

PHOTOGRAPHIC NOTES.

*Photograph of Lightning.*—From A. H. Binden, Wakefield, Mass., we have received a superb  $6\frac{1}{2} \times 8\frac{1}{2}$  photograph of lightning, taken quite recently during a severe thunder storm, between eight and nine o'clock in the evening.

The exquisite detail in the fine branch-like flashes is especially noticeable, while the illumination of the clouds and landscape is also remarkable. As many as four principal bolts are seen in the picture.

*Hydroxylamine and Pyro. Developer.*—In a paper read before the Photographic Society of Philadelphia, reported in the *American Journal of Photography* by Dr. Charles L. Mitchell, the following formula is given:

No. 1.	
Hydroxylamine chloride.....	30 grains.
Pyrogallol.....	240 "
Water.....	16 ounces.
No. 2.	
Sodium carbonate (crystals).....	$1\frac{1}{2}$ Troy ounces.
Sodium sulphite.....	$4\frac{1}{2}$ "
Water.....	16 ounces.

To develop, take of No. 1 from one to two fluid ounces, No. 2 one half fluid ounce, water four ounces; flow over the plate, and if the image does not appear within thirty or forty seconds, add more of No. 2 solution in small portions at a time, until development commences.

I have developed a dozen lantern slides, using the same developer for all, and after the last plate was finished, the developer was but of a moderately light orange color. The mixture of the pyro. and the hydroxylamine chloride seems to possess remarkable keeping qualities. As a general rule, pyro. mixtures should be stored in yellow or amber colored glass bottles provided with rubber corks, as the amber color prevents the actinic light from penetrating to the contents of the bottle. The developer is very superior for negatives, giving clear shadows free from stain. Hydroxylamine, though a somewhat new article in photography, can be had from the largest dealers and manufacturers in photographic materials.

*A Safe Reducer.*—It frequently happens that negatives, by prolonged development or by the addition of too much pyro. to the developer, become too dense in the high lights, and thereby obscure detail. Farmer's solution of ferricyanide of potassium and hyposulphite of soda is generally recommended, but unless the plates are carefully washed, a tendency of the negative to turn yellow is sometimes observed.

In a communication to the photographers' annual convention, held in Minneapolis, Minn., in July, Charles Ehrmann advises the use of potassio-ferric oxalate combined with a small quantity of hypo. We quote from the *Photographic Times* the formula and remarks concerning it: "Potassio-ferric oxalate is sensitive to light, and must therefore be kept in the dark. It has a peculiar green color, which oxidizes to a brown if the crystals are exposed much to light. The formula for reducing is simply to take 10 parts of the potassio-ferric oxalate in weight, previously dissolved in as little water as possible, and add it to 100 parts of ordinary hypo. solution, such as is used in fixing out plates. When an over-intense negative is subjected to this compound, the reduction will take place slowly, but perceptibly, and the process can, therefore, be easily controlled. Unless the hypo. is combined with the green salt, no reduction will occur. Hence it will be apparent that it will not be necessary to wash a negative after fixing, provided it is to be reduced.

*Photographers' Convention.*—The annual convention of the Photographers' Association of America was held in Minneapolis, Minn., from July 10 to 14, and was largely attended by Western photographers, about four hundred being present.

Several interesting papers pertaining to photographic subjects were read, and there was a large display of photographs. H. McMichael, of Buffalo, was elected president for the next year, and it was voted to hold the next convention in Boston, Mass.

*Eder's Orthochromatic Wet Collodion Process.*—According to H. E. Gunther, whose account of the latest process by Dr. Eder we find reported in the *Photographic News*, plates sensitized as directed produce most beautiful results. He says: "Though its sensitiveness is about ten to twenty times less than that of collodion emulsion, the exposure required varies between a few minutes and a quarter of an hour in the case of oil paintings. Also, by this process, the various colors are reproduced in their true values without a yellow screen being required. The process is the following: Eosine collodion. In 140 c. c. of alcohol (of 40°) 0.6 gramme of eosine (yellow stain), and 12 grammes of cadmium bromide are dissolved and filtered, and 70 c. c. of this solution are mixed with 100 c. c. of 2 per cent plain collodion. The glass plate is coated round the edges with India rubber solution, then the collodion is poured on. After the first coating has settled, another coating of collodion should be applied, this time pouring it on at the opposite corner of the plate. The film having settled, the plate is sensitized in a strong silver bath. The first bath consists of 100 grammes of silver nitrate, 500 c. c. of water, and

2 to 3 drops of concentrated nitric acid. The plate is left in this bath for five to seven minutes, when it is immediately placed in another sensitizing bath consisting of 10 grains of silver nitrate and 500 c. c. of water, in which the plate is left for one to two minutes. In this way the unclean portions of first sensitizing bath left in the film are washed away, the weak solution preventing, in the case of longer exposures, the silver nitrate from becoming dry and crystallized. The exposure will take about five to eight times longer than is required in the old wet collodion-iodide process. The developer consists of a solution of 10 grammes of iron sulphate in 100 c. c. of water, to which 2 to 4 drops of concentrated sulphuric acid are added. The picture comes out rapidly, and the development has to be carefully controlled. The negative is fixed with hypo. The picture, appearing somewhat flat at first, afterward becomes clear and brilliant. The reddish color remaining in the film can be eliminated by application of diluted alcohol and rinsing with water. Intensification is effected with the well known mixture of pyro, citric acid, and silver nitrate, reduction by potassium ferricyanide with hypo, or by bichloride of mercury with potassium cyanide."

*Toning Gelatino-Chloride Emulsion Prints.*—Reported in the same journal by Mr. Gunther is a description of Obernetter's toning process for this improved paper, as follows: The prints must be a little overprinted, still more than albumen prints, because they are considerably reduced in the fixing bath. They are placed with the film side upward in the washing bath, and after having been washed out for five to ten minutes, they are taken out, and put into the toning solution. This consists of:

Gold and sodium chloride.....	1 gramme.
Distilled water.....	600 c. c.
Powdered chalk.....	50 grammes.

One hour before use the gold solution is shaken up, then allowed to settle, and then filtered into the dish. It is then ready for use. After it has been employed, it is poured back into the stock solution bottle. In this bath the prints are left until the yellowish color which by transmitted light may be seen in the light parts of the picture has disappeared, and a slightly reddish violet color appears in the half tones. Then the prints are washed out for a short period, placed in the alum bath, washed out once more, and placed for fifteen minutes in the fixing solutions (1:20); in this bath the prints will lose their violet color, and become reddish brown or brownish, according to the previous mode of toning. If the prints are then washed out and dried, that warm photographic tone will appear which, according to the duration of the action of the toning bath, will vary from brownish violet to purple and gray. If a fresh, strong, gold solution is used, the toning will be completed within twenty to thirty seconds. In this manner fifty prints of the size of 11 by 15 inches can be toned with only one gramme of gold and sodium chloride without exhausting the gold bath. Comparative experiments have shown that in using the toning bath recommended by Obernetter, almost four times as much gold chloride is required to obtain the same color tones, and that even the toning of albumen prints requires more gold chloride than this process. Prints which have been toned for too short a period, and which, therefore, have retained a brownish color, may be toned further after fixing in the bath itself, if a little red prussiate of potash is added to it until it turns yellow. After one to two minutes the print is taken out, washed out, placed into the alum bath, and then washed out. The alum bath consists of a cold saturated alum solution to which a little citric acid is added. As a rule, the prints will tone the quicker, the shorter they have before been washed out; on the other hand, the toning process can be better controlled if it proceeds slower. Therefore, the mid way will be the best. After a few experiments, it will be very easy to obtain the tone required by this method.

Copper-Coated Propeller Blades.

At the last meeting of the Institute of Naval Architects, Mr. W. C. Wallace read a paper on "The Material Best Suited for Propeller Blades." A discussion ensued, in which the great amount of corrosion and pitting in cast steel propeller blades was particularly emphasized. This discussion attracted great attention in the Sheffield district, and several steel manufacturers set to making experiments. At Attercliffe there are steel works known as the "Specialty," which belong to Messrs. John Willis & Co. Mr. Willis, the principal, was among those whose interest was excited by the discussion. The outcome of his study and experiments is a new method of preserving iron and steel propellers, blades, etc., from corrosion. This invention consists in a coating of copper united to the casting, this being effected by the copper plate properly bent in shape being placed in and forming part of the mould, into which the iron or steel is then poured, with the result that the copper is said to be firmly united by fusion to the iron or steel face. The invention applies to all anti-corrosive metals, several of which are now undergoing tests to ascertain the most suitable for this pur-

pose. Several blades, with the backs protected by a copper coating on Mr. Willis' system, are in course of manufacture in Sheffield.

Rock Crystal Watches.

A new and peculiar class of timepieces has lately been brought out by the Waltham Watch Company which illustrates the steady progress that is being made in the art of skill and precision. This is a watch of ordinary size, of which the case and plates are made of Brazilian pebble or rock crystal, thus rendering the watch transparent, and exposing to plain view the wheels and all other parts of the interior mechanism. Watches of this kind are now kept in regular stock by the Waltham company, and as timekeepers they possess the usual superior excellence for which all Waltham watches are now celebrated.

The rock crystal watch is, we understand, the result of the especial skill and genius of Mr. Wm. R. Wills, who for the past thirty-one years has had charge of the jewelery department of the Waltham Watch Company. He has discovered a new and rapid mode of cutting crystals and gems of all kinds, by which the lapidary's art is greatly facilitated. Operations heretofore requiring two months' time are now reduced to two hours. Mr. Wills seems to have learned how to carve, cut, and bore the hardest stones with as much facility, certainty, and precision as if the materials were so much brass. He will, for example, take a six inch block of pebble, and in a couple of hours cut it into sheets of any desired thickness; or from the same block cut out the center of the casing or solid ring for a watch case. We lately examined one of these new rock crystal watches.

The center of the case is of rock crystal, in one piece. It is bored for the stem and stem winder, which is secured therein by clamping screws. It is also bored for the push pin by which the winding and setting mechanism is operated. The two plates of the watch, between which the wheels rotate, are made of rock crystal. The pivots of the balance bridge, pallet bridge, the center wheel, and third wheel, the fourth wheel, and the escape wheel are set in rubies, and these rubies are set in sapphires, which latter are set in the crystal plates, these settings being secured to the plates by friction. There are in all twelve sapphire settings, each carrying a ruby setting. The pivots of the barrel and crown wheel run in the crystal plates. The plates are held apart by sapphire pillars, through which screws pass. The balance cock and pallet bridge are of rock crystal, the push pin is of chrysolite. For the various screws and settings there are 38 holes drilled in the crystal plates.

The dial is made in the form of a skeleton of gold. Above each hour mark is a diamond, and between the diamonds there is a ruby for each minute. The diameter of the rock crystal plates is  $1\frac{1}{8}$  inches. The front and back of the case is composed of a crystal plate. Thus constructed, the watch is transparent, and may be used as a slide for a magic lantern. Altogether, it is a unique and attractive article.

Another of the watches which we examined had its front plate made of red agate, and presented a very beautiful appearance.

Action of Medicines on the Biliary Secretion.

A number of experiments as to the action of medicines on the biliary secretion have been made by Messrs. Prevost and Binet, chiefly upon dogs (*Compt. Rend.*). They found that bile itself, taken internally, is the most powerful cholagogue. Other substances acting as cholagogues are oil of turpentine and its derivatives terpinol and terpine, chlorate of potassium, benzoate and salicylate of sodium, salol, euonymin, and muscarine in subcutaneous injection. Some other substances which are generally considered to be cholagogues are classed by these experimentalists in a separate group, the action of which is slight, doubtful, or uncertain, as bicarbonate, chloride, and sulphate of sodium, Carlsbad salt, aloes, cathartic acid, rhubarb, boldo, hydrastis, ipecacuanha, propylamine, and antipyrin. The following substances were found by them to cause a diminution of bile, viz., iodide of potassium, calomel, iron, and copper, atropine subcutaneously injected, and strychnine in a toxic dose. The drugs found to be without action on the biliary secretion were phosphate of sodium, bromide of potassium, chloride of lithium, corrosive sublimate, arsenate of sodium, alcohol, ether, glycerine, quinine, caffeine, pilocarpine, kairin, cytisine, senna, and calumba.

Chinese Cash.

A large number are engaged in moulding, casting, and finishing the "cash" used as coin all over China—Mexican dollars and Sycee silver being used in large transactions. The cash are made from an alloy of copper and zinc, nearly the same as the well known Muntz metal; and it takes about 1,000 of them to answer as change for a dollar, so minute and low do prices run in this country, of which I will only give one instance. The fare for crossing the ferry on the Peiho was only two cash, or one-fifth of a cent.