A FAST CEMENT.-- A very valuable cement has been discovered by Mr. A. C. Fox, of which details are published in Dime. Dingler's Polytechnisches Journal. It consists of a chromium preparation and isinglass, and forms a solid cement which is not only insoluble in hot and cold water, but even in steam, while neith neither acids or alkalies have any action upon it. The chromium preparation and the isinglass or gelatine do not come into contact until the moment the cement is desired, and when applied to all to adhesive envelopes, for which the author holds it to be especially the envelopes of the second se especially adapted, the one material is put on the envelope cover adapted, the one material is put on the envelope covered by the flap (and therefore not touched by the tongue), while the isinglass, dissolved in acetic acid, is applied under the flap. The chromium is made by dissolving crystallised chromic acid in water. You take :---

Grammes. Crystallised chromic acid..... 2.5 Water ..... 15 Ammonia ..... 15

To this solution about ten drops of sulphuric acid are added, and finally solution about ten drops of sulphur actual and actual, in grammes of sulphate of ammonia, and four grammes of fine white paper. In the case of envelopes, this is applied to fine white paper. applied to that portion lying under the flap, while a solution prepared to that portion lying under the map, much a cold (one part acid by dissolving isinglass in dilute acetic acid (one part The latter is moistened, and then is pressed down upon the said preparation, when the two units, forming, as we have said, a firm and insoluble cement. In the case of mounting cartes de visite or other photographs, it would perhaps be wisest to such that the mounts first to apply the chronic preparation uniformly to the mounts first of all, and permit these to dry, when they would be ready be faced with moment. The print would then merely have to faced with an and pressed be faced with the solution of isinglass and acetic acid, and pressed to +to the mount. We have ourselves no practical experience of the comment. cement, but it would be well worthy of trial by photographers.

INITATION INLAYING. - Suppose I want an oak panel with a design inlaid with walnut. I grain the pauel wholly in oil. This is not a bad ground for walnut. When the oak is dry, I grain the whole of the panel in distemper. I have a paper with the design the design drawn thereon, the back of which I rub with whiting, place it on the panel, and with a pointed stick trace the design. then with a brush and quick varnish trace the whole of the esize design. When the varnish is dry, with a sponge and water I remain the particular to the state of This, if well executed, presents a most beautiful imitation of inlaid wood. Marbles are executed in a similar manner.—

KEROSENE DANGERS.—A correspondent mentions a source of danger in using kerosene lamps which seems to have been Renerally Renerally overlooked, namely, the habit of allowing lamps to atand they become heated sufficiently to convert the oil into gas. Not unfrequently persons engaged in cooking or other work about the stove stove will stand the lamp on an adjacent mantelpiece, or even on the to a stand the lamp on an adjacent mantelpiece, or even on the top of a raised oven; or when ironing will set the lamp near the stand on which the heated iron rests. It is needless to en-large near the stand on which the heated iron rests. large upon the risky character of such practices.

METHOD OF CLEANING PRINTS.-Immerse the print for an hour or so in a ley made by adding to the strongest muriatic acid its and the strongest muriatic acid its own weight in water, and to three parts of this mixture adding one of weight in water, and to three parts of this mixture adding. one of red oxide of manganese. A print, if not properly clean, may remain in this liquid for twenty-four hours without harm. Indian ink stains should in the first instance be assisted out with hot we hot water : pencil marks taken out with indiarubber so carefully water; pencil marks taken out with inclaruouer so called, the paste on the back should be thoroughly removed with warm water. The paste on the back should be thoroughly removed with warm water. The saline crystal left by the solution may be removed by remove by repeated rinsings in warm water. -- Art Union.

CLEANING ENGRAVINGS.—Put the engraving on a smooth board and cover it thinly with common salt finely powdered. Squeeze lemon juice upon the salt so as to dissolve a considerable portion Portion of it; elevate one end of the board so that it may form an angle of it; elevate one end of the board so that it may form an angle of about 45 or 50 degrees. Pour on the engraving boiling water f. Water from a tea kettle until the salt and lemon juice be all from stains. It must be dried on the board or some smooth sur-face gradnen.  $f_{ace}$  gradually. If dried by the fire or the sun it will be tinged with a net of the sun it will be tinged with a yellow colour.

HOW TO MAKE PLASTER OF PARIS HARD ENOUGH FOR TURN-ING. MIX WITH Fresh plaster of Paris from two to four per cent of Down of powdered marsh mallow root, then add sufficient water until

it forms a mass. This will set in about an hour and become so hard and dry that it may be sawed and turned. It is used in the manufacture of dominoes, dice, &c. When eight per cent of the root is added a still harder mass is obtained which may be rolled into leaves and painted or varnished.

A small quantity of alum added makes it set harder and quicker.

DIAMOND CEMENT .- Diamond cement, or whitefish glue, is made of isinglass dissolved in dilute spirits of wine or common gin. The two are mixed in a bottle loosely corked, and gently simmered in a vessel containing boiling water ; in about an hour the isinglass will be dissolved, and ready for use. When cold, it should be an opaque, milk white, hard jelly; it is re-melted by inmersion in water, but the cork should be at the same time loosened. After a time a little spirit should be added to replace that lost by evaporation. - The Boston Cabinet-Maker.

TO GILD A SMALL WOODEN FLOWER-STAND .- Rub the wood smooth, and prime with glue size; then put on two coats of oil paint and one of flatting. Smooth over, when dry, with washleather. Put on gold size, and when it is sticky to the touch, it is ready for the leaf, which put on carefully and dab with cotton wool. A thin transparent glazing can be used to deaden the gold in places. - Scientific American.

## SIEMENS' AND HALSKE'S ELECTRIC LAMPS.

The distinguished firm of electrical engineers. Messrs, Siemens and Co., have patented several forms of electric lamps, most of them in the names of Siemens and Halske, the proprietors of the Siemens dynamo-electric machine. Perhaps the most useful regulator devised by them is their modification of the Serrin, but the illustrations on page 182 will serve to exhibit the diversity of form taken by lamps using only the common rods of carbon. In Fig. 1 the carbons fall to each other, but are separated at their upper extremities by a rod formed of some refractory substance. This rod is moved in a vertical direction by the lever arm L, which is actuated by the electro-magnet. When the current passes through the electro-magnet and the carbons, the rod, R, thrusts the carbons apart. If the current should decrease in strength, the carbons fall together again. The current is not broken by any similar lamp on the circuit failing to perform its function. In Fig. 2 one carbon is set in oscillation or vibration by means of the lever arn, D, which is terminated by an iron cylinder forming the movable core of the electro-magnet. The carbon has to vibrate merely 32 times a second to cause the appearance of a steady light. The lamp admits of several lights in the same circuit. Fig. 3 represents another form of the same idea, and resembles in its chief features the lamp invented by Profs. Elihu Thompson and E. J. Houston. The upper carbon falls gradually upon the lower, which is set into vibration by means of the lever arm, L, actuated by the electro-magnet. The lower carbon moves so quickly that the upper carbon, which is forced down merely by its own weight, cannot sympathise with it, and a small voltaic arc is herefore produced. The fluctuations of this arc are so rapid (about 30 per second) that they produce no apparent alternation in the light.

## THE MYSTERIES OF A LUMP OF COAL.

For years no one supposed that a lump of soft coal, dug from its mine or bed in the earth, possessed any other purpose than that of fuel. It was next found that it would afford a gas which was combustible. Chemical analysis proved it to be made of hydrogen. In process of time mechanical and chemical ingenuity devised a mode of manufacturing this gas, and applying it to the lighting of buildings and cities on a large scale. In doing this, other products of distillation were developed, until step by step, the following ingredients are extracted from it :

1. An excellent oil to supply lighthouses, equal to the best sperm oil, at lower cost.

2. Benzole-a light sort of ethereal fluid which evaporates easily, and, combined with vapour or moist air, is used for the purpose of portable gas lamps, so-called.

3. Naptha-a heavy fluid, used to dissolve gutta-percha, India rubber, etc.

4. An excellent oil for lubricating purposes.

Asphaltum, which is a black, solid substance, used in ma-5. king varnishes, covering roofs, and covering over vaults.

Paraffine-a white crystalline substance, resembling white 6. wax, which can be made into beautiful wax candles; it melts at a temperature of 110°, and affords an excellent light. All these ubstances are now made from soft coal.