Photographic Notes.

RECOVERY OF SILVER FROM HYPO BATH.

The *Photographische Wochenblatt* recommends the precipitation of silver from the fixing bath with an old oxalate developer that still contains enough protoxide for this purpose. The precipitate is in a very fine state of division, and difficult to filter.

THE FINEST BROMIDE OF SILVER.

For obtaining this salt in an extremely fine state of division the same journal advises saturating ammonia water with carbonate of silver, and neutralizing with bromine water. The precipitate is never curdy, and the liquid smells of carbonate of ammonia.

VARNISHING DRY PLATES.

Alcoholic varnishes are not adapted to gelatine films, hence Wilkinson uses the borax solution of shellac. It may be flowed on the plates while wet. The varnish should be filtered over bone black.

SENSITIVENESS OF DRY PLATES.

According to Pritchard, when the emulsion is dried without heat, say at 30° to 68° Fahr., the plates are more sensitive, and will develop four times as fast as when dried at a higher temperature.

DEVELOPING DRY PLATES.

They should first be soaked in water to soften them, but not too much.

Heating Small Plant Houses.

The following plan for heating small green houses and conservatories, a writer in the *American Garden* recommends: While employed, he says, some years ago, in England, by a gentleman who found that the usual brick flues required more time and attention than could be given by his gardener, I constructed a cistern under the plant stand, the whole length of the house. This tank was made of planks, the joints laid in white lead. Over its entire length was placed a box six inches deep, and containing sand, which served as a cover and was used for the propagation of various plants by cuttings. The heating apparatus consisted of a small copper boiler holding about eight gallons. From the top of this a lead pipe communicated with the top of the cistern, and another pipe, protected against the fire, ran from the bottom of the tank to the bottom of the boiler. The management of this apparatus required but little care and time, while a continuous and uniform heat was maintained at a comparatively small cost.

I have since fitted up a similar and still less expensive apparatus, in which the boiler of the kitchen range supplied the necessary heat, and common iron gas pipes were used for the conveyance of the water.

It will readily be perceived that the large body of warm water will keep up a more steady and uniform heat than could be produced by pipes alone; and if the supply pipe is carried to the extreme end of the tank, the water will be kept in constant circulation.

Various modifications, adapted to existing conditions, might be suggested. For a small room, an ordinary stove could be used; and as there is little or no pressure of steam, almost any metallic vessel that holds water may be made to serve the purpose of a boiler.

Preparation of Hydrobromic Acid.

W. Gruning, in Moscow, has published in the *Pharmaceutische Zeitschrift fur Russland* the results of his investigations upon the preparation of hydrobromic acid on a small scale. He succeeded best when using phosphoric acid to decompose the bromide of potassium, and then conducting the gas into water. He therefore recommends the following method:

Take 100 grammes of coarsely powdered bromide of potassium and 280 grammes of phosphoric acid, specific gravity 1·304. Place them in a glass flask that will hold half a liter (16 oz.) and provided with a gas delivery tube. On heating the flask over a gas or alcohol flame, on a wire gauze, the salt will soon dissolve in the liquid, but as the water evaporates it separates again. The liquid then begins to bump, but not sufficiently to endanger the flask, and this can be avoided by moving the flame to one side. In a short time it will boil quietly again, as the mass is gradually converted into metaphosphate of potassium.

The first portion of the distillate is merely water, and is allowed to escape, then an aqueous acid goes off, and finally pure hydrobromic acid gas, which is passed into distilled water. As bromide of potassium is seldom free from the chloride, it is advisable to collect the first portion apart and test it for hydrochloric acid, which passes off before the hydrobromic acid.

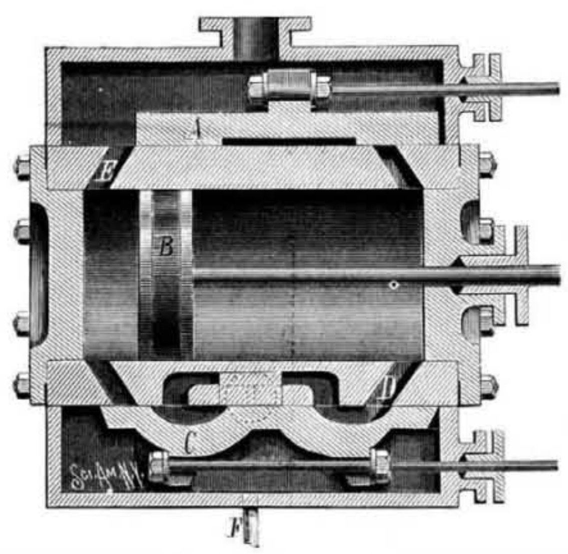
Since hydrobromic acid gas is rapidly absorbed by water, some precaution should be taken to prevent the water from rushing back into the generating flask. He prevents this by using an inverted funnel, which is attached to the delivery tube and dips under the surface of the water. If the water is drawn up into the funnel, its level will be lowered sufficiently to allow air to enter the tube.

Acid of any desired concentration can be obtained in this way, and its strength ascertained volumetrically or by its specific gravity. It yields 80 per cent of the theoretical quantity of 10 per cent acid.

Mount Jefferson Davis is the highest peak in Nevada. Its altitude is 13,075 feet.

SLIDE VALVE.

The invention illustrated herewith refers to that class of engines employing separate slide valves for the admission and exhaust of steam. The admission of steam is controlled by the valve, A, opening and closing the ports, E, and moved by a rod connected to an eccentric. The exhaust valve, represented at C, works within a separate chest placed diametrically opposite the steam valve chest, or at right angles if so preferred. The exhaust valve has recesses which alternately connect the steam exhaust ports, D, from the cylinder with the exhaust passages communicating with the common outlet. The pipe, F, admits live steam for the purpose of holding the valve, C, firmly on its seat. As the valve, C, covers the ports during its whole stroke, no escape



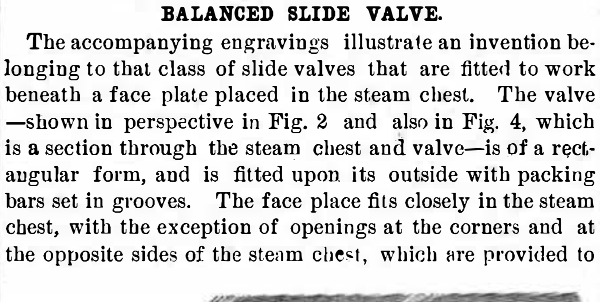
DOTY'S SLIDE VALVE.

of steam is possible. This plan permits the setting of the valves with the greatest precision, and permits also of their being driven by different connections for maintaining any relative adjustment with each other.

This invention has been patented by Mr. Riley Doty, of Leonardsburg, Ohio.

BALANCED SLIDE VALVE.

The accompanying engravings illustrate an invention belonging to that class of slide valves that are fitted to work beneath a face plate placed in the steam chest. The valve—shown in perspective in Fig. 2 and also in Fig. 4, which is a section through the steam chest and valve—is of a rectangular form, and is fitted upon its outside with packing bars set in grooves. The face place fits closely in the steam chest, with the exception of openings at the corners and at the opposite sides of the steam chest, which are provided to



DE LANCEY'S BALANCED SLIDE VALVE.

allow free circulation of oil and steam. The plate is supported by rests (shown in Fig. 1) cast upon its under side, or by lugs cast upon the inner surface of the chest. The balance plate, Fig. 3, rests upon the packing bars of the valve, and is formed with flanges upon its under side that fit in the top of the valve so that the plate will be moved with the valve. The upper surface of the plate is made with grooves extending around it at a distance from its edges about the width of the packing bars of the valve beneath it. These grooves are connected by cross grooves with the central aperture, so that they are connected with the exhaust cavity of the valve. The object of this is for the purpose of balancing the pressure and for conducting the steam that may leak past the outer edges of the plate to the exhaust. The groove also serves for the admission of exhaust steam and oil between the upper side of the balance plate and the under side of the face plate. At the ends of the balance plate are short grooves for admitting steam between the two plates for lubricating that portion not covered by the other grooves. There are projections upon the face plate for receiving the ends of set screws which hold the plate down. Upon the cover of the steam chest is a valve for admitting air when the engine is running without steam. Fig. 1 shows the valve attached to a locomotive. The valve is giving most satisfactory results on locomotives on different roads and also on stationary engines.

This invention has been patented by Mr. John J. De Lancey, of Binghamton, New York, who should be addressed for further information.

Hot Water for Inflamed Mucous Surfaces.

Dr. George R. Shepherd, Hartford, Conn., says in the *Medical Record*: I have used hot water as a gargle for the past six or eight years, having been led to do so from seeing its beneficial effects in gynecology. In acute pharyngitis and tonsillitis, if properly used at the commencement of the attack, it constitutes one of our most effective remedies, being frequently promptly curative. If used later in the disease or in chronic cases, it is always beneficial, though perhaps not so immediately curative. To be of service it should be used in considerable quantity (a half pint or pint) at a time, and just as hot as the throat will tolerate. I have seen many cases of acute disease thus aborted and can commend the method with great confidence. I believe it may be taken as an established fact, that in the treatment of inflammations generally, and those of the mucous membranes in particular, moist heat is of service, and in most cases hot water is preferable to steam. All are familiar with its use in ophthalmia and conjunctivitis, as also in inflammation of the external and middle ear, and I feel confident that those who employ it for that most annoying of all slight troubles to prescribe for, viz., a cold in the head, or acute coryza, will seldom think of using the irritating drugs mentioned in the books, nor of inducing complete anæsthesia with chloroform in preference to the hot water douche.

Venice and Her Glass Bead Industry.

Beads are largely made in Venice, where glass making has always been a principal industry. It is said that the invention of beads dates from the thirteenth century, and is due to two Venetians—Miotti and Imbriani—who were urged to make experiments by the celebrated Venetian traveler, Marco Polo. Under the Venetian Republic, and for some years after its fall, says our consul at Venice, the exportation of beads had not reduced the importance it has now attained. This was, perhaps, owing to the smallness of the furnaces and to the difficulty and length of the technical processes required for the composition of the paste. The Morelli, however, who in 1670 were the principal bead manufacturers, had four ships at sea carrying beads to the East on their own account, and they became so rich that in 1860 they entered the rank of the Venetian nobility on payment of a sum of 100,000 ducats to the Republic. Since 1815 this industry has become so important as to give at the present time employment to about 15,000 persons. The traffic is carried on with all the world, but the principal exportation of beads is to the ports of Asia and Africa. An extraordinary stimulus was given to this industry a few years ago by the prevailing taste for beads for trimming ladies' dresses. A great extension of the manufacture took place, and the labor was paid so high that all who could do so gave up their usual trades for bead making. But when the demand for beads declined, most of the workmen who had been allured by fancy wages to the bead manufacture were thrown out of work, and compelled to return to their former occupations. Whatever be the cause, bead making has always been the special privilege of Venice, in spite of all foreign attempts to manufacture this article elsewhere. The wages in glass works are for a first master about 8f. a day, for a second master 4½f., and for the ordinary workmen from 2f. to 5f. a day. During the last five years the average annual exportation of beads has been 25,000 quintals, of the approximate value of 5,500,000f.

Liquid Oxygen and Nitrogen.

We are slowly learning more of the liquid and solid states of the elementary and compound bodies formerly known as permanent gases. According to the latest researches, oxygen when cooled to 136° C. (213° F.) liquefies to a colorless transparent liquid at the very moderate pressure of 23 atmospheres, or thereabouts. Nitrogen at the same temperature does not liquefy at a pressure of 150 atmospheres, but yields a colorless liquid, with distinct meniscus, when the pressure is cautiously allowed to fall to a point not lower than 50 atmospheres. It is now well known that ozone, under quite moderate limits of pressure and temperature, is a liquid of intensely blue color, which gives a vapor which can only be compared in color with the brightest blue sky. In this condition ozone is a most potent body, decomposing with explosion upon slight provocation into common oxygen. Pure alcohol is a white solid at about 130° C. (202° F.). At a very slightly higher temperature it is viscous, like oil