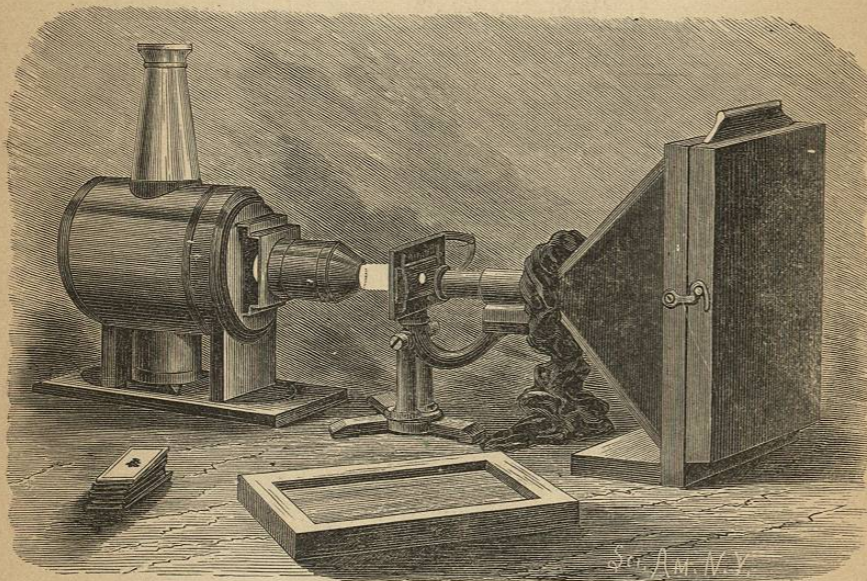


course, be used. They are procurable almost anywhere, and are inexpensive. As to the treatment of plates after exposure, and printing and toning, the reader is referred to the first article in this chapter and to the works on photography.

The amateur who possesses one of the microscopes already described may arrange it for projection, and may insert the end of the microscope tube in the camera box

FIG. 320.



Microscope and Camera arranged for Photo-Micrography.

above described, after removing the tube, and project the image of the microscopic object on the sensitive plate, and thus produce good negatives of the objects, from which prints may be made which will be interesting both to the operator and his friends.

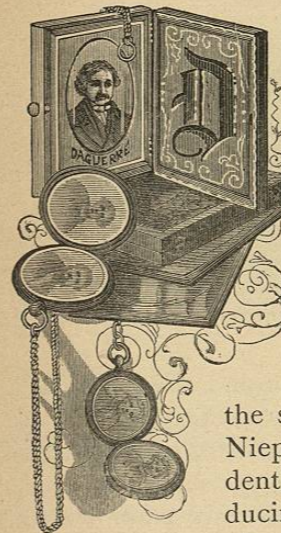
The eyepiece of the microscope referred to is a very good objective for photo-micrography. Although special objectives are made for this purpose, almost any good objective will produce a good negative. In photographing micro-

scopic objects, it will be necessary to employ a focusing ground glass, and to focus very carefully by the aid of a magnifier.

Slow plates are preferable for this use, as they bring out the detail much better than fast plates. The time of exposure will vary with the object, from fifteen seconds to as many minutes. In some cases the time extends to hours.

Fig. 320 shows the arrangement of the lantern, the microscope, and the camera box. It will be noticed that the annular space in the end of the camera box around the microscope tube is stopped by a black cloth wound loosely around the microscope tube. This and other precautions are necessary for preventing the light from reaching the plate except through the object and the microscope.*

DAGUERREOTYPY.



DAGUERREOTYPY, although one of the most notable inventions of the present century, is already obsolete. It is nearly forgotten by those who practiced it, and is not preserved in all its details in the literature of photography. It is undoubtedly safe to say that a very small proportion of professional photographers, and a still smaller proportion of amateurs, have any practical knowledge of the subject. It will be remembered that Niepce and Daguerre sought independently of each other for a method of producing sun pictures. Niepce at first employed plates coated with bitumen. He formed a partnership with Daguerre in 1829, but died before the invention now known as daguerreotypy was perfected.

After the death of Niepce, Daguerre improved the art

* For full information upon this subject, the reader is referred to "Photo-Micrographs and How to Make Them," by George M. Sternberg.

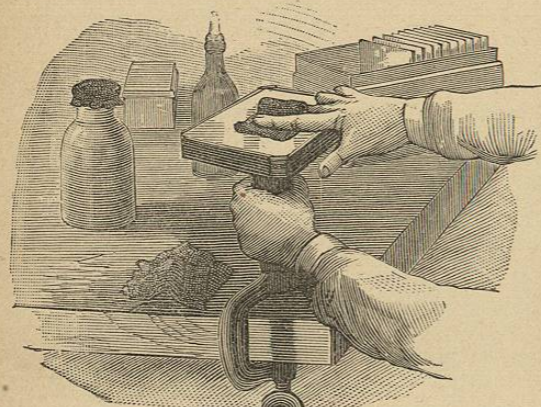
to such an extent that Niepce's son allowed it to go under its present name. Both inventors received annuities from the government for giving the invention to the public.

In this country the art was first practiced by Morse, and was improved by Draper soon after it was introduced here.

Daguerreotypy was very simple, easily understood, and easily managed, and was learned by many who found it a light business, requiring little capital and returning large profits.

The plates employed were copper faced with silver. The metal was hard-rolled, and the plates, as received from the

FIG. 321.



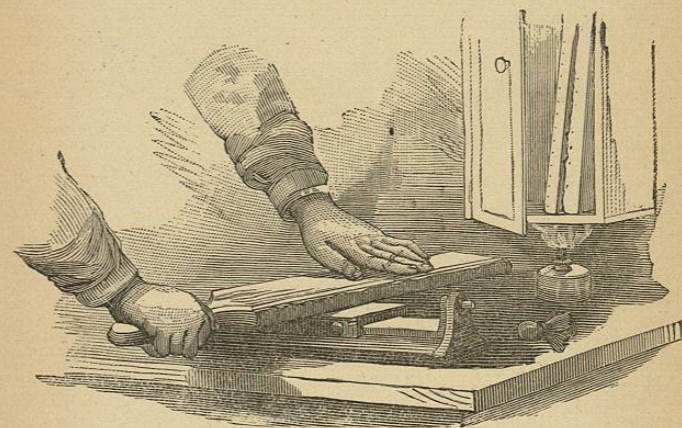
Scouring the Plate.

manufacturers, were flat and quite smooth, but not polished. The first step toward the preparation of the plate for use was to clip the corners and turn down the edges slightly, in a machine designed for the purpose, to bring the sharp edges of the plate out of reach of the buff employed in producing the necessary polish.

The plate was held, for scouring, in a block having clips on diagonally opposite corners for engaging the corners of the plate. One of the clips was made adjustable, to admit of readily changing the plates. The block was mounted pivotally on a support clamped to the table, as shown in Fig. 321.

The scouring was effected by sprinkling on the plate the finest rottenstone from a bottle having a thin muslin cover over its mouth, and the rottenstone as well as the square of Canton flannel with which it was applied was moistened with dilute alcohol. The center of the Canton flannel square was then clasped between two of the fingers, and moved round and round with a gyratory motion until the plate acquired a fine dead-smooth surface. The last traces of rottenstone were removed by means of a clean square of flannel. The plate was then transferred to a block mounted on a swinging support, and buffed by the vigorous applica-

FIG. 322.



Buffing.

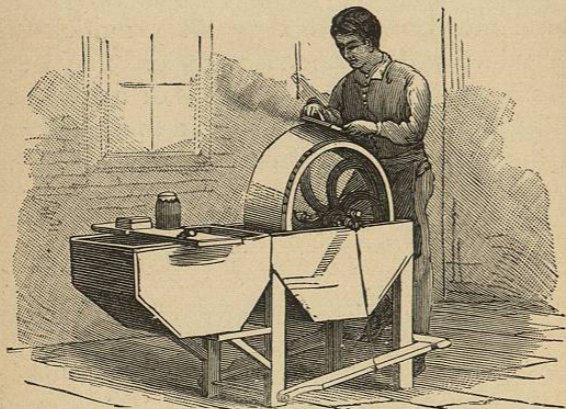
tion of a straight or curved hand buff formed of a board about four inches wide and thirty inches long, padded with four or five thicknesses of Canton flannel, and covered with buckskin charged with the finest rouge. Scrupulous cleanliness was imperative in every step of the process.

The buffs were kept clean and dry, when not in use, by inclosing them in a sort of vertical tin oven (Fig. 322), which was warmed by a small spirit lamp. A careful operator would prepare a plate having a bright black polish without a visible scratch, while an incompetent or careless man would fail in this part of the process, and would prepare

plates full of transverse grooves and scratches. The beauty of the picture depended very much on the careful preparation of the plate.

Occasionally, a buff would in some manner receive par-

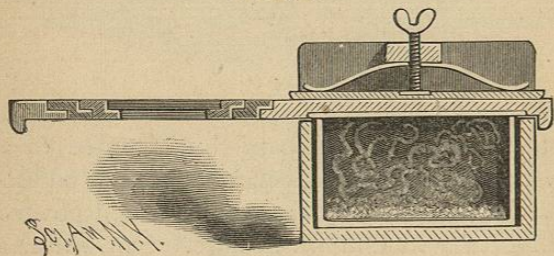
FIG. 323.



The Rotary Buff.

ticles of matter which would cause it to scratch the plate. The remedy consisted in scraping the face of the buckskin, and brushing it thoroughly with a stiff bristle brush, gen-

FIG. 324.



The Coating Box.

erally a hair brush devoted especially to this use. The buff was then recharged by dusting on rouge from a muslin bag.

When the rotary buff wheel was adopted, it insured rapid work, but it was otherwise no improvement over the hand buff. At first, the wheels were made cylindrical, but

that incurred the necessity of an objectionable seam or joint where the leather lapped. The conical buff wheel (Fig. 323) allowed of the use of a whole skin, thereby dispensing with the seam.

After buffing, the plate was taken to the dark room to be

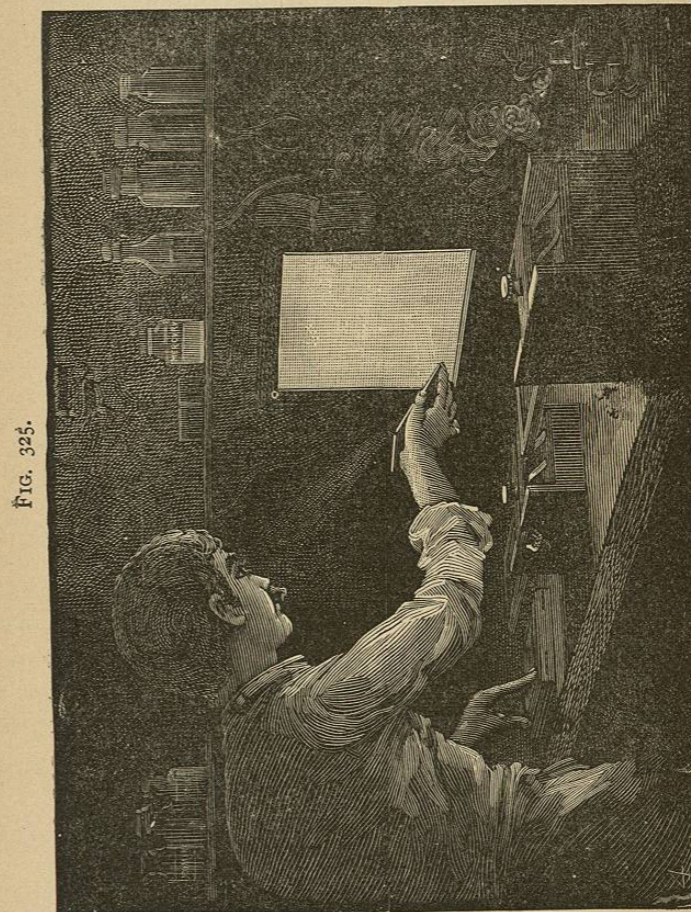


FIG. 325.

The Dark Room—coating the Plate.

sensitized. The room had a side window, generally covered with yellow tissue paper, for the examination of the plate during the process. The room contained two coating boxes, one for iodine, the other for bromine. The construction of these boxes is clearly shown in Fig. 324, which is a