

food upon which another mind subsists, and a third realizes, in a practical form the dreams of both. This is essentially the case in respect of chemistry; and one of the most recent illustrations of its truth is to be found in the alleged discovery of a means of producing artificial sunlight. We know that for many years past attempts have been made to evolve from natural elements a gas or flame which, on a small scale, should equal in quality and intensity the light emitted from the sun. Abroad as well as at home, this has been a haunting thought in the brain of chemists. Innumerable experiments, with more or less success for their results, have been made from time to time, and there is no doubt that eventually perseverance will meet its almost unflinching reward—achievement of the object sought.

So long back as 1859, Professor Banson and Professor Roscoe suggested that the fusion of the metal magnesium might prove to be the solution of the philosophical problem, and now Mr. Sondstadt is actually commencing to manufacture that metal on a large scale for photographic purposes. It has been demonstrated that, by burning magnesium wire in a spirit or oil lamp an illuminating power of great brilliancy might be gained. The two professors named long since examined the photo-chemical action of the sun, compared with a terrestrial source of light, and this latter was that effected by the combustion of magnesium wire. The application of this light may become, it is easy to perceive, of vast importance beyond its photographic uses. A burning magnesium wire, of the thickness of 0.297 millimetre, evolves as much light as seventy-four stearine candles, which five go to the pound. In order to produce a light equal to that of seventy-four such candles burning for ten hours, and in which 20 lbs. of stearine would be consumed, 72.2 grammes of magnesium wire would be required. The magnesium wire is prepared by forcing out the metal from a heated steel press, having a fine opening at the bottom. For the purpose of consumption, it may be rolled up in coils on a spindle, which, by the agency of clock work, or weights above, could be made to revolve. A pair of feeding rollers would push the end of the wire forward at a rate commensurate with the speed of its combustion.

Magnesium is not in itself costly at present, but there is no doubt that the efforts of Mr. Sondstadt and others who are devoting attention to the subject will lessen the expense of its production by improved manipulation.

So far as the usefulness of the discovery is concerned in relation to photography, we have the following testimony from Mr. Brothers, of Manchester:—"The result of an experiment I have just tried, is, that in fifty seconds, with the magnesium light, I have obtained a good negative copy of an engraving—the copy being made in a darkened room. Another copy was made in the usual way, in daylight, and in fifty seconds the result was about equal to the negative taken by the artificial light." Who shall say, therefore, that at some not distant day, nature and science may not place at our disposal a substitute for the bright orb of day—an artificial sun.

Silvering and Gilding on Wood.

The process of silvering and gilding on wood consists, first, in giving the wood or moulding a thin coating of glue size (bonnet glue), combined with a little English washed whiting (gilders), which is free of sand. The object is to fill up the pores of the wood, and render it non-absorbent to some extent. Then a composition of white glue and whiting of thicker consistency, resembling white house-paint is applied, coat after coat as it dries. From five to seven coats are used; parts to be burnished require a thickness of at least the 16th of an inch of this composition. The surface is then smoothed down with pumice and water, and finished with fine sand paper when dry. It is very important to know if the whitening composition is of the right strength. Apply the nail of the finger as a test; if the composition can be scratched, it is right, if the nail makes no impression, more water and whiting should be added; for if too strong and hard it will not burnish well and the composition will in time crack and peel off. If too weak it will blister when gilding it, the water used will soak through it too easily to the wood, neither will it burnish but chip off.

Second. From five to seven coats of a composition styled burnish gold size, are now applied. This composition consists of best London pipe clay, free of sand, ground in water with best black lead, red chalk and a little grease, and combined when to be used with weak glue size. This mixture is smoothed down with fine emery paper and sometimes washed with cotton cloth and water. In America the gold size composition is used very weak in glue, while in Great Britain it is used very strong. Equally good work is made by both modes.

Third. The work is now coated with a very weak solution of glue, so weak that when quite cold the liquid will not more than set into a jelly. Parts to be burnished get two extra coats, and are not rubbed down with emery paper. The surface is now ready to receive the silver or gold leaf. Pure water, or better, new rum, is used to wet the work, and while wet the silver or gold leaf is cut into suitable pieces, and applied with a brush styled a gilder's tip. After the work is covered with gold or silver, and dry, a very weak glue size is used over the metal leaf, except on the burnished parts; such parts are burnished in about two hours after gilt. The dead work is rubbed down (styled mat silvering on gilding), with a little cotton wool, and then small pieces of silver or gold leaf as may be are applied with new rum to all little omissions. When dry it is again rubbed down with cotton, if the work should now prove perfectly covered with leaf, say silver, it is then coated with gold lacquer, receiving from three to four coats, and is known as German moulding or gilding. Gold leaf is not lacquered. To give a minute description of the process would require many pages.

Soap from Coal-oil.

The editor of the *Oil City (Pa.) Register*, has seen a good article of soap manufactured from coal-oil. It is claimed that soap manufactured from this oil will remove all kinds of stains and dirt, and do more work than any other and in less time.