PHOTOGRAPHIC NOTES.

Formula for Working Bromide Paper.—At a demonstration given by Mr. David Cooper before the St. Louis Photographers' Convention, recently, the latest formula for working bromide paper was stated as follows:

Development is accomplished in an exceedingly simple and cleanly manner. The well known oxalate of iron developer, in a slightly modified form, is the most suitable for all purposes.

No. 1.

Oxalate of potash	1 pound.
Hot water	3 pints.

Acidify with sulphuric or citric acid. Test with litmus paper.

No. 2.

Protosulphate of iron	1 pound.
Hot water	1 quart.
Sulphuric acid (or citric acid, ¼ oz.)	½ drachm.

No. 3.

Bromide potassium	1 ounce.
Water	1 quart.

These solutions keep separately, but must be mixed only for immediate use.

To Develop.—Take in a suitable tray: No. 1, 6 oz.; No. 2, 1 oz.; No. 3, ½ dr.

Mix in the order given; use cold. After exposure, soak the paper in water until limp; then immerse in the developer.

The image should appear slowly, and should develop up *strong*, *clear*, and *brilliant*. When the shadows are sufficiently black, pour off the developer and flood the print with the

CLEARING SOLUTION.

Acetic acid	1 drachm.
Water	1 quart.

Do not wash the print after pouring off the developer and applying the clearing solution.

Use a sufficient quantity to flow over the print, say 2 ounces for an 8×10. Allow it to act for one minute, and then pour it off and apply a fresh portion; repeat the operation a third time; then rinse in pure water and immerse for ten minutes in the

FIXING BATH.

Hyposulphite of soda	3 ounces.
Water	1 pint.

After fixing, wash thoroughly two hours, and hang up to dry. Use fresh developer for each batch of prints. With a glass bottomed tray, 7 ounces of developer are sufficient for a 25×30 print.

Object of Clearing Solution.—The object of the clearing solution is to prevent the precipitation of the iron from the developer in the fiber of the paper. This can only be done by keeping the paper acid while washing out the developer.

Citric Acid may be used instead of acetic in the clearing solution, in which case use one-eighth ounce to the quart of water. Citric acid is less liable to cause blisters.

Blisters sometimes appear in bromide paper, and may be avoided by using a little common salt in the first washing water after mixing. The hypo must not be stronger than 3 ounces to the pint of water.

No Toning Required.—With Eastman's permanent bromide paper, the final tones are obtained entirely by development, and range from a soft gray to a rich velvety black, depending somewhat upon the density of the negative and the quality of the light used in printing.

Clean Dishes, Clean Hands.—The faintest trace of hyposulphite of soda or of pyrogallic acid is fatal to good results with bromide paper, and the operator cannot be too careful to avoid any contamination. The tray used for developing with oxalate should never be used for anything else.

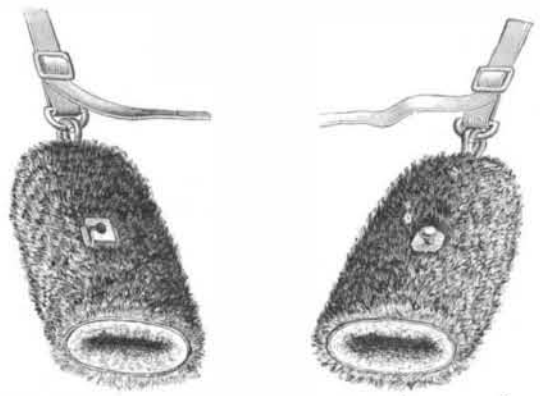
Mention has been made in these directions regarding the use of a dilute solution of acetic acid and water immediately after development, and before washing with water at all. This is a most important point, and cannot be too strongly impressed on the mind. A brief hint as to the reason for using the acidulated water is shown in the foregoing directions, but it is so important that it deserves further consideration. Pure whites cannot possibly be *obtained* and *retained* where this precaution is neglected. As noticed in the directions, it had been proved that thorough removal of the oxalate of iron can only be accomplished while the print and water are kept acid. It seems that the degree of acidity needs only to be very slight, as the formula shows. This has been commented on, and several who doubt the efficacy of the homeopathic dose prescribed have increased the proportion, but have not found any additional advantage. While in cold weather a moderate increase of the acid may not have any serious influence, it may in hot weather develop a tendency to blistering, and should be avoided.

In any case, it is not so much the amount of acid as the repeated application of the very dilute solution recommended which will fulfill the demands.

After fixing, another important measure is the use of a first washing water containing common salt, say half a pound to two gallons of water. This will most effectually prevent blistering, unless provoked by some unusually careless manipulation.—*Photo. Times.*

DRIVING APPARATUS.

The muff or hand protector herewith illustrated completely protects the hands of the driver from cold, while it enables him to hold the reins securely. The muff is made of thick and warm material, and is of such a size as to cover the sleeve of the wearer and protect the wrist from cold. The rein may be attached to the outer end of a stirrup form of holder or loop, arranged within the protector, where it is grasped by the hand. By means of a catch the two protectors may be held together, thereby allowing the driver, if necessary, to withdraw one of his hands,



LOWTHER'S DRIVING APPARATUS.

both reins being then controlled by the hand inserted in one muff.

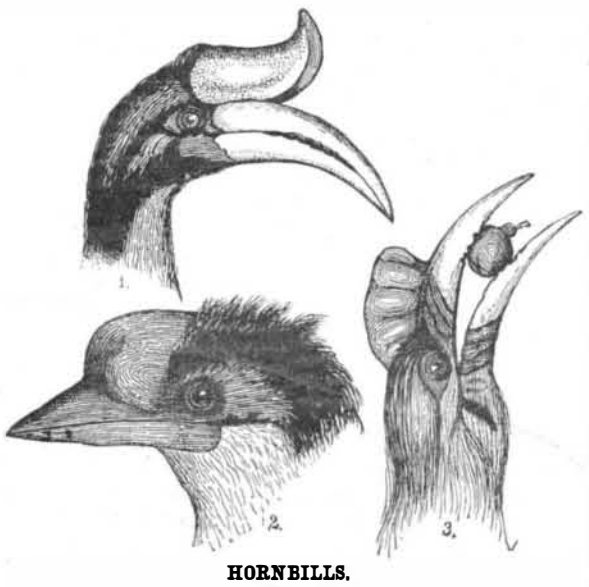
This invention has been patented by Mr. Charles Lowther, of 104 West 11th Street, New York city.

HORNBILLS.

Living specimens of these peculiar birds are rarely, if ever, seen in our zoological collections. There are about fifty species of hornbills known to naturalists, inhabiting tropical Asia and Africa and the islands of the Indian Ocean.

The curious characteristics of these birds which most attract the attention are the enormous development, and the singular horns or protuberances of the beak. In one species the bill armor resembles somewhat the great recurved horn of the rhinoceros, in another a broad, two-sided helmet, while in others it stands up comb-like, in irregular swollen ridges.

In all species it has the appearance of being heavy and solid, but, on the contrary, it has near the skull a core hollowed into numerous cells of various sizes and forms, with very thin partitions between them, while the anterior portion is scarcely more than a hollow shell, so that remarkable lightness is obtained. Indeed, in one species at least, the helmet-like ornament is so delicate in the anterior portion that it may be crushed in with the fingers. The bill is long, curved, and acute, and is often unevenly toothed on its cutting margin, as if small pieces had from time to time been accidentally broken out. The bill is extremely light for its size, the entire core consisting of porous bone. Another peculiarity is that the upper and lower mandibles in some species rarely meet except at the base and tip, the intermediate portion being separated by an open space, sometimes one-quarter of an inch wide.



HORNBILLS.

In the great hornbill (*Buceros galeatus*), Fig. 2, however, the bill is nearly straight, more solid, and there is little or no space between the upper and lower mandible when the beak is closed. The horn also differs greatly from that of the other species. Mr. Forbes says, in parts of Sumatra, "each head commands a large price, for out of its dense white ivory-like consolidated horn are manufactured studs and sleeve links of great beauty."

The hornbills are rather large birds, varying in size from a small crow to a turkey. The plumage is generally dark colored or black, or black and white combined; in some cases the head and neck are red, as in the helmet hornbill (*Buceros cassidix*), Fig. 3. The bill and its horn are most beautifully colored with crimson, orange yellow, and ivory white; especially so in the rhinoceros hornbill (*B. rhinoceros*), Fig. 1, in which species the bill attains great size and beauty. It was this species that some old voyagers declared was the happy possessor of two heads. It is a large bird, measuring over four feet in length.

The hornbills are generally seen in flocks of from ten to twenty; some of the larger species, however, mostly go in pairs. Their food consists for the most part of fruit, while some devour reptiles, insects, eggs, and young birds. The statements of the older naturalists that they were largely carrion eaters, like the vultures, have not been confirmed by modern travelers.

The tongue of these birds is quite small, almost rudimentary, so that in swallowing they are obliged to throw the head back and up, and by a few jerks force the food down into the throat (see Fig. 3). The feet are also peculiar, the three front toes being more or less united for quite a distance from the base, so that they are unable to spread them out, as is the case with most birds. They very much resemble the feet of our kingfisher.

The voice of many species of these birds is said to be harsh and disagreeable. A traveler says when a bird is wounded or captured alive, the terrible noise it makes is perhaps not surpassed in the animal world. It is something between the bray of an ass and the shriek of a locomotive, and is kept up continuously, so as to be absolutely unbearable. When a female bird was captured on the nest, its shrieking was heard nearly a mile off—a horrible noise even at that distance.

The majority of these birds nest in hollow trees. The larger species lay two white eggs, while some of the smaller species are said to produce more. A singular fact connected with the breeding habits of some of the hornbills, which was at first considered fabulous, but now confirmed by various travelers, is, that as soon as the female has laid her eggs in a cavity of a hollow tree, the male completely shuts her in by plastering up the entrance with clay, leaving only a small opening or hole, through which she can protrude only a small portion of her bill, so that she can receive food, with which he keeps her well supplied. She is thus kept a prisoner until the young are hatched, and sometimes longer. A species inhabiting Java the natives call the "jealous bird." They say that if any indications appear of the nest having been visited during the absence of the male bird, he will, on his return, entirely close up the opening with mud, and leave his unhappy mate to starve to death.

C. FEW SEISS.

George L. Perkins.

Among the crowd of spectators assembled at New London, recently, to witness the arrival of the yachts of the American Yacht Club fleet was Colonel George L. Perkins, of Norwich, Treasurer of the Norwich and Worcester Railroad Company, a gentleman within a few days of his ninety-eighth birthday, and still hale and vigorous. He saw the first steamboat, Robert Fulton's Clermont, and indeed was a passenger on that vessel some time in 1807, having walked from Norwich to Poughkeepsie to be such, and on Thursday last saw the latest examples of steam engineering in Herreshoff's Henrietta, the Atalanta, etc.

Colonel Perkins has held the office of Treasurer of the Norwich and Worcester Railroad continuously since the incorporation of that company, a period of more than fifty years, and to-day is as prompt in appearing at his desk in the office as ever, and quite as alert in looking after the interests of the concern. He is a tall man, quite erect and even jaunty in his carriage, and does not look his age by twenty-five years. During the war of 1812 he was in the Quartermaster's Department of the United States Army, and from that service derives his title. In his youth Colonel Perkins was considered something of an invalid, and was sent on a voyage to the West Indies under care of a body servant to recover his health. Unlike many men who antedate the railroad, telegraph, etc., the Colonel is quite up to the times, and has no intention of getting left by any of his juniors.

After Treatment of Cataract.

At the St. Louis meeting of the American Medical Association, Dr. Michel advocated the plan of using a light bandage to the eyes after cataract operations and iridectomies, and allowing the patients to be in a lighted room, where freinds can come and read to them. Dr. Michel's plan was not favorably received at St. Louis, but it has been tried by Dr. Chisolm, of Baltimore, who reports fourteen cataracts and four iridectomies treated in this way. After the removal of a cataract or the performance of an iridectomy, the eyes if a cataract, the eye if an iridectomy, is closed in its normal position, and a bit of isinglass plaster, about two and a half inches long by one inch wide, is then rendered flaccid by immersion in some germicide fluid, and is neatly applied to the surface of the closed lids. When dried this forms a close, firm band. The patient is then allowed the full liberty of his room, and is not shut up in darkness, as was formerly deemed essential.