One of the greatest advantages claimed for the new lens, over all the European telescopic lens system, is the fact that the new lens works instantaneously even when stopped down to $f/45$. The *Photographische Nachrichten*, published in Berlin no later than April 27th last (p. 216), distinctly mentions that the German tele-photo objectives are not suited for instantaneous work. Here we have proof of the claim of the new American objective. I submit for your inspection a number of comparative photographs, all made by the inventor of the new lens, which will enable you to judge intelligently of the magnification, covering power rectilinearity and speed, some of them being produced by an exposure of one-fiftieth of a second.

I now leave the subject in your hand for further investigation.

THE MANUFACTURE OF ANTIQUE PERSIAN RUGS.

BY H. ENDEMANN, Ph.D., Chemist.

Some time ago I found in one of our daily papers an article complaining of the sale of imitation antique rugs for the genuine article. Having come into the possession of one of these, I experimented with it, not only with the view of devising a plan for readily detecting the spurious nature of these goods but, incidentally, regarding the probable method by which they were produced.

Later on I will give a method which is capable of producing as beautiful a specimen of an antique rug from a bright-colored Persian rug as ever delighted the eye of antique hunting buyers. The rugs as found, however, show all more or less traces of their treatment. On close inspection it is easily observed that some of the bright colors of the wool have run into the cotton margin, which is itself discolored throughout and gives reactions for iron as well as tannin compounds, but otherwise the rugs look as if really age only had wrought the changes observable.

The wool is more decolorized on the outside than on the inside, where it is firmly held by the warp, and an inspec-

tion in this direction will therefore not reveal the spurious nature of the goods. For this fact of a more thorough destruction of the color on the surface where atmospheric influences, as moisture, air and light, have acted more thoroughly is true likewise for the real antique article, where we find the color destroyed also more on the surface than on the inside.

Also the softness of the artificially made antique rug compares well with that observable in the genuine goods.

An examination of the colors on the wool is hopeless when we have to deal with colors destroyed and changed to such an extent as I found them in this class of goods. The real test can therefore be best made on the cotton margin by chemical reactions and general inspection.

The preliminary examination taken into account, I set out to unearth the probable mode of manufacture.

It was soon found, that all bleaching agents, while they removed sufficient color in some cases, left the colors rather in bright shades, and alone could therefore not have been used for the production of the antique rug, *i. e.*, the colors must be toned or shaded to produce the desired result.

I shall not go into the details of all possible methods but go at once to the description of the method which I consider to be the most serviceable and therefore very likely the one used in the production of such spurious goods as I had occasion to see. The first step is to discharge most of the color by means of an alkaline bath.

For ten rugs (25 x 40 inches each) dissolve one pound of borax in 120 gallons of water and heat to about 140° F., then prepare a concentrated solution of caustic soda, two and one-half pounds to about two gallons of water.

Then add one-third of this solution to the warm borax solution and enter your rugs, working them constantly by hand or reel, at the temperature mentioned. During one hour while they are worked the rest of the caustic soda is added in small portions, taking the precaution that the newly-added alkali is thoroughly mixed with the old solution before the rugs re-enter.

At the end of this time considerable color will have

passed into the solution, which is then run off and replaced by fresh water repeatedly to remove the alkali.

The rugs are then allowed to dry, when dry they are put for a short time into a solution of extract of fustic, one to 100, and again allowed to dry (one pound extract of fustic to twelve gallons of water). They are now bleached in the following solution: One gallon commercial hydrogen peroxide is mixed with thirty-five gallons of water and thereto is added one-fourth gallon strongest aqua ammonia.

The rugs are entered and remain therein until sufficiently decolorized. The colors now, though quite towards the yellow, are still bright.

The rugs are now taken out, wrung and at once brought into a bath of four fluidounces of tersulphate of iron (*United States Pharmacopœia*) in about fifteen gallons of water, where they remain until the shade has become sufficiently dirty to suit the operator. Slightly changing the conditions, as, for instance, not allowing the rugs to dry, when mentioned in the process, or changing the strength of the solution and the time of exposure will give corresponding results in producing different shades, which may account for the difference of shades of such spurious goods as found in the market.

It is perhaps needless to say, that the cotton margin gives identical reactions with those observed in spurious goods found in the market. Treatment with a neutral solution of ferric chloride produces a greenish-black color. The iron can be seen by the rusty color of the ashes and additional tests if required. I do not anticipate that rugs so treated will show the same keeping qualities as the real antique rug. The fact that the colors in the rugs have not been changed but bodily taken out will certainly result in the almost complete destruction of the small quantity of color left, especially under the oxidizing influence of the iron salt introduced for the purpose of toning.

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