

Thus the labor to reel 1 pound of raw silk will cost \$1.70, or that to reel 1 pound of choked cocoons, approximately, 50 cents.

Deducting the cost of reeling from the \$65.42 obtained, we have \$50.92 with which to buy the necessary cocoons; say 33 pounds of choked cocoons for the nine pounds reeled silk. If we use \$49.50 of this sum for this purpose it will enable us to pay \$1.50 per pound for our cocoons, and we still have \$1.42 as a profit on every 9 pounds of raw silk manufactured. This, if we employed two hundred reellers, would be a yearly income of \$7,384.

It is safe to say that the process of reeling just about doubles the value of the product, and if the silk-raiser can reel his own cocoons he may safely count on this increase of its value, provided it is well reeled.

What the actual profits are that accrue to the owners of the large filatures in Tarascon, and other parts of South France or Italy, it would be impossible to state without having access to the books of the companies.

ESTIMATE OF PROFITS IN RAISING EGGS.

Average number of eggs in an ounce, 40,000.
Maximum number of cocoons from one ounce of eggs, 40,000.

One-half of these, or 20,000, are females.

Number of eggs laid by each female, say, 300.

Quantity of eggs from one ounce, 6,000,000, or 150 ounces.

Deducting, as probable loss from all causes combined, one-half, we have 75 ounces.

Price of eggs in Europe, \$2 to \$5, say \$3 per ounce.

Amount realized on 1 ounce, \$225.

On the basis of the first estimates two adults could take charge of the issue from 4 ounces of eggs. These would yield the sum of \$900, and, even after allowing for the first cost of eggs, trays, commission, freight (which is light), extra time and labor (say another month), and incidental expenses, it leaves a very excellent return.

In studying the above estimates the reader must bear in mind that the silk industry, like all industries, will have its ups and downs—its periods of buoyancy and depression. It is just now going through one of these last. Silk-culture never was and never will be an exceedingly profitable business, but it adds vast wealth to the nations engaged in it, for the simple reason that it can be pursued by the humblest and poorest, and requires so little outlay. The question of its establishment in the United States is, as I have elsewhere said, "a question of adding to our own productive resources. There are hundreds of thousands of families in the United States to-day who would be most willing to add a few dollars to their annual income by giving light and easy employment for a few months each year to the more aged, to the young, and especially to the women of the family, who may have no other means of profitably employing their time."

"This holds especially true of the people of the Southern States, most of which are pre-eminently adapted to silk culture. The girls of the farm, who devote a little time each year to the raising of cocoons, may not earn as much as their brothers in the field, but they may earn something, and that something represents an increase of income, because it provides labor to those members of society who at present too often have none that is remunerative. Further, the raising of a few pounds of cocoons each year does not and need not materially interfere with the household and other duties that now engage their time, and it is by each household raising a few pounds of cocoons that silk culture must, in the end, be carried on in this as it has always been in other countries. Large rearing establishments seldom pay."

IMPROVED COTTON STRETCHERS.

MESSRS. DOBSON & BARLOW, of London, exhibited at Paris several improved stretching machines, at the late Paris Exhibition, one of which we illustrate in the accompanying engraving.

It is a stretcher containing three registers, of four rollers each. The several rollers run at different speeds, the one

Should the band of cotton fibers be irregular in thickness or tear, the machine stops automatically. Hereby the operator's attention is called to the difficulty, which may now be removed.

CLEAN PHOTO PLATES.

By F. A. BRIDGE.

I HAVE adopted the following plan for about seven years, and never spoil a picture through the plate being dirty, although some of my small plates (used for negatives for enlargements) have been used over and over again.

Fill a copper about two-thirds with water, and when it boils, put in a couple of packets of Manby's cleansing crystal; stir well, and while the water is still boiling, drop in your dirty plates, face downward. When the water has cooled sufficiently, take out your plates, and in nine cases out of ten the films will be left behind in the water. Rinse the plates well in clean cold water, and, while still wet, rub them over with Solomon's Diamond Polish (or tripoli and water with a little methylated spirit). I allow this to dry on, and when I require them for use merely rub it off (don't forget the edges) with one leather, and then give a final polish with another; but they may, of course, be cleaned and polished at once if preferred.

I may, perhaps, mention that I never use a substratum for dry plates, but I invariably edge my plates—large and small—with India-rubber in benzole, and I am never troubled with either dirty plates or split films.—*Photographic News*

ON THE REDDENING OF CARBOLIC ACID.

OWING to frequent complaints from purchasers and consumers of carboic acid, about its acquiring a red color, the firm of Gehe & Co. (of Dresden) have published the following:

Many prominent chemists, and all manufacturers of crystallized carboic acid, have long endeavored to discover the cause of the reddening of pure crystallized white carboic acid. But in spite of their careful investigations and experiments, the reason still remains unknown. It is inexplicable why, for instance, a portion of a distillate should remain perfectly white for months, while another portion of the same distillate turns red. Some chemists maintain that this reddening is a characteristic trait of perfectly pure carboic acid; but this has not been proven. Whatever may be the cause, it is universally conceded that such colored carboic acid, provided it has the correct boiling point, is precisely as good as the white, and need not be rejected. The Phar. Germ. prescribes that it should melt between 25° and 30° C. (77°—86° F.), but it has generally a high melting point [the U. S. Ph. gives the latter between 93° and 106° F.] No manufacturer can warrant the permanency of the white color of his carboic acid.

ON ANILINE AND THE METHYLATED TOLUIDINES, AND ON THE DYES DERIVED FROM THEM.

By P. MONNET, F. REVERDIN, and E. NOELTING.

ALL these bases on oxidation yield coloring matters of different shades, and in greater or less quantity.

We have oxidized them by the method generally pursued in the manufacture of methylaniline violet. The base to be acted upon is mixed with ten parts of silicious sand, a concentrated solution of a salt of copper, and a small quantity of acetic acid, and the whole is then left for two or three days in a stove heated to 122° Fahr. (we have made use, in fact, of the stove employed at the works of MM. P. Monnet & Co. for the manufacture of methylaniline violet.)

At the end of this time the mass is found to have grown hard; it is ground to a fine powder, and heated in the water-bath, after having been moistened and mixed with the quantity of sulphuret of sodium necessary to decompose the double salt of copper and of coloring matter; then it is ex-

It results from our researches that amongst all the bases which may be met with in commercial methylaniline, *pure dimethylaniline* is the only one suitable for the manufacture of a violet dye.

Monomethylaniline and dimethylorthotoluidine give certainly fine violets of a redder tone than that of dimethylaniline, but the yield of coloring matter is but small. With monomethylorthotoluidine, on the other hand, we obtain a good yield of violet dye, but it presents the defect of being scarcely soluble in water.

Finally, the methylated derivatives of the two other toluidines yield brown and gray coloring matters of no value, and whose production ought to be carefully avoided in the reaction, which gives rise to methylaniline violet.—*Bulletin de la Soc. Chimique.*

LIQUEFACTION OF SILICIDE OF HYDROGEN.

By M. OGIER.

THE author has performed this experiment with the apparatus of Cailletet. At ordinary temperatures (about 10°) liquefaction does not take place under pressures of 200 to 300 atmospheres. On the contrary, from 50 atmospheres the cooling due to the release determines the production of a thick mist and of a manifest trickling of liquid down the sides of the tube. Under these conditions the gas is at a temperature bordering upon its critical point. It suffices, indeed, to cool it a few degrees below zero in order to effect a total condensation. Hydric silicide is liquid at -11° at the pressure of 50 atmospheres; at -5° under 70 atmospheres; at -1° under 100 atmospheres, while at 0° it remained liquid up to 200 atmospheres. The conditions of the liquefaction of this gas resemble those of marsh gas, with which it has so many analogies.

RADIATION OF INCANDESCENT PLATINUM.

By J. VIOLETTE.

THE author has made a number of measurements of the intensity of the red light emitted by platinum at different temperatures, from 900° to 1775°, the melting-point of the metal. The intensity of the red light, scarcely sensible at 500°, increases at first very rapidly and then more slowly. At 2910° its intensity is not greater than at the melting-point of silver.

AMALGAMS.

By H. MOISSAN.

If a concentrated solution of chromous chloride is shaken up in water with sodium amalgam, a part of the sodium decomposes water, gives off hydrogen, and forms soda, which precipitates a certain quantity of chrome. The other part of the amalgam produces by double decomposition chloride of sodium and an amalgam of chrome. To be certain that no sodium remains in the mercury the amalgam obtained is kept for an hour in boiling water, stirring from time to time. If this amalgam is heated in a current of hydrogen to 350° metallic chrome is left as a black amorphous slightly coherent substance. The same method serves for preparing amalgams of manganese, iron, cobalt, and nickel.

"GARNET," THE RESIDUE OF THE MANUFACTURE OF MAGENTA.

By M. JOUSSET DE BELLESME.

THIS substance dissolved in treacle is much more used for coloring wines than is pure magenta, which would give a shade too much bordering upon a rose. In a number of experiments made upon animals this color always produced fatal results. One c. c. proved fatal to a cat in twelve days. The symptoms are persistent diarrhoea and rapid wasting.

JAPANESE LACQUER.

At a meeting of the Manchester Literary and Philosophical Society, February 18, 1879, J. P. Joule, D.C.L., LL.D., F.R.S., etc., President, in the chair, a paper was read "On a Chemical Investigation of Japanese Lacquer, or Urushi," by Sadamu Ishimatsu. Communicated by Professor Roscoe, LL.D., F.R.S.

During a few months last year I had the opportunity of examining roughly into the nature of "Urushi," in the laboratory of Tokio University.

The specimen of lacquer which I had under my examination was obtained from Kuyemon Nakamura, in Tokio, a large lacquer merchant.

It is a milky juice of pale gray color, and gives out a certain kind of poisonous volatile gas. Some persons are terribly attacked by this poison, producing a great swelling where the acid comes in contact. During my examination in the laboratory one of the apparatus keepers was terribly attacked by this gas, producing ugly swellings all over the face. He told me at the time it was exceedingly itchy. By using the solution of chloride of sodium, carbonate of soda, acetate of lead, etc., he was said to have recovered within a week. This poison acts only on certain persons. I had to work with it for many days, yet never had any attack of the kind nor felt any uneasiness from it.

It has a sweetish characteristic smell, and has an irritating taste. It burns with very luminous flame, evolving dense black smoke like oil of turpentine.

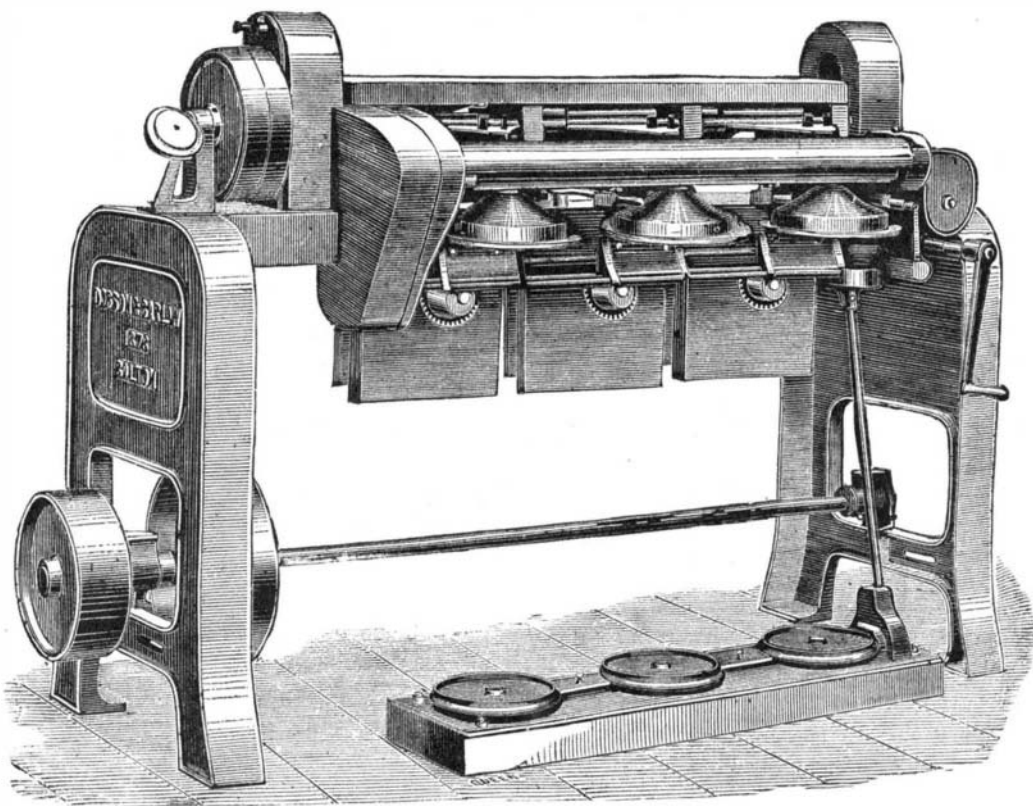
It is to a great extent soluble in benzol, ether, absolute alcohol, etc., leaving behind a blackish gray residue in which gum was found.

Lacquer, on exposure to the atmosphere, rapidly loses its weight, and at the same time blackens on its surface; although this loss is different in different specimens, yet on the average of those which I have examined it seems to vary from 25 to 37 per cent.

When the lacquer is exposed to the action of sunlight in hermetically sealed vessels in the atmosphere, or in carbonic acid, blackening does not take place, but a large quantity of moisture collects on the sides of the vessel.

The loss of weight in the atmosphere is almost, if not entirely, due to the escape of water, with a minute quantity of carbonic acid which may be formed by the oxidation of some organic compound existing in the lacquer. The attempt has been made to estimate the relative amounts of carbonic acid and water; yet it was not successful at the time, being too difficult, and it must be left open to some future investigation.

It is by many supposed to be due to the combined action of light and air, that the blackening of lacquer in the air takes place; but this seems to be erroneous from the following experiments: First, I made a square box, which had a well fitting sliding door, and the inside of which was made perfectly black, so that practically no light is permitted to



IMPROVED COTTON STRETCHER.

over which the cotton passes last running at the greatest velocity. Hereby the fibers are well stretched.

From these rollers the cotton passes between two cylindrical rods extending through the entire length of the machine and revolving slowly. They are inclosed in a sheet iron cylinder. They deliver the band of cotton into funnel-shaped iron pots, which, when full, are removed and emptied out.

tracted with boiling water, and the coloring matter is precipitated with salt. Extraction with boiling water never suffices for the complete extraction of the sand; we have, therefore, in general, treated the residue with alcohol, in order to try the tinctorial effects of the portion soluble in that liquid. In certain cases, even such as monomethylmetatoluidine and dimethylmetatoluidine, the coloring matter cannot be considered soluble in water.