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ations.
lis and - suppose, by dyeing the finished fabric. In fact, the silk after leaving the loom, beyond simple brushing, undergoes no further treatment. The dyeing processes are carried out on the , thrown silk thread, which after boiling receives a large quantity of nitrate of iron in solution. It is then treated with soap and alkali to "kill" the iron, or rather the acid effects of the salt. Another bath of nitrate solution follows, and
then another application of soap, and thus these processes then another application of soap, and thus these processes are repeated according to the weight desired. The operation is one of building up. When honest silks were made a single process or so of this kind answered all the purpose; but vicious ingenuity discovered that by repeating the operation the thread would be made heavier, and the more numerous the repetitions the greater the weight added.
Bluing by prussiate of potash, which is the next process, is followed by baths of gambier, cutch, or other astringents fastened with tin salts. The fabric after passing through this liquor is cleansed and treated with acetate of iron. Then another gambier bath, and as this stage of the operation also adds weight there is a chance for more repetitions. This, however, is virtually a tanning process through the action of the astringent on the gelatine of the silk, and the result is pretty much the same as that of tan on leather. The fabric is now a heavy, dirty, dull looking stuff.
To brighten it it is put in a logwood To brighten it it is put in a logwood dye bath, with large
quantities of soap, often as much as 8 ounces to the pound. quantities of soap, often as much as 8 ounces to the pound.
The soap is retained in considerable quantities in the silk, The soap is retained in considerable quantities in the silk,
and with the alkali already in the material forms a kind of grease which friction and wear speedily bring to the surface. This is the secret of "shininess" and the wearing smooth of black silks of all grades.

So far the swindling process is the same for all varieties of silks. Now, however, the dyer's art extends to finishing the thread so that the completed fabric shall be soft and
satin like, or "scroopy," as the peculiar rustling quality
which a stiff silk possesses is technically termed. For the first the thread is sometimes treated with oil and soda; for the second, a little acid goes in. Ladies who think that soft silks and stiff silks possess materially different qualities will thus perceive that there is really no ground for difference at all. After the thread is treated as above described it is wound and woven, and the fabric goes to the market.
It may be asked whether all black silks are thus adulterated. We are positively informed that such is the case. The normal condition of honest black silk is about 17 per cent of dye. Twenty-five years ago the highest percentage reached was 33, but then in the interval dyers have grown wiser.
We have shown the cause of "shininess." Cracking at folds is in the same way due to the extra weight. Just as an oilcloth cracks and breaks when folded at a sharp angle, so does silk, and that the threads pull apart is not at all to be wondered at when the miserable, thin little fabric which bears all the weight of dye is regarded. Colored silks, probably in some measure owing to the smaller demand for them and in great degree to the difficulty of concealing the swindle under various hues, are rarely adulterated. Browns, drabs, slates, and similar shades contain, as a general rule, about 25 per cent weighting, which is not objectionable, but rather gives fullness to the goods. It is generally obtained from a sumac bath. Silks dyed with the anilines being specially bright and highly colored are not weighted, as the addition of the necessary materials to this end tends to obscure the delicacy and brilliancy of the hue.
In order to exhibit the exact weighting of the black silk now sold in New York drygoods stores, we have collected from the six leading houses below named twenty-eight samples of silks of low, medium, and best qualities, as indicated by the price per yard. These, provided with identification marks which gave no clew to their maker's or seller's names, were sent to Mr. Leigh, with instructions to remove the dye, and send us the weights of the pieces before and after the process. In returning them, he statesthat the general quality of all is good, and that that of Nos. 1, 10, 13, 7, 8 , and 17 is especially excellent.


No. 22 Mr. Leigh states to be mainly made of waste, and to be of such poor quality that it can easily be sold at a low price without adulteration. Hence the low percentage of dye. Omitting this sample and comparing averages of the others, the following relative percentages of weighting are found:

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Average all grades.

## :

From this it is evident that the lower the price the greate the weighting. Thus, when silk is bought at a dollar a yard, about fifty cents is paid for dye and fifty cents for silk; when purchased at $\$ 3$ per yard, $\$ 2$ goes for silk and $\$ 1$ for dye. Supposing adress pattern of 20 yards of $\$ 1$ silk be purchased, then, one half of this being wasted in dye, the wear ng value of the silk is represented by $\$ 10$, or half the amount paid. The same amount of $\$ 3$ silk costs $\$ 60$, and its wearing value would be $\$ 40$. But there is four times as much silk in the $\$ 3$ fabric as in the $\$ 1$ goods; hence $\$ 40$ must be divided by 4, which gives 10 as the wearing value. So that it would seem that the person who buys a $\$ 1$ silk really gets as much for his money as the buyer of the $\$ 3$ silk, assuming that the resistance to wear is directly proportional to the quantity of silk present. In fact, however, the discrimination is largely against the buyer of the $\$ 1$ silk, which is relatively of poorer material, besides being overloaded with a greater percentage of weight. So that in this, as in most all other cases where adulterations are brought to light, the cheaper goods are the most falsified, and, of course, the poorer people who are
sufferers.

Power of Rivers.-According to Dr. Young, water moving with a velocity of 900 feet per hourtears up fine clay; at 1,800 feet carries fine sand; 3,600 feet, fine gravel; 2 miles an hour, moves pebbles as large as a hen's egg. Mr. Login loses in abrading power.

