

CORK-LINED FABRIC—A TEXTILE NOVELTY.

BY THE PARIS CORRESPONDENT OF THE SCIENTIFIC AMERICAN.

A new fabric has been brought out in France, known as Tissu-Liege, or cork tissue, and it is now manufactured on a commercial scale. Cork, cut in very thin layers and treated so as to be quite flexible, is applied to almost any kind of woven fabric for this purpose. In this way a fabric is obtained which is quite water-

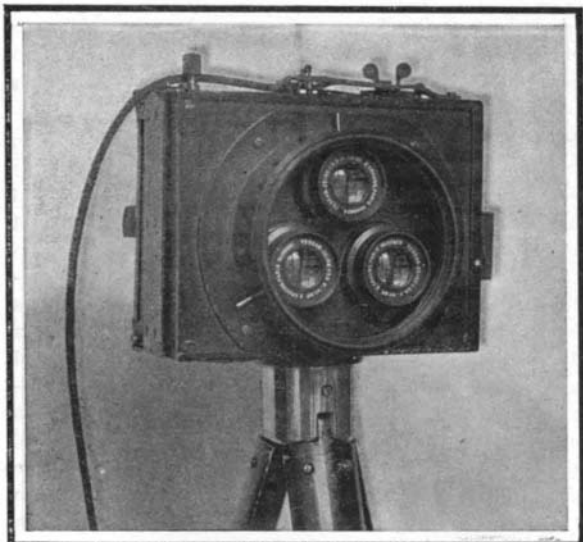


A COAT MADE OF CORK-BACKED FABRIC.

proof, and very light, odorless and comfortable in general. It is designed specially to take the place of rubber cloth and to overcome the numerous disadvantages of the latter.

The cloth fabric is faced with the thinly-cut cork upon one side only, leaving the outer side of the usual appearance. If desired in certain cases, the cork layer is placed between two layers of cloth. In the process of manufacture the cork is given a preliminary treatment by which it is freed of its resinous matter. It becomes quite flexible and is cut into very thin sheets. A sheet is placed upon the fabric and is tightly pressed upon it. Any of the usual fabrics can be used with the cork layer, cotton, wool, silk, ramie, jute, and others. The operation does not change any of the properties of these fabrics nor their external appearance. Felt as well as leather can be employed in this way.

The fabric thus cork-lined does not deteriorate in the course of time, which is the case with rubber cloth. It is well known that rubber, especially in thin layers, quickly deteriorates and after a time becomes brittle and cracks, thus losing its waterproof character. Because of the lightness of the cork, a garment made of Tissu-Liege is scarcely over half a pound heavier than the same when untreated. Those who feel the weight of rubber cloth garments will see this advantage at once. It might be thought that the cork could not be supple when thus applied, but in reality it is made as supple as cloth; for the cork is treated so as to be quite freed from the resinous bodies



THE CAMERA WITH ITS THREE LENSES AND SOCKET IN FRONT FOR A COMMON CONDENSER.

which make it brittle, and is cut in very thin layers of 1/10 millimeter (1/250 inch). It is somewhat surprising to see that such a cork fabric can be bent and folded down without the slightest sign of breaking, and in fact the cork is now as flexible as cloth, owing to the extraction of the resinous parts.

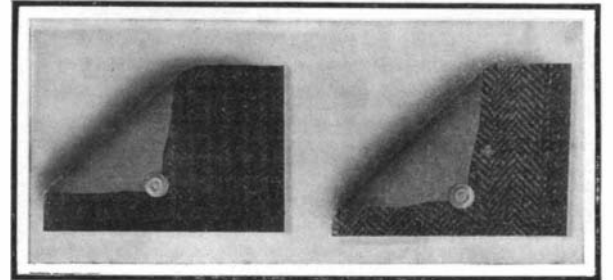
A NEW COLOR-PHOTOGRAPHY PROCESS.

DESCRIPTION OF A NEW CAMERA FOR TAKING AND PROJECTING PHOTOGRAPHS IN NATURAL COLORS.

Amateurs would no doubt use much oftener the three-color process for obtaining views in natural colors were it not that there is a considerable complication in carrying out the method as it is employed at present, at least when we compare it with ordinary photography. When well handled, the use of the three screens for color photography will give very pleasing results, and these are well worth the pains which are spent in this way. However, there is not only the difficulty in taking the three exposures with the color screens, but after the plates are obtained they must be matched exactly in order to secure the proper combined effect. On the other hand, owing to the introduction of the new autochrome and similar plates for taking photographs in colors upon a single plate, it is to be feared that the three-color process will be abandoned unless there is some more simple means found for carrying it out. This seems to be the case, however, with the apparatus devised by M. André Chéron, of Paris.

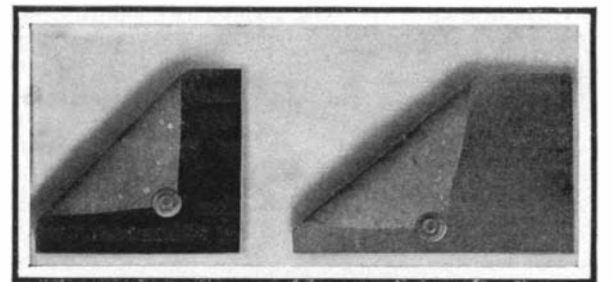
What is characteristic of M. Chéron's apparatus is that it not only takes the three views upon a single plate and in one operation, but that it also serves, after the plate has been obtained, for projecting the views upon a screen, as would be done in a stereopticon, so that we can observe the views in their natural colors and greatly enlarged, without taking much more trouble than is found with the use of an ordinary camera. For this purpose he employs a camera of small size like that illustrated herewith, and makes use of three lenses of the same kind, one for each of the red, yellow, and blue color screens. These screens are properly graduated in color beforehand so as to secure the proper effect. The lenses are of the fixed focus type such as are used in the non-focusing kodaks. In the rear of the camera is an ordinary plate holder. The plate used is large enough to take all three images from the three lenses, and owing to the reversed effect there are thus two images at the top of the plate and one at the bottom. As the images given by the lenses are less than two inches in diameter, all three of them can be taken upon a 4 x 5-inch plate, so that the camera is of small and portable size. A shutter of the rolling curtain type is mounted next to the plate and allows of making the exposures. The color screens are adjusted with the lenses so that the exposures for the three lenses can be made at the same time. After exposing the plate, it is developed, and from the negative a positive or lantern transparency is made in the usual way, so that it also contains the three images in black and white. For making the projection on the screen in natural colors, the transparency is placed in an open slide or plate holder and put in the position occupied by the original plate. A lamp, such as a Welsbach burner or other good light, is placed back of the camera so that the beams of light pass through the plate and out through the lenses. These, as already stated, are of the constant-focus type, that is, they are focused only for parallel rays coming from the distant object, and such rays are brought to a focus on the plate. If now the light be sent through the image, this light will be divergent at first, but upon reaching the lens the rays will be brought to a parallel beam such as the lens received from the distant object in the first place. Such rays therefore will not be concentrated on the screen placed in front of the camera. Taking the case of a single image and its lens, the parallel rays given out from the lens can be brought to a focus on the screen by using a second lens in front of the first one. With the color screen still in place the red image would thus be obtained on the screen. The second combination lens would project the blue image which would be superposed on the first, and the same would be the case with the yellow image, so that the three differently-colored images being thus superposed upon the screen would give the image in natural colors. However, in practice, it would be a complicated matter to use three extra lenses. M. Chéron has found that he can concentrate all three images on the screen and at the same point by using a large condensing lens of the usual type, which he inserts in the circular socket surrounding the three lenses. It will be seen that the projection of the images on the screen is thus accomplished in a simple and quite automatic manner, since all the adjustments are made beforehand so that the three images fall upon the screen and are exactly matched, simply by placing the large lens in position. Thus the projection can be carried out by the use of the camera itself, and there is no extra apparatus whatever to be set up outside of the source of light and the screen.

Each of these lenses has a diaphragm which is set properly for the correct color values once for all for taking the photographs. However, the relation of the color values is not the same upon the photographic plate as it is for the eye, so that when it comes to the projection of the images the diaphragms have to be readjusted so as to give the correct proportions for human vision. This second adjustment, as well as the



SPECIMEN OF CORK-BACKED FABRIC.

first one, is found once for all, so that it is repeated at will without any further trouble. In order to give the correct adjustment of the images, the plate holder which carries the transparency is mounted on a pivot, so that if there is any slight difference in position this can be corrected by observing the projection on the screen and turning the camera until the right effect is secured. Should it be desired to take views of objects being nearer the camera than the use of the constant-focus lenses will allow, we can insert the large



FABRICS LINED WITH CORK.

condensing lens, or another lens of the same diameter can be placed in front of the three lenses. The rays from the object will be then rendered parallel by the large lens before they pass into the small ones.

An objection may be made that the pictures can only be viewed in colors instead of seeing them upon a single plate, as is the case with the Lumière process; but as the Lumière plates are not very transparent, they cannot be well projected except by calcium light or a strong arc light, and this is not always within reach of the amateur. M. Chéron's process allows of using a gas burner and can thus be employed by anyone, which is a distinct advantage when it comes to projection work. At the same time the views seen in large size on the screen are more agreeable than the small views. The size of the projected image, when an incandescent gas burner is used, is about three feet in diameter, and good illumination of the image is obtained. With a stronger light the diameter can of course be increased. Another point is that this new camera could, with certain modifications, be used for taking and projecting moving pictures in colors.

A reagent which yields a more delicate and characteristic test of the presence of arsenic than is given by Bettendorff's reagent is made by dissolving 1 part of calcium hyposulphite in 10 parts of fuming hydrochloric acid. A few drops of this solution added to the suspected liquid produce an orange red coloration on standing if arsenic is present. If the quantity of arsenic is large, a brown precipitate is ultimately formed.



TRANSPARENCY SHOWING THE THREE IMAGES FOR PROJECTION THROUGH THE THREE COLOR SCREENS.