

soaked, and add an equal amount of pure water to dilute the iodine and starch solution in the other tube. This will permit an accurate examination of the change effected by hyposulphite if present in the water in which the card has been immersed. Hyposulphite of soda will quickly remove the blue tint of the solution to which it is added by combining with the iodine; and any degree of change will be readily observed by comparison with the other tube held by its side as a standard.

To ascertain if ultramarine is present in the mounting card another mode of testing is necessary. Ultramarine, being a furnace product, is indestructible by fire. The suspected paper or cardboard to be examined should be reduced to a charred mass by burning in the air, and then introduced into a crucible and further heated until all the carbon is consumed. If the ultramarine is not already visible in the ash by its colour, the blue particles should be sought for with the aid of a lens or microscope. A characteristic property of ultramarine is the change in colour from blue to white, accompanied by the evolution of sulphuretted hydrogen when moistened with an acid.

The photographer has, of course, no control over the manufacture of mounting-boards, but he can exercise a power of selection and rejection; and the facts which have repeatedly come under our attention point to the importance of doing so. Of late, the increase in the consumption of hyposulphites as "antichlor" in paper making is stated to have advanced in enormous ratio. It is probable that if the protest of photographers against its use in the papers and cards to be used in photography were made sufficiently loud and urgent to be heard and understood by paper manufacturers, that other substances would for their purposes be employed. Sulphite of soda, or of lime, for instance, would absorb chlorine with formation of sulphates of these bases, which would be harmless. That of lime is occasionally used, we believe, in giving whiteness to paper, and its presence might be regarded as in no wise injurious to the photograph.

#### PHOTOGRAPHY AND DISEASE.

MR. CAREY LEA, commenting in the *Philadelphia Photographer* on the recent communications in our pages on this subject, considers the question is so important that if an article were written monthly on this subject it would scarcely be too much. He remarks:—

"It is not in the least difficult to explain loss of health as occasioned by photographic pursuits. All physicians know that the proper ventilation of the blood through the lungs is one of the most indispensable conditions of health, and that continued exposure to vapours not in themselves usually considered poisonous produces most injurious effects. Such vapours are, for example, fumes of ammonia, or of carbonate of ammonia, vapour of acetic acid, fumes of alcohol, or of benzine. The vapours of ether and of nitric acid are now too generally recognized as poisonous to render it necessary to say much about them, and any one exposing himself to their influence must necessarily expect to suffer.

"In a word, the lungs were made for inhaling pure air, and when they are compelled to take in chemical vapours, the load the system has to carry is just in proportion to the extent to which the air is vitiated.

"It is so difficult to produce an impression in these respects, that if an article were written monthly on this subject it would scarcely be too much. But just at present is the moment when caution is most needed. In the spring and autumn there are periods when the weather is too warm for fires and too cool to work with open windows. At such seasons, rooms have unusually little ventilation; in winter the fire keeps up circulation, and in summer open windows maintain a draft. At the intermediate period there is more than usual evil from vitiated air, and unusual caution in avoiding its deterioration is called for.

"Therefore, the photographer at such times should rather maintain his fires, and keep the temperature down by opening windows freely. In fact, the safety of the photographer will always largely depend on habituating himself to a constant movement of air."

#### LOSS OF SENSITIVENESS IN DRY PLATES.

PROFESSOR TOWLER, in recording the results of some comparative trials of dry plates, states his conviction that most dry plates lose sensitiveness by keeping. The plates tested were prepared by England's modification of the collodio-albumen process, by Col. Baratti's coffee process, and Bartholomew's morphine process. The experiments were tried in winter, the exposures made in a good diffused light the day after the plates were prepared. All the plates, having been exposed for the same time with the same lens and under all the same circumstances, were developed with a nitro-gelatine iron solution. The morphine plate could not be brought to the proper intensity without pyrogallie acid. Upon the whole, he states, that of the three, the coffee plate was the softest, cleanest, and best negative.

After the lapse of another day he exposed three other plates; but the time of exposure had to be lengthened for all of them by two or three minutes. The results with albumen and coffee were in this case about equal. The morphine plate is stated to have come out just as rapidly as the other two, but stopped short in the development as before, and pyrogallie acid and silver had to be used again.

On the third day the exposure had to be twelve minutes for each plate; with less time the impression was feeble. For several days the experiments were continued, and during the whole time they had to make a like increase in the time of exposure, in order to get tolerable results. As time progressed, coffee began gradually to fail.

On the eighth day a pair of each of the three plates were exposed for twenty minutes: the albumen plates gave results clear and distinct, but under-exposed; whilst from the others the pictures could not be forced into anything worth keeping: they are described as "complete failures."

Professor Towler concludes:—"None of these plates can be said to retain their sensitiveness beyond a few days; and, in a practical way, I would not think of trusting them beyond the second day. I believe they owe their sensitiveness to a retention of moisture in the film, and not to any preservative with which they are imbued. The albumen plates preserve their working powers the longest. The coffee plates are easily prepared, and, when used the next day, are reliable, and produce excellent results. I do not like the morphine plates, although they are very sensitive soon after preparation—you cannot force the pictures easily. Of course I have reference in these observations to the peculiar mode of development; my aim is to develop both wet and dry plates with the same developer (protosulphate of iron)."

#### EGG-ALBUMEN, FROM A CHEMICAL POINT OF VIEW.

BY JOHN SPILLER, F.C.S.

ON a recent occasion it has been proposed to employ the white of egg in a naturally moist condition as the standard of comparison in estimating the quality, or degree of impurity, of potable waters, as regards their nitrogenous organic constituents. Variations in the amount of nitrogen contained in the white of egg have, however, been admitted, and the proportion of water, or, in other words, the weight of dry albumen, is suspected to be subject to variation. Whilst engaged in some experiments upon this new method of water analysis, in which, as I have said, albumen is taken as the starting point, and its nitrogen (or a known fraction of it) is evolved and estimated in the form of ammonia, it