Cheapness would hardly be the cause. What the exact prices were in those days we cannot say, but copperas, at any rate, has always been a very cheap chemical, and chromium, as one of the rare elements, would probably be dearer than either alum or copper. As regards this point, however, the chrome cost might be levelled up by the greater need of the older mordants for assistants in the mordanting bath.

Neither was it that the colors on chrome were faster to light than on iron or copper — for on the average they are probably less fast. They may have been brighter, but this would not count much in tertiary shades — brown, greys, &c. As compared with alum, the chrome shades may average a greater fastness to light, but they are not as bright — compare the bright red alizarine alum lake with the maroon shade developed on chrome.

So far as we can judge nowadays, the contest between the new chrome and the older iron, copper, and alum mordants would be decided chiefly in the dyeing of logwood blacks, and in the general color trade with alizarines.

Logwood Chrome Lake.

In regard to logwood black, the chrome lake is certainly inferior in fastness to light to those of iron and copper, and in this respect the adoption of chrome was undoubtedly a retrograde step. But the logwood-chrome black got a reputation for being a nicer shade, though the iron and copper blacks are not so dingy as some authorities would try to have us believe; and when dyeing dead blacks the dingier shade may have a positive advantage on the score of expense. But logwood black, on what we may call the standard recipes for mordant with copperas or bluestone, is very inferior to the logwood-chrome black in fastness to rubbing and scouring. At any rate, this is the present writer's experience, though in common with present-day dyers his experience with the older mordants has been limited.

But in the absence of any other valid reason, we take it that this was the chief thing that led to the discarding of the copperas black and the adoption of the chrome black. It would be the same with the alizarines. These are very liable to rub and bleed when dyed on iron or copper. A "dirty" dyeing is liable to be condemned off-hand as inferior. The contingency of its being ultimately faster to light is somewhat remote, and we can see that the personal equation might operate here. On a chrome mordant the dyer could at once get credit for a "nice" dyeing. For a "dirty" result (though actually, in the long run, superior) the dyer would get prompt discredit. Naturally he would prefer to keep up appearances.

Harsh Handle.

On one other count chrome would score. All the other mordants we have mentioned are liable to make wool feel harsh. This would be a specially bad fault with botany wool, which might depreciate pence a pound. To make botany handle like cross bred is an unpardonable sin. There are some people who talk about the detrimental effect of chrome on wool. If our recollection is not at fault this point has been made in some of the literature relating to vat dyes. Accidents will happen, of course, but when chrome injures wool it is an accident. Normally there is no noticeable effect.

Of the older mordants tin is the worst sinner in spoiling the handle of wool. Results from the others could probably be improved. The fault may be as much due to the sulphate part of the mordanting salt as to the metallic part. Research into the application of organic salts of these metals would probably yield satisfactory results.

Steep Twills or Diagonals. Also Basket Effects.

Weave Fig. 1 — shows a *"steep-twill,"* repeating on 12 Harness (straight draw) and 26 picks; being well adapted for the manufacture of worsted coatings — suitings — etc.

Weave Fig. 2 — shows what we may call a *"pin check"* effect (a combination of basket (8 x 8) and broken twill effects (8 x 8) both effects working, *i. e.*, exchanging) on the checkerboard "Twill-effect."

Repeat of weave: 16 warp-threads and 16 picks. 16 Harness (straight-draw).

Weave Fig. 3 — shows what we call a "broken" steeptwill running for:

60 warp threads from left to right
9 " " " right to right

69 warp threads in repeat of weave, and
24 picks in repeat of weave.

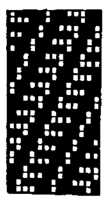

Fig. 1

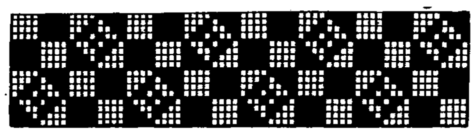

Fig. 2

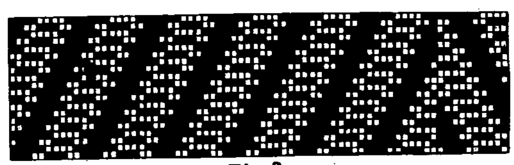

Fig. 3

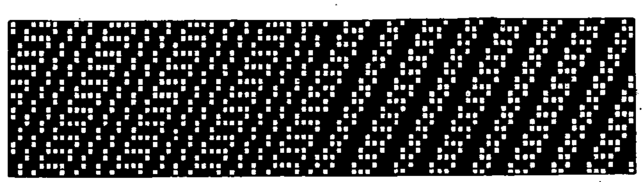

Fig. 4

Weave Fig. 4 — shows what we call a "stripe effect" combining two (2) different steep-twills in one effect; running for:

44 warp threads the 3 3 1 1 1 3 / 2 2 1 1 2 2 steep-twill,

to exchange alternately with

44 warp threads the 5 1 1 5 1 / 2 2 1 2 2 steep-twill.

Repeat of weave: 88 warp threads and
22 picks in repeat of weave.