOBIA.—A German gamekeeper (W. Gassel), 82 years of age, states in the *Leipziger Zeitung*: "I do not wish to bury with me my much-approved remedy against the bite of mad-dogs, but will make it publicly known; that is the last service I can render to the world. Take some warm wine vinegar and lukewarm water, wash the wound thoroughly, and dry it. Then pour a few drops of muriatic acid on the wound, because mineral acids destroy the poison of the saliva."—*Journal of Chemistry.*

A GOOD GLASS CEMENT.—Mix 10½ pounds of pulverized stone and glass with 4½ pounds of sulphur. Subject the mixture to such a moderate degree of heat that the sulphur melts. Stir until the whole becomes homogeneous, and then run it into molds. When required for use it is to be heated to 248°, at which temperature it melts, and may be employed in the usual manner. It resists the action of acids, never changes in the air, and is not affected in boiling water. At 230° it is as hard as stone.

SOLUBILITY OF PHOSPHORUS IN ACETIC ACID.—G. Vulpius reports that, digesting phosphorus for some time in concentrated acetic acid at a moderate heat, about 1-100th of the weight of the latter is dissolved and kept in solution on cooling. If only a few drops of water are added, however, the solution becomes milky from deposited phosphorus, and when the addition reaches the volume of the solution used, no phosphorus at all will be retained in solution.—*Archiv de Phar.*

HOW TO BRONZE PLASTER STATUES.—In bronzing plaster statues the powder is dusted over the statue while it is yet sticky from a coating of turpentine varnish. The best way is first to give a few coats of alcoholic shellac varnish, and then the coating of turpentine varnish, as otherwise the latter is too quickly absorbed. Let it stand till half dry and sticky and then dust over any color of bronze-powder to suit the case.

SCIENCE IN NATURE.—"Everything," says Hugh Miller, "is writing nature's history, from pebble to planet. The scratches of the rolling rock, the channels of the rivers, the falling rain, the buried fern, the footprint in the snow, and every act of man, inscribes the map of her march. The air is full of sounds, the sky is full of memoranda and signatures which are more or less legible to every intelligent human being."

M. Camille Flammarion, of Paris, has recently published a number of articles to prove that the moon is inhabited, and is now organizing a committee to collect the necessary funds to construct a refracting telescope of sufficient power to see them. He calculates the cost of the instrument at one million francs.

DISCOVERY OF A NEW PLANET.—The following has been sent by the Astronomer Royal:—Professor Peters, of Clinton, New York, announces the discovery by himself of a minor planet of the tenth magnitude, in R.A. 12 hours 16 minutes, dec. 6 degrees 46 minutes north, with a slow motion south.