

PHOTOGRAPHIC NOTES.

Washing Bromide Prints.—According to E. W. Foxlee, in an article in the *British Journal Photographic Almanac*, it is highly important that every trace of acid be eliminated from the print before it is transferred to the fixing bath, if permanency and pure whites are to be obtained.

It is suggested in a recent article on the subject in the *British Journal of Photography* that this is best accomplished by thoroughly washing the print under a rose with good pressure of water, and supporting the print upon a sheet of glass somewhat larger than the print, or, instead of glass, a sheet of ebonite or hard rubber. We formerly employed this process of washing with much success, until it was suggested that the prints could be safely washed in tanks of running water, which is the plan we now adopt. But when only one or two prints or enlargements are to be made, we recommend the plan of supporting the paper as specified, as being much the quickest and equally as efficacious.

The *British Journal* advises the use of the following appliances:

A dish or tray to contain the fixing solution, and another for washing the prints; a rose, like that of a garden watering pot, with very fine holes. This must be fixed in a piece of India rubber tubing eighteen inches or two feet long, attached to the water supply. A couple of glass plates, somewhat larger than the pictures to be treated, and a rather soft squeegee. Instead of glass, thin sheets of ebonite, mounted on boards to give rigidity, may be substituted with advantage, as they are less fragile than glass.

Continuing, it says:

Taking the picture in hand from the developing stage, the first thing to be done is to free it from the acid. This may be easily and quickly accomplished by washing if a good pressure of water be available; and we prefer simple washing to treating the print with an alkali.

The print is placed face upward on a glass or ebonite plate, and a stream of water from the rose is directed upon it with all the force that can be obtained. This will quickly wash out the acid, if the development has been conducted from one side only; but if the development has been effected by immersion, then the back as well as the front must be similarly washed. A slip of litmus paper pressed on the surface of the print, after slight draining, will always indicate if the acid has been removed. Experience will soon teach the operator when this has been accomplished without the necessity of testing chemically. The print is next freed from water as much as possible by draining, or, better still, by laying it on one of the glass plates and passing the squeegee lightly over the back. It is then ready for immersion in the fixing bath. This should consist of two pounds of hyposulphite of soda dissolved in a gallon of water and made slightly alkaline.

When the print is placed in the bath, it should be kept constantly in motion for the first five minutes, and occasionally for the remainder of the time—not less than twenty minutes. The picture is then removed and placed face downward on one of the plates, and the back squeegeed somewhat firmly to remove as much as possible of the "hypo" solution. It is then immersed in a dish of clean water and kept in motion for a few minutes. It is now removed and placed on one of the plates and the back squeegeed, and next it is removed to the other plate, face upward, and a stream of water from the rose with full pressure directed upon it. Then it is transferred to the first plate again, this time with the face downward and the back similarly treated. After this operation has been repeated on both sides, two or three times, the back is squeegeed and the print again put into clean water and allowed to soak for ten minutes. It is then removed and subjected to the syringing and squeegeeing operations as before.

By alternate soaking for ten minutes or so, and treating the picture as directed, the last trace of the hyposulphite can be more completely removed from the enlargement in an hour and a half, or two hours, than it may be with twelve hours or more of continuous soaking, even in running water, notwithstanding that the paper itself may be thick. The force of the fine jets of water from the rose dashes, as it were, the hypo out of the paper. It is needless to point out that the plates used for supporting the prints during the operations of squeegeeing and syringing should be thoroughly rinsed each time the picture is removed.

The directions here given for washing gelatino-bromide enlargements apply also to albumen prints. By treatment similar to the above, hyposulphite may be more thoroughly removed from a picture in an hour or so than it often is by simply allowing it to remain soaking in water for a whole day.

Two fixing baths are recommended to be employed. This is highly desirable when working on a commercial scale, or when a large number of prints are fixed in the same solution; but it is scarcely necessary when only one or two have to be dealt with, provided the solution be new and there is plenty of it, and, what is of equal importance, the prints are kept constantly moving about while they are in the solution.

Admiral Porter on the American Navy.

We give below some extracts from the letter from Admiral Porter to Congress, alluded to elsewhere. It is impossible to present the full reprint of the document by any number of extracts. We fail to agree with the Admiral in many of his conclusions.

"The board on fortifications and other defense represent the following harbors as entirely defenseless: 1, New York; 2, San Francisco; 3, Boston; 4, the lake ports; 5, Hampton Roads; 6, New Orleans; 7, Philadelphia; 8, Washington; 9, Baltimore; 10, Portland, Me.; 11, Rhode Island ports in Narragansett Bay; 12, Key West; 13, Charleston, S. C.; 14, Mobile; 15, New London; 16, Savannah; 17, Galveston; 18, Portland, Oreg.; 19, Pensacola, Fla.; 20, Wilmington, N. C.; 21, San Diego, Cal.; 22, Portsmouth, N. H.; 23, defenses of Cumberland Sound at Fort Clinch; 24, defenses of ports of the Kennebec River at Fort Popham; 25, New Bedford, Mass.; 26, defenses of ports on the Penobscot River, Maine, at Fort Knox; 27, New Haven, Conn. "These harbors are to my knowledge entirely defenseless against a single first-rate armored, which could enter any of them at any time without any difficulty. Twenty heavy ironclads could in as many days lay every important town on our seaboard under contribution; so that by a well-concerted action by an enemy every harbor on our coast, on the same day, would fall into their hands."

"Note.—Defenses are most urgently required at the first eleven ports named."

We believe that a hostile ironclad in New York harbor would find herself in very hot water. The river boats and coasting steamers would be utilized to ram her or destroy her by torpedoes.

"Our lakeboard cities are entirely open to the attacks of the British navy. In twenty-four hours the English could overrun our lakes with gunboats and ironclads by means of the Welland Canal, and we have not a gun to prevent their doing so."

The Welland Canal could be put out of service in a few minutes. Our first move would be to capture it, and then no ironclad could make her way through it, or, if any danger of it appeared, the locks could be destroyed one by one.

"But we cannot expect to be always exempt from the difficulties that beset nations any more than other powers. Within the last year we have had a difficulty with Canada on the fishing question, which at one time promised to be serious, and nothing but the moderation and good sense of this Government prevented a crisis. Canada, with an improvised navy of two schooners, made actual war upon our fishing interests, captured our vessels on the most trifling pretexts, and scarcely gave them time to meet the requirements imposed upon them by the authorities. Does any one pretend to say that these aggressions would have taken place had the Government of the United States been provided with a force of fifty heavy ironclads and seventy fast cruisers? I unhesitatingly answer 'No.'"

The Admiral's immense navy would undoubtedly prove stronger than the improvised Canada navy of two schooners. But the fishing treaty aggressions can be dealt with on a lighter basis than one hundred and twenty ironclads. To re-enforce their navy, the Canadian authorities, within a few months, came to us and purchased an American vessel, the Yosemite. The game would hardly be worth the candle if an immense navy is to be created to enable our fishing vessels to violate treaties with Canada.

"We are building at the Washington navy yard new improved rifles equal in workmanship to any in the world, and the Bureau of Ordnance is hard at work on the batteries for the Chicago and Boston, which will make, when finished, eight 8 inch, nineteen 6 inch, and two 5 inch; in all, twenty-nine as the sum total of all the new high powered guns contained in the United States navy; and, to give you an idea of the paucity of resources of this favored land, most of the forgings for the tubes and jackets for these guns were furnished by manufacturers in England. Purchasing steel forgings abroad may be considered humiliating for Americans, but it is no more so than buying anything else there that can be furnished better than here or that we cannot furnish at all."

This has some of the right ring to it. We can finish guns in this country. The Canadians showed no feelings of humiliation in buying a ship here, in preference to the mother country. We should purchase steel forgings where we can get them cheapest.

The question of humiliation is a purely sentimental one, and does not apply to the present case.

"We, sitting here quietly, hardly realize that such a magnificent channel of trade as Puget Sound exists or that we have any rights there, while the Canadian Pacific Railway is now completed, and it is said that arrangements are perfected by which freight and passengers can be promptly transferred by rail and steamships from London, via Montreal, to Victoria, and thence by steamer to Yokohama and Hong Kong. There is enterprise for you, well calculated to throw the boasted enterprise of Americans into the shade. The nations of the earth are looking for the shortest route to and from China. The nation that can retain possession of the Eastern trade will be the richest on earth."

In the event of a war, the Canadian Pacific road would fall into our hands. As it is, we have led the way across the continent, and cannot stop Canada from building railroads. It is not our part to violently oppose the execution of peaceful enterprises, or to go to war for the purpose of hindering the development of Canada.

In fine, we believe that America is not yet forced to the wall. We doubt if she is in such imperative need of a navy as the Admiral thinks. We believe there are

resources enough in the country for her ample protection at very short notice.

Useful Recipes.

The *Sanitary Plumber*, which should be good authority in such matters, gives the following recipes for plumbers and others:

Chloride of zinc, so much used in soldering iron, has besides its corrosive qualities, the drawback of being unwholesome when used for soldering the iron tins employed to can fruit, vegetables, and other foods. A soldering mixture has been found which is free from these defects. It is made by mixing 1 pound of lactic acid with 1 pound of glycerine and 8 pounds of water.

A wooden tank may be rendered capable of withstanding the effects of nitric or sulphuric acids by the following methods: Cover the inside with paraffine; go over the inside with a sadiron heated to the temperature used in ironing clothes. Melt the paraffine under the iron so as to drive it into the wood as much as possible, then with a cooler iron melt on a coat thick enough to completely cover the wood.

For brassing small articles: To one quart water add half an ounce each of sulphate copper and protochloride of tin. Stir the articles in the solution until the desired color is obtained. Use the sulphate of copper alone for a copper color.

To clean rust from polished steel, mix 10 parts of tin putty, 8 of prepared buck's horn, and 25 of spirits of wine to a paste. Cleanse the article by rubbing with this, and finally rub off with blotting paper.

A good cement for celluloid is made from 1 part shellac dissolved in 1 part of spirit of camphor and 3 to 4 parts of 90 per cent alcohol. The cement should be applied warm, and the broken parts securely held together until the solvent has entirely evaporated.

Tin and tin alloys, after careful cleansing from oxide and grease, are handsomely and permanently bronzed if brushed over with a solution of one part of sulphate of copper (bluestone) and one part of sulphate of iron (copperas) in twenty parts of water. When this has dried, the surface should be brushed with a solution of one part of acetate of copper (verdigris) in acetic acid. After several applications and dryings of the last named, the surface is polished with a soft brush and bloodstone powder. The raised portions are then rubbed off with soft leather moistened with wax in turpentine, followed by a rubbing with dry leather.

Curiosities of Alloys.

The way in which an alloy of gold and copper or other metal is affected by a small quantity of impurity presents one of the most serious difficulties with which our case makers and jewelers have to deal in working gold. It has long been known to workers in the precious metal that minute quantities of certain metals render it brittle and unworkable; and referring to this, in a lecture at Birmingham, Professor Roberts-Austen, of the Royal Mint, said:

"It may be well to demonstrate the fact. Here are 200 sovereigns. I will melt them, and will add, in the form of a tiny shot, a minute portion of lead amounting to only the 2,000th part of the mass; first, however, pouring a little of the gold into a small ingot, which we can bend and flatten, thus proving to you that it is perfectly soft, ductile, and workable. The rest of the mass we will pour into a bar; and now that it is sufficiently cold to handle, you see that I am able to break it with my fingers, or, at least, with a slight tap of a hammer. The color of the gold is quite altered, and has become orange brown; and experiments have shown that the tenacity of the metal—that is, the resistance of the gold to being pulled asunder—has been reduced from eighteen tons per square inch to only five tons. These essential changes in the property of the metal have been produced by the addition of a minute quantity of lead."

In the same lecture Professor Roberts-Austen said: "Here is a bar of tin, 2 ft. long and 1 in. thick, which it would be most difficult to break, though it would readily bend double. If only I rub a little quicksilver on its surface, a remarkable effect will be produced—the fluid metal will penetrate the solid one, and in a few seconds the bar will, as you see, break readily, the fractured surface being white, like silver."

New Russian Canal.

The Russian Government has contracted a loan of 25,000,000 rubles with the firm of He sent & Co., Paris, for the construction of the Perekop Canal in Southern Russia. M. Louis Gaisseau, a French engineer of Suez Canal fame, is to be the chief engineer. The canal will establish a direct communication between the River Don, the Black Sea, and the Sea of Azov, and will also be the medium of connecting several South Russian railway lines. It will be of considerable strategical importance, but its commercial significance will be still greater, as it will enable coal to be brought from the rich mines in the vicinity of the River Don to the Black Sea, where their selling price will be lower than that of English coals, which, at present, are the only kind used at Constantinople and the Black Sea ports.