protected from violence. At a meeting of the committee of the Ironmasters' Association held in Wolverhampton on Wednesday, the offer was accepted, and an application was made to the Lord Lieutenant of the county for the needed protection. At the same meeting, the committee expressed themselves as altogether unable to give the Brierley Hill executive credit for their sincerity in their professed discountenancing of the North Staffordshire puddlers, facts having been brought to the knowledge of the committee which led them to conclude that, to say the least, the executive are winking at assistance being rendered. Very little more confidence was expressed in the Gateshead union; but the mill-men were spoken of in terms approaching to confidence in the sincerity of their motives relative to the North Staffordshire men. To show that the masters in South Staffordshire are equally willing with those in the North of England to come to terms with their men, the committee recommended the North Staffordshire masters to see a number of their men, to ascertain of what they complain and why they refuse to go to work. But no great confidence is expressed in the business result of the interview, for it is believed that the men will demand the wages for which they have struck, whilst their masters will certainly refuse to give it. All hope in the termination of the lock-out within a reasonable time is centered in the result of the scheme for introducing non-unionists into North Staffordshird. The masters continue to confine their attention to the question which brought about the lock-out—that of wages—and refuse to entertain any project for breaking up the union. They have no objection to their men having a union, if that union will only confine itself to legitimate business and not make itself intolerable by interference with the management of works."

A New Kiud of Electrifying Machine.

The electro-magnetic coil has, in a great measure, superseded the electrifying machine; the latter, however, will never cease to be an object of interest; and, it is probable, will always be preferred for some purposes. The expense and difficulty of managing large plates and cylinders of glass have hitherto been obstacles to the use of large electrifying machines. These obstacles appear now removed—glass being rendered unnecessary by the discovery of a far more convenient and effective material. M. Edmond Bequerel exhibited to the Academy of Sciences on a recent occasion an electrifying machine, the plate of which was made of indurated red sulphur, the invention of a civil engineer. It was eighty centimetres in diameter, and afforded a spark fourteen centimetres in length. No amalgamated cushions were required with it, the skin of a cat being quite sufficient to produce every desired effect. Sulphur undergoes extraordinary changes by successive fusions; becoming extremely hard and tenacious. After the third fusion it no longer acts on metals, or possesses its characteristic odor. The plate used by M. Bequerel was formed by fusing the sulphur three times in a cast-iron vessel, at a temperature between 250° and 300° Cent., and allowing it, after each fusion, to cool thoroughly. After the first and second fusions it was crushed to a coarse powder; and, after the third, it was poured into a plaster mold. Plates four metres in diameter may easily be made in this way; they cost extremely little; and, besides being more efficient, are far less hygrometric than glass.—*Intellectual Observer.*

Aluminum Bronze for Coins.

During the past year, says the Director of the U. S. mint, some interesting experiments were made with aluminum as an alloy for coins; not with a view to displace the bronze coinage, but to propose a system of tokens for five and ten cents. More than two years ago experiments were made in aluminum alloys to try their fitness for medals. Information was received from Paris that the introduction of only one per cent of aluminum into fine silver would resist the sulphuretted tarnish which is so apt to attack that metal in certain exposures. The experiments made here did not confirm that statement; on the contrary a slip of this alloy (99 silver to 1 aluminum) suffered more discoloration from the vapor of sulphuretted hydrogen than a slip of fine silver. The alloy was also much harder. An alloy of thirteen parts copper with one of aluminum was then tried, and another of nineteen parts copper to one of aluminum. The former gave a pale gold color, the latter the color of standard gold coin—both beautiful but too nearly resembling that precious metal. Under the press, however, they were both found to be so hard and stubborn, in spite of repeated blows, as to be quite impracticable. The question, however, was still open, whether a different proportion, and the low relief used for coin, would not give a satisfactory result. In fact, we had specimens of aluminum bronze coinage, effected by European manufacturers of aluminum, which proved that the striking was at least practicable, if not easy.

The Cornish Eugine Deteriorating.

It appears from a report in the London *Mining Journal*, that the Cornish engine is failing to work as economically as in former years. This deterioration is probably as the authority in question says from want of care and proper attendance. We quote:—

"In the year 1811 Mr. Joel Lean began to report the performances of the Cornish engines, and during that year, it is said, issued his first engine report. In the year 1827 an eminent engineer, Capt. Samuel Grose, commenced to improve the duty of steam engines at Great Wheel Towan. It is believed that practical experience has done more than scientific researches in procuring the high economy of fuel. which has been the result, and that this has been principally effected by the use of high pressure steam expansively employed, and using Mr. Trevithick's boilers, and clothing the steam pipes and cylinders with a non-conducting material, together with great attention of the enginemen to the fires, so as to make the best of every bushel of coals consumed, as some enginemen are now doing on the railways.

"In 1843 the average duty for 94 lbs. of coal was 60,000,000 lbs., while in 1856 it had steadily decreased to 47,000,000 lbs., for the same fuel. It is to be deeply regretted that the duty of our steam engines is decreasing, and that many of the important lessons taught by Capt. Grose appear to be forgotton; whilst we are brought familiar with the rapid improvements of locomotive and marine engines, we have to deplore a retrograde movement of the stationary engines in our Cornish mines. With the present low price of minerals, and reduced dividends, we certainly ought to try to bring up the duty of our steam engines to where it was in 1843. The number of pumping engines reported for January is 37. They have consumed 2846 tuns of coal, and lifted 22·3 million tuns of water ten frames high. The average duty of the whole is, therefore, 52,800,000 lbs. lifted one foot high, by the consumption of 112 lbs. of coal."

Solution of India-rubber.

A solution of caoutchouc or india-rubber, for repairing india-rubber shoes, is prepared in the following manner:—Cut two pounds of caoutchouc into thin, small slices; put them in a vessel of tinned sheet-iron, and pour over twelve to fourteen pounds of sulphide of carbon. For the promotion of solution place the vessel in another containing water previously heated up to about 86° Fahrenheit. The solution will take place promptly; but the fluid will thicken very soon, and thus render the application difficult if not impossible. In order to prevent this thickening and difficulty, a solution of caoutchouc and rosin (colophony) in spirits of turpentine must be added to the solution of caoutchouc in sulphide of carbon, and in such quantity that the mixture obtains the consistency of a thin paste. The solution of caoutchouc and rosin in spirits of turpentine should be prepared as follows:—Cut one pound of caoutchouc into thin, small slices; heat them in a suitable vessel over a moderate coal fire until the caoutchouc becomes fluid, then add one-half pound of powdered rosin, and melt both materials at a moderate heat. When these materials are perfectly fluid, then gradually add three or four pounds of spirits of turpentine in small portions, and stir well. By the addition of this last solution, the rapid thickening and hardening of the compound will be prevented, and a mixture obtained fully answering the purpose of gluing together rubber surfaces, etc.—*American Drug Circular.*

Directions for Making Blacking.

Liquid.—Ivory black, in fine powder, 1 lb.; molasses, 3-4 lb.; sweet oil, 2 oz.; beer and vinegar, of each, 1 pint. Rub together the first three until the oil be perfectly "killed," then add the beer and vinegar. Ivory-black and treacle, of each 1 lb.; sweet oil and oil of vitriol, of each 1-4 lb. Mix the first three as before, then gradually add the vitriol, diluted with thrice its weight of water; mix well, and let it stand for 3 hours, when it may be reduced to a proper consistence with water or sour beer.

Paste.—Molasses, 1 lb.; ivory-black 1 1-4 lbs.; sweet oil, 2 oz.; rub together as before, then add a little lemon juice or strong vinegar. Ivory black, 2 lbs.; molasses, 1 lb.: olive oil and oil of vitriol, of each 1-4 lb.; water q. s., as before.

The manipulations required for paste and liquid blacking are the same, the difference in the two being the quantity of liquid added. Thus, by diluting paste blacking with water or beer bottoms, it may be converted into liquid blacking of a similar quality, and, by using less fluid matter, the ingredients of liquid blacking will produce paste blacking. One thing must, however, be observed, and that is, that the ivory-black used for liquid blacking must be reduced to a much finer powder than for paste blacking, as, if this be not attended to, it will settle to the bottom, and be with difficulty diffused again through the liquid. For those persons who do not like the use of blacking containing oil of vitriol, the first of the above forms, either for paste or liquid, may be adopted. The vitriol, however, greatly contributes to promote the shining properties of the blacking, and in small quantities is not so injurious to the leather as has been falsely represented, as it wholly unites itself to the lime of the phosphate contained in the ivory-black, and is thus partly neutralized. This is the reason why lamp-black should never be employed for blacking, as it has no earthy base to absorb or neutralize the acid, which would then prove very hurtful to the leather. Oil of vitriol is now employed in the manufacture of all the most celebrated shining blackings. The addition of white of eggs, isinglass, gum arabic, and similar articles to blacking, always proves injurious, as they tend to stiffen the leather and to make it crack.—*Cooley.*

A Curious Clock.

A number of Union mechanics from the rebel prisons, now at the hospital of the Union Volunteer Refreshment Saloon, Phil., brought with them from Dixie a piece of their handiwork, well worth special mention. It consists of a clock, made to wile away their we ry hours at Salisbury, N. C., during their imprisonment last winter. The main spring is made from the blade of a saber which once belonged to Stonewall Jackson. The hair-spring and balance-wheel were taken from the telegraph office timepiece, Andersonville, Ga. The hands are made of a toasting-fork from the kitchen of Vice-President Stephens. The wheels are made from the mountings of carriages, &c., of prominent southerners. The pillars which connect the frame are made of a ramrod, and nearly all the parts are taken from something picked up in the confederacy, and have more or less romance attached to them. A saw used in constructing this interesting little piece of mechanism was made of a table-knife; and files, jack-knives, &c., used in making rings, were often called into requisition by the anxious workmen.

Plants From Cuttings.

Peter Henderson, of Jersey City, a noted propagator, gives a simple mode of raising plants from cuttings, such as roses, verbenas, carnations etc., adapted to inexperienced cultivators, although not the mode used on an extended scale. A common flower-pot saucer, or even a common kitchen saucer or other dish, is filled with sand and the cuttings inserted thickly in it. It is then watered until it becomes about as liquid as mud.

The cuttings should, of course, be of green or unripened wood, three or four inches long, placed in a strong light in a room or green house, kept in a temperature of fifty to eighty degrees, best at seventy to seventy-five degrees, allowed to remain from ten to twenty days, till rooted, and the sand kept constantly in this semi-fluid state, for if they become partly dry they are ruined.