

BALDWIN'S

TEXTILE DESIGNER

PRACTICAL

JOURNAL

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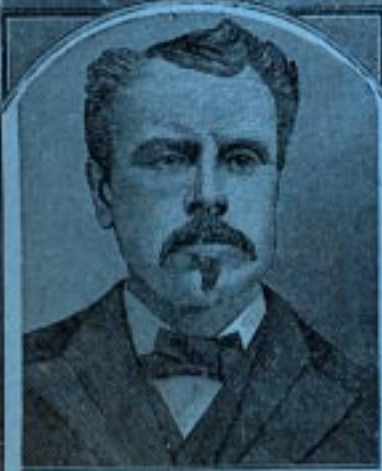
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No. 3.



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VOL. II.

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No. 3.

ORIGINALITY IN DESIGNS.

[Written for BALDWIN'S TEXTILE DESIGNER.]

THE art of textile designing is certainly one which is advancing. Almost every day is productive of novelties, either in new designs by some individual gifted with originality, or by a new and attractive combination of old novelties. To the young, progressive designer, who desires to perfect himself in his chosen profession, and is determined to reach the goal of his ambition, every new design he sees should be carefully studied, and its especially attractive feature, or the point which gives it a new and novel appearance should be noted, and if possible, a sample of the goods procured; otherwise a pencil sketch of that portion of the design should be made. Every designer with a love for his art ought to be able to sketch sufficiently well to do this. He could then paste these samples and pencil sketches in a scrap-book, kept for that purpose, where they would be available for future reference.

The studying of fancy fabrics for both men and women's wear, and making new and graceful designs, too frequently consumes more time than is allotted the designer, or the employer can afford, and more than can be legitimately bestowed on the average goods at the present state of keen competition in the textile business; but a collection of unique or meritorious designs, kept in the manner specified, will save the average designer much time and trouble. By this means he is enabled to obtain, in a few moments, an idea as to weave, combination, or colors which will suit his purpose for the proposed ideas in his mind, and can thus produce, by a combination and a little alteration, a piece of goods the novelty and beauty of which will be limited only by his ideas of harmony, skill in execution, and attention to details. New ideas are not originated every day, and when one is noted it should be carefully preserved.

The wide-awake designer can get many new and valuable ideas which may be used advantageously in his profession by observing the free style in which many of the designs on calico and other print goods are executed; also fancy window curtains, wall paper, upholstery goods, fancy work, etc., of private residences will often furnish him with many available ideas as to the combining of colors. When an idea is obtained in this manner as appropriate to the work in hand, proper attention should be paid in detail to its execution. If a stripe or plaid is required of several loud colors, great care should be used in their arrangement; because the effect is invariably spoiled when some unsightly color predominates, as is too often the case. If mixes are required of loud colors, good judgment should be displayed in the percentage of each color used, as a little out of the way here will often spoil

what might otherwise have been a creditable mix. Better for a less pretentious design, in colors creditably displayed, than one whose execution shows inability which would otherwise be unobserved.

There is another feature to this question to which it would do well to refer, and which should never be lost sight of, namely, the exercise of a sound judgment in the selecting of appropriate stock for the goods, and the fineness, or size, to have it spun. We have known designers whose judgment was as exercisable as their mechanical execution was commendable. In other words, while from a purely mechanical standpoint their productions were comparatively faultless, they invariably displayed a lack of technique, judgment or appreciation of the "eternal fitness of things," which robbed the goods of their merits as well as of their effect. In this, as in most affairs in life, skill, directed by practical knowledge will prove the victor.

OLD DESIGNER.

**A GOOD WORKMAN SHOULD RECEIVE
 GOOD WAGES.**

[Written for BALDWIN'S TEXTILE DESIGNER.]

IT is good policy to pay a good workman a fair price for his services. And it is an excellent thing to be able to voluntarily increase his wages as a recognition of improvement or growing efficiency in his work. A well paid laborer is inspired to greater exertions; and in this day of almost unlimited facilities for work and for educational advancement in industrial pursuits, there are no bounds to the possibilities for improvement in a workman. It is evident, however, that there is an exception to the foregoing remarks, in the case of a class of workmen who, in their character and habits, are low and degraded. Such men, being brutal in their instincts, do not grow better by better treatment, but rather worse, and the more pay they receive the greater will be their debauchery and intemperance. But, barring this class, we are justified in contending that a good day's pay for a good day's work is money well expended. A man who works day after day for barely sufficient pay to keep soul and body together becomes a mere machine, and instead of working to his full measure of efficiency will fall far short of it.

There is nothing that so prompts a man to make improvement and to do his best for his employer, as the hope of a reward commensurate with his exertions. A good laborer that sees his work is appreciated, and finds that as he becomes more valuable to his employer he receives enlarged remuneration for his services, will be spurred to do his best. Such a workman will not be so clamorous for an eight hour law as some, but will feel that every hour

expended in his work will not be so much loss, but that it will count him as gain in the long run. The great aim of most workmen is to have a comfortable home, to live well and to be able to lay up sufficient funds for a "rainy day." Perhaps the more aspiring think of that future time when they can emerge from the position of workmen to the more responsible one of manufacturer. Good wages is the road of progress for such men. The little hoardings of the year soon augment and shortly the stock in the saving's bank gives promise of the realization of the workmen's dream of aspiration. To cut off the wages in such a case is to destroy all hope in the man, and to check his progress and crush his ambition.

Trades-unions, as at present constituted, are great hindrances to the aspiring workman, because the tendency of these unions is to bring good and bad workmen on a level. In demanding a uniform rate of pay for wages, the manufacturer is practically excluded from favoring the men most deserving, or even if he may show such a favoritism, the fact that the workmen extort their wages through the coercive power of the union is apt to make him disinclined so to do. We are satisfied that thousands of good workmen, by joining their interests with the trades-unions, rob themselves; because were they independent enough to stand alone they would merit and receive the favor of the men for whom they labor. This is one of the unfortunate results of the establishment of these unions. But, notwithstanding the interference of these unions, and other hindrances, we think that it will pay to favor deserving workmen in every way possible, and especially by paying them the greatest amount that their services are worth and this is what most manufacturers are willing to do.

WORKINGMAN.

THE FINISHING ROOM—PROCESS OF OPERATIONS.

No. 9.

[Written for BALDWIN'S TEXTILE DESIGNER.]



WHEN the flocking is done wet, a considerable saving may be made in flocks by not removing the waste from the mill and putting on so much less on the next set, but on dry flocking this is not advisable.

Sometimes difficulties arise in fulling and one of these is the rolling or roping of the goods in the mill. There are several causes which may produce this trouble, one of which is the stock put in the listing. If this should happen to be of better fulling stock than the body of the fabric there is a good chance for trouble with rolling or roping.

Another cause is due to the laying out of the fabric, and this is mostly found on heavy goods. Generally the backing is coarser than the face filling and if the backing is put in pretty tight it is sure to cause rolling of the goods in the mill. When the two causes just mentioned are found to be the means of making the goods roll it is a good plan to take the goods out of the mill, straighten them out and run them in again the other end to, applying a little more soap and the trouble will cease. On the old style mills there is a chance of rolling by the rolls being out of true. Have them taken out and made true and everything will be all right.

Another difficulty which often presents itself is cockles. I have doubts as to the mill being the cause of cockles and I am of the opinion that the true cause of cockles is to be looked for further back. Some say that uneven soaping will produce them, but this I do not believe.

If they are made in the mill, I should say that a weak soap may be apt to produce them. A soap weak in point of alkali will not start the grease properly and uneven fulling will be the result, but whether this will tend to produce cockles, I should not like to say, never having had any trouble that way.

The mixing of filling, as will sometimes happen, seems to me more apt to produce cockles than other causes, also where odd batches of yarn are worked in now and then after laying around the mill for some time, cockles are likely to make their appearance, and if there is much trouble with cockles, a close investigation will show one or the other to be the cause of them. As far as the fuller is concerned, let him make his soap heavy and strong enough and apply it evenly, and all has been done which it is in his

power to do, to prevent cockles. If then they do appear be sure you have to look elsewhere for their origin.

Fulling on time is a practice upon which much has been said lately and which has met with considerable favor with finishers generally. While fulling on time is in some instances very desirable, there are cases where it is entirely out of the question. Still, what some would call fulling on time, is in my estimation, nothing more nor less than fulling out of time. The general practice adopted is somewhat after this fashion: All pieces of the same range, to full the same length of time, say two or three hours, or whatever the limit may be.

Now, for instance, taking a set of pieces 36 yards long and running them 3 hours would give each yard just 5 minutes under the rolls. Then taking the next set for instance, averaging 40 yards in length and running them 3 hours, would give each yard only $4\frac{1}{2}$ minutes under the rolls, or in the aggregate 20 minutes less than the other set, and also so much less than what it ought to have. On goods running only $1\frac{1}{2}$ or 2 hours, this discrepancy will hardly make any perceptible difference, but it is fair to presume that when goods full 6 hours or over, there is going to be a difference unless this is taken into account.

The true standard of running on time, it will readily be seen, must be based upon the running time of one yard and calculations must be made from that. For example; a set of 36 yard pieces runs 6 hours, to give a set of 45 yard pieces the same running time would require 45 times 10 minutes (the actual running time of one yard) or $7\frac{1}{2}$ hours, then both are worked exactly alike.

The next step in the process of operations is the washing of the goods after coming from the mill, and the treatment here depends upon the facilities afforded. One of two methods will have to be adopted; either the cold or warm process. If the appointments of the room are such that a plentiful supply of warm water can be had, this method is the most desirable: For washing or scouring soap a thin liquor is preferable; and 2 oz. of hard soap and $1\frac{1}{2}$ oz. of alkali make a fair scouring soap. As there are a great many mills that do not have the facilities for washing with warm water, I will take the cold process first. Run the goods in the washer and sew the ends together and start up, putting four pails of the liquor as described to each piece and run about 30 minutes. This will produce a good, rich lather and the goods must be watched to see if they do lather up in good shape, else they will not be clean. Then the draw-off gates are opened and at the same time a stream of water is let on to rinse them. The rinsing process is regulated as to time according to the supply of water at command. If the stream is in any way strong, 25 to 30 minutes will suffice to remove all traces of soap; but if the supply of water is small, the time must be increased. Then the water is shut off and after letting the piece drip off for about five minutes the draw-off gates are closed and the goods are ready for spec or burr dyeing.

If the facilities for washing with warm water will warrant the adoption of this method: It is well to commence part of it in the mill by adding just a trifle more soap immediately before taking the goods from the mill. Then run them in the washer, sew together, start up and apply warm water to the amount of about 4 pails to each cut and run about 20 minutes. Then draw off and after drawing off close gates and apply 3 pails of the liquor as described. This application of soap to the fabric after the heaviest dirt has been removed has a very softening effect upon the goods and can only be appreciated if the two processes are tried side by side.

REAUMUR.

INFLUENCE OF ANIMAL AND VEGETABLE OILS ON MACHINERY.

SINCE mineral oils have come into use for lubricating purposes their manufacture has reached such perfection that their general adoption, in preference to any animal or vegetable oil, is only a question of time. The advantage derived from the use of good mineral oil is so decided that every one who possesses any technical knowledge must be convinced of the same. Mineral oils are not fats, but hydro-carbons, and are obtained from the natural crude oil after the volatile or light oils, have been removed. Fats, however, whether animal or vegetable

whether in a fluid or solid state, contain not only hydro-carbon, but also oxygen, and represent a union of organic acids, called fat acids, with oxide of glyceryl. The greatest possible difference exists between mineral oils and those just mentioned—viz., animal and vegetable—they having, in fact, nothing in common except that they are both greasy to the touch. It is therefore unreasonable to ask what amount of fatty substance a mineral oil contains, because in its purest and most useful state, it should not contain any fatty matter. Mineral oils, of proper specific gravity, lubricate as effectually for a lengthened period of time as vegetable or animal oils do when but freshly applied. The lubricating power of mineral oils increases in proportion to their specific gravity; therefore, on all heavy machinery, where friction has to be overcome under great pressure, the heaviest oils should be used. Mineral oils which are properly manufactured, and consequently free from gum and acid, retain their lubricating power unchanged in all temperatures so long as there is any oil on the bearings. Vegetable or animal oils, on the contrary, however pure they may be, gradually lose their lubricating power, owing to their combination with the atmospheric oxygen, which causes them to become thick, gummy, and finally dry—thus necessitating the frequent and thorough cleaning of bearings and shafts. Mineral oils have no tendency to oxidate, and consequently do not gum or dry. Of course, we only speak here of the heavy oils, the oils of small Sp. gravity being unsuitable for lubricating purposes. Vegetable and animal oils chill and become solid with slight cold, while mineral oils remain liquid in the coldest weather, severe frost causing them to become somewhat thicker, but never solid. The principle reason, however, why animal and vegetable oils should be superseded by mineral is the destructive effect of the former on the iron parts of the machinery. There are various causes for this. As already stated, fats consist of a combination of fat acids and oxide of glyceryl. This combination, by the action of water or steam, becomes decomposed, setting free the oxide of glyceryl. It is in this manner, and based on this theory that stearine is manufactured. The same decomposition also commences, though slowly, in ordinary temperatures through contact with atmospheric moisture. The acids thus generated exercise a corroding influence on the iron, forming what is called a metal soap. The iron gradually becomes porous, and in time is destroyed. To this injurious influence all parts of the machinery are subjected, whether they come in contact with steam or not. The affinity of oxide of iron to the acids of fat, is so great that, chemically speaking, the iron corrodes immediately it is brought into contact with the fat.

"MANY MEN KNOW MORE THAN ONE MAN."

[Written for BALDWIN'S TEXTILE DESIGNER.]

SOME years since one of our New England colleges had the walks about its grounds concreted. As the work was extensive requiring many days for its completion, the beauty of the grounds, the artistic students thought, was not improved by the not very ornamental implements required to do the work, and to one of them a huge stone roller, there was a still greater objection; for college boys do not all retire with the sun nor "rise with the lark as jocund and as gay," and "if it should happen" they said "that any of our number while returning from the evening prayer-meeting or elsewhere should meet so unthinking and unyielding a substance as that cylinder-formed implement the resultant sensation might be very poignant and possibly severely injure some embryonic Milton, whose life's work would be impaired therefrom and the nation at some important crisis in her history, and perhaps the world at large suffer irreparable loss."

It will not surprise the reader to be told that some of the boys had read Kent and Locke to some profit—had learned how to think and also how to put noble thoughts into action, and as all things ought to be made to serve some purpose, they planned it that a good deed had better be done in a quiet, unobtrusive manner, by dropping the afore mentioned cylinder-formed implement into an unused well at an hour when "naught but ghosts do walk the earth."

Unfortunately, as the boys used to think, this college, like many another one had a man who prided himself on being a stern

disciplinarian—a cold, unsympathetic sort of figure head, who while he believed just a little in "muscular Christianity," thought perhaps there might be such a thing as spending too much time on the campus and had even insinuated that the world had been blessed with some men of fair ability who never even won a score on a base ball ground.

The president went to work in a quiet way and soon had sufficient evidence to warrant a prosecution of the guilty parties; believing by so doing he would best serve the institution (like a loyal son) and indirectly do a good turn to those who needed to be taught that the law was made for all classes in society and that the educated are especially under stern obligations to set an example of good and orderly citizenship to the masses.

As it seemed best that the case should not be brought before the court in the name of the college, the president wrote a brief note to the man who had the work in charge to call, when the matter was laid before him with a request to prosecute at once, and the college would cheerfully bear the expense.

The man had been once a student of the same institution and after expressing some sympathy for the boys, declined to move at all in the matter and then began a display on the part of the president of that which is quite natural to some but which can be acquired by most men to a greater or a lesser extent of how to manage men.

Here was a president of a college naturally austere—one that men who knew him not would meet on the street and speak of him as having a forbidding and unapproachable look—one that his pupils respected and feared rather than loved.

One of the president's studies had been human nature and he turned it to a good account and the man was approached in a very affable manner and soon felt deeply impressed that the good name of the college was at stake and he was bound by a stern sense of duty to respond with entire willingness to the call that had just been made upon him.

It is interesting for one who has been long connected with a woolen mill to call to mind what a difference has been shown in the ability to manage men by superintendents.

Some of them, put in any amount of hard work, are always in a state of unrest and seem to keep their overseers disturbed all the time, and yet the mill never seems to get anywhere as to dividends. While others just feel that it is best to run the mill with as little friction as possible among the important hands that they may not waste their strength in ways that will not tell on the desired result.

The writer calls to mind a very notable case where a mill was run successfully on fancy cassimeres by a superintendent who had an easy time of it. He managed his overseers with the utmost ease and everything was harmonious about the mill. If new machines were required, his word obtained them for his employer had confidence in him. But when a change was made, the new man undertook to run, as one might say, the whole mill. Regarded himself as more than the equal in each room of the man who had made a specialty of that particular branch and in that mill had been employed for years. The outcome was the mill did not succeed and the want of success made each room fall behind in keeping up with other mills as to modern machines which brought on an embarrassing state of affairs.

In the early California days Mark Twain makes one of his odd characters say to a minister of whom he desired service at the grave of a friend; "I like you, and I'll lick any man that don't." It may be expressed in a little different way here in New England, but there must be some of the same kindly feeling felt by overseers in mills for their superintendent to have things run smoothly, and that man who can prove the best general in knowing how to manage his men will have the inside track of those who take no special pains to prepare themselves for work in that direction.

A woolen mill should be run with the thought of the proverb: "Many men know more than one man."

Men capable of holding positions of trust in mills as well as elsewhere, are apt to have some individuality and will work the better by having it respected, and superintendents who know how to manage men find no wrong done to any moral or Christian sen-

timent by being at times a little poetic and humoring perhaps certain peculiarities of which they do not care to be possessed themselves.

So long as a room is run economically and its products satisfactory there may be possibly found some things quite as important to be looked after as its manager.

Uncle Toby found room enough in the world for the fly as well as himself, and there should be room in a mill for some little difference of opinion as to methods when the result is all that could be expected. "So you said Emerson would have everybody like yourself. Don't do it; one is enough."

Some men may be managed by guiding; others by being let much alone and a superintendent should be able to read well his men putting in his own oar at times and then again be noted for a "wise and masterly inactivity."

FAIRNESS.

LAMENTATIONS OF "THE BOSS MANUFACTURER" REVIEWED BY AN EMPLOYEE.

[Written for BALDWIN'S TEXTILE DESIGNER.]

IT is a long time since I have read anything which amused me more and at the same time struck me with its ridiculous lamentations as "MANUFACTURER'S" article on the first page of February issue. It seems the man has taken about the poorest specimen of a manufacturer, and has thrown him in contact with the worst lot of employees to be found. Under such circumstances it is no wonder that he thinks he has reason to crave the sympathies of the readers of the TEXTILE DESIGNER.

Now what kind of a manufacturer would you call the man that figures on a lot of goods and finds when he has got them out that he has figured in only half enough stock? Can such a man be justly held up as a comparison between employer and employee or even for the purpose of arousing sympathy for the poor manufacturer? It is no wonder that a manufacturer of that stamp has very little time to devote to the comforts of his family, and I verily believe that he would be better off if he retired and left the field to men better able to fill it.

On the other hand, there is little doubt that many employees, especially the more ignorant class, look upon the employer as "a tyrant, an oppressor, a villain or a schemer, against whose arts, and wiles and inherent rascality his employees must be always on the alert," but certainly, there must be a reason for such conduct and I verily believe that instances to warrant such assumptions are not wanting.

If "MANUFACTURER" would study the pages of such journals as the TEXTILE DESIGNER carefully he would in a short time come to the conclusion that all employers are not of the stamp as illustrated by him and that the majority of employees would be only too glad to sustain a man and put him by their exertions in a position where he would not be obliged to seek for sympathy through the columns of textile journals. But the trouble is that man of the kind, one would be led to believe "MANUFACTURER" is a sample, are not willing to profit by the knowledge of others.

The true employee recognizes that the interest of his employer and himself are identical and as soon as the employer takes the same view there will be little trouble between the two.

R.

"THE BOSS MANUFACTURER" HAS A SYMPATHIZER.

[Written for BALDWIN'S TEXTILE DESIGNER.]

THE writer had a very enjoyable time when first he read the article in the February number of the TEXTILE DESIGNER, under the heading of "The Boss Manufacturer," and he has read it several times since with many a smile at the experience related and the good hits made therein.

Since operatives in mills so largely outnumber manufacturers and their minds are freer from care when out of the mill it is not surprising that we hear from the representatives of the former class much oftener than we do from those who can write from a deeper experience and knowledge of manufacturing than the operative can, which makes an article like the one under consideration all the more readable, not only for its uncommonness, but also as

coming from one who writes of those things about which, he with men engaged in the same pursuit are largely interested.

Some one has said, "a road is known by going over it," and certainly a woolen manufacturer is engaged in a business where there is too much capital invested to admit of his travelling far without noting many things by the way about which he must be able to talk and write in an intelligent and interesting manner.

The writer sometimes meets a venerable looking man who was some years ago a woolen manufacturer in Pascoag, R. I., and I am sure he would be pleased to shake hands with "The Boss Manufacturer," for they have passed through similar experiences in the woolen business.

One of the funny things that happened to my venerable friend of which he loves to tell as showing how easy it is to calculate on what is best to do in making woolen goods:

At one time the mill was making a certain style which took so well from its being a novelty that it was difficult to keep up with the orders that kept coming in, and the buyers, notwithstanding there was a handsome profit on the goods, showed no disposition to ask for concessions; a general area of good feeling seemed to be reigning in the mill and it was a pleasure for the operatives to see the "old man" (as the boss is sometimes called even if his years do not warrant the name) around. But all at once there was a change at a time when there were many pieces in process of manufacture of the style which had sold so readily. The price was reduced which had but little effect on the trade, and sometime after this they had to be sold at a very great reduction; some of them even for less than cost.

Some fifteen years ago the writer thought he would be part of a "boss" and invested \$1,500 in mill stock about which he said but little for fear his friends would be looking upon him as "a bloated bond holder."

His thoughts run so much on dividends that it was hard for him to appear natural; and when the certificate of stock came, two more important persons than wife and self it would have been not an easy matter to have found. It had been made out so far as it was necessary to write it by a most excellent penman, and the flourish with which the writer's name had been written rendered the paper all the more beautiful, even if nothing was added to its marketable value.

Once looking at the paper which told the story of fifteen shares of stock did not seem to satisfy, for frequently the writer would sit down by the side of the lady of the house to examine again a paper, the like of which had not been seen in the house before, and it seemed likely to be "a thing of beauty and a joy" for an indefinite length of time.

The writer did not think it well to retire at once from the active duties of life but it was a something which now and then was in his mind as he thought of the large dividends which would be coming in after awhile, for as a mill operative he had fully made up his mind that mills were run to make money either for individual owners or for stock holders.

In school-boy days the question used to be often up for discussion as to whether there was "more pleasure in anticipation than in realization." I am sure if the writer had to decide from his experience as a stock holder in a mill he would vote two to one on the former for he learned by long waiting the meaning of "Hope deferred maketh the heart sick;" which might have been followed with "Man is born to trouble as the sparks to fly upward."

Business not being brisk not only was the dividends passed, but the stock depreciated and it was far from exhilarating to hear of it on the market begging for purchasers when offered a good deal below par.

The writer held his stock for some years receiving but one dividend, and finally sold it for much less than he gave.

His little experience has made him perhaps a more careful observer of mill stock and their dividends than he otherwise would have been, and he long ago came to the conclusion that "all is not gold that glitters;" and there are few woolen or cotton mills that are able year after year to pay large dividends.

New machinery has to be purchased—poor trade or a fire gives the mill a set back; so that in the long run most of men

think a regular saving's bank dividend a rather sure and desirable thing.

If there is now and then a spurt in business let the manufacturer enjoy it for he has a large capital invested in an enterprise which he may not be able to find some morning and should he prosper long there is, in these latter days, with most employers a thought of the

OPERATIVE.

THE COCHECO WOOLEN MANUFACTURING COMPANY—EAST ROCHESTER, N. H.

IN 1862 the No. 1 mill of the present plant was erected by Stephen Shorey. John Hall hired the same for a term of 10 years, and placed therein four sets of woolen machinery.

In November, 1862 the machinery was put in the mill, the first wool carded in December, the first loom started January 1, 1863, and in February the first finished goods sent to market. At this time Samuel B. Rindge of the firm of Parker, Wilder & Co., suggested to Mr. Hall the idea of forming a stock company. Mr. Hall took the matter into consideration, and after consultation with N. V. Whitehouse of Gonic, it was decided to carry Mr. Rindge's suggestion into effect, and accordingly a company was formed, consisting of John Hall, N. V. Whitehouse, S. B. Rindge, C. S. Whitehouse, Larkin Harrington and Jonathan Overand. On petition of the above named gentlemen to the legislature, an act of incorporation was granted to carry on the woolen business under the name of the Cochecho Woolen Manufacturing Company. Their first meeting was held in the little old counting room on July 30, 1863, to accept the act of incorporation, which was passed June 24, and to adopt by-laws, elect officers, etc. N. V. Whitehouse, John Hall, and S. B. Rindge were chosen directors; Benjamin Phipps, of the firm of Wilder, Parker & Co., treasurer; Larkin Harrington, clerk.

In 1864 the company built No. 2 mill of brick, and put in four more sets of machinery, which were put in operation in January, 1865. In 1868 they fitted up the saw mill and chair factory which they bought of Stephen Shorey in 1863, and added still another four sets of machinery. This is known as No. 3 mill, and the work carried on is carding, spinning and weaving, the finishing being done at No. 2 mill. At the head of the canal is also situated the box factory and planing mill. This is used for making the boxes or cases in which the goods are shipped. Since No. 3 mill was put in operation three more sets of machinery have been placed in No. 1 and 2 mills, making 18 sets in all. One hundred and six broad looms are employed to do the weaving. On the class of goods now manufactured about 9,000 pounds of finished product are turned off weekly.

John Hall held the position of agent from the organization of the company until July, 1875, when he resigned, and C. S. Whitehouse was appointed in his place. During the time Mr. Whitehouse was agent many improvements were made about the grounds and buildings. Mr. Hall went abroad and was gone five years. On his return, May 5, 1880, he was again appointed agent, Mr. Whitehouse having resigned sometime previous. Mr. Hall held the position this time but two years, resigning July 31, 1882, and Charles E. Manson was appointed to that place, having served two years as superintendent. Thomas H. Gotts was superintendent under Mr. Manson until January 1, 1884, at which time Mr. Everett M. Sinclair was elected to that position which he still holds. In 1884 the company built the new brick counting room which they now occupy, and in 1886 the large brick weaving shed was erected. There are six persons now employed by the company whose names appeared on the first pay roll in January, 1863, and are as follows: Francis Gotts, Charles A. Jones, Clara Gotts, Richard Boocock, Lavina (Knipe) Smith, Mary J. Rogers. Francis Gotts and Charles A. Jones have never left the employ of the company from that time to this, and the others have only been out for a short time.

The first pay roll contained 67 names and amounted to \$1,000 for a month. It now contains 225 names, and for the same length of time amounts to \$6,700. The first overseers were as follows: Carding, Thomas Ingham; spinning, James G. Jones; weaving, Jonathan Overand; dyeing, Charles F. Parker; finishing, John Acworth; wool scouring, Francis Gotts. At the present time

they are as follows: Carding, W. H. Adams and W. H. Loud; spinning, J. R. Agnew and Corydon Sleeper; weaving, T. S. Sinclair and G. E. Manson; finishing, F. R. Bean; dyeing, J. O'Donnell; dressing, E. H. Davis; sorting, Francis Gotts; picking, Andrew McElroy; repairs, Joy W. Barker. On January 1, 1887, the Rindge Relief Fund was established. This was the generous gift of Frederic H. Rindge, son of S. B. Rindge, who on the date above mentioned placed in the hands of three trustees selected by the operatives the sum of \$5,000, with a promise to add to this the sum of \$1,000 annually, so long as the conditions mentioned in a circular were adhered to. The conditions were that all operatives in the employ of the company at that time, and who from that time should lead virtuous, temperate, and industrious lives, and from any cause should be unable to earn the necessities of life, should receive benefits from the fund. The trustees elected at that time were F. W. Corson, T. S. Sinclair, and Thomas Ingham. In the summer of 1888 the company fitted up their old counting room for a reading room and library, and gave the free use of the same, furnishing fuel for heating, so long as it should be used for the purpose above mentioned. The counting room was built in 1866, shortly after No. 2 mill was completed, and when the new brick office was built in 1884, the old one was hauled to Main street opposite the Glendon House, and contains as fine a reading room and library as is often found in larger places. It is supported by the public. The company have eight single tenements, 13 double, and two blocks containing eight and four tenements each.

[The above is an abstract from an article which appeared in a recent number of the *Rochester Leader*.—ED.]

"MANY A MICKLE MAKES A MUCKLE."

[Written for BALDWIN'S TEXTILE DESIGNER.]

IN taking up the pen to discuss matters relating to wool carding, I am well aware that it would be impossible for any individual to lay down prescribed rules governing the preparation and treatment of stock, the adjustment of carding machines, etc., that would in their entirety receive the unanimous approval of that particular set of men known as wool carders. Again, on the other hand, carding in its main principles has been so thoroughly discussed, not only in the pages of many excellent works extant, but also through the columns of various textile papers that it is a difficult task to undertake to write anything regarding the subject, and at the same time avoid a repetition of that which has already been written. Notwithstanding these facts it is safe to venture the assertion that in no other branch of textile work is there such a diversity of opinion displayed among those employed in its field than is manifested by those employed in the vocation of wool carding concerning different technicalities of their work. Having for many years been a reader of textile papers, and a most interested reader of those contributions to their columns from the pens of my fellow-craftsmen, and having noted the exhaustive treatment the theme "carding" has been subjected to by their sharp-pointed pens, I have for the present time decided not to attempt any elaborate essay upon the subject of carding, but will confine myself to a train of thought suggested by a remark that I lately heard proceed from the mouth of a young man employed as second hand in the carding room of a woolen factory. "Taint anything to card wool after one has learned how to cover, grind and set cards." The sentiment expressed in the foregoing apostrophized lines defines an idea that I have found to be quite common with young men who aspire to be overseers and who, after becoming somewhat familiar with the methods of covering, grinding, etc., are confident that they possess all the necessary qualifications that a good overseer should be required to possess. While it is essentially requisite to be acquainted with the mode of procedures in covering, grinding and adjusting carding machines to allow one to honestly claim any ability at all to manage a carding department, these technicalities of the calling are but the rudimentary principles of the carding processes, a knowledge of which is easily obtained when compared with the time and experience that is necessary to teach the new-beginner that learning to look after "little things" involved in the carding processes is paramount to all

things else in the carding room. It is not probable that any overseer can, however high he may be rated in his calling, preside over his room, to supervise all the mechanical work therein, to keep in good discipline its full complement of help, to do all this and perhaps more, and do it so well that not an atom of work performed will be otherwise than perfect. To confess to such a belief would be tantamount to admitting that man has power to make himself ubiquitous as well as omniscient. It is however within the province of every overseer to do the best that he can under the circumstances and conditions surrounding him. In doing this they are doing all that can be expected of them. To insure the successful management of the carding department, prudence demands that the carder shall overlook the manipulation of the stock from the moment that it comes under his control. Commencing with the picker room, the first care should be to ascertain in what condition the wool arrives from the dye house, to note whether or not the natural softness and elasticity of the fibre has been injured by the unwise application of some chemical or ingredient common in use in scouring or dyeing departments. The next precaution should be that the machines in the picker room are in good condition to receive the stock, and following this, that his stock be mixed and oiled upon a system that has his full approval, and that system proving satisfactory, never to permit it to be abrogated by the negligence of old hands, or the inexperience of new ones. All through the subsequent stages of the carding process the same care must be bestowed on all the details of stock manipulation—never slighting "little things" such as proper tension of belts, temperature of room, and a thousand and one little emergencies that confront the carder when least expected; and not until he has demonstrated his ability to successfully combat them, can he feel assured of success in his calling. A proper appreciation of the fact that "many a mickle makes a muckle" will go a long way toward insuring success in card-room management.

WOOL-CARDER.

"R'S" ARGUMENT ON PROHIBITION DISSECTED.

[Written for BALDWIN'S TEXTILE DESIGNER.]

I AM a total abstainer, so far as the use of alcoholic liquor as a beverage is concerned, and as such, believing it to be for the best interest of the rest of humanity to be as I am, I accept most opportunities to ventilate my opinion on this very important subject. I wrote an article for the June issue headed "Don't be influenced by King Bacchus." I did not expect to refer to the subject again in this paper, but upon reading "R's" communication in January issue, I felt that a few more words from me might be admissible.

The people, as represented in state and national government, have the unquestionable right to not only restrain, but also to prohibit any act of any nature whatever which abridges or endangers their prosperity and happiness. Now I have no doubt but that "R" will agree with me that the drinking habit endangers the prosperity and happiness of our people. I also believe that he will acquiesce in the opinion that they (the people) have the right to prohibit its use for such a purpose. He admits their right to restrict its use and as a natural sequence, he cannot avoid the conclusion that they may prohibit if they so elect. It only remains then to convince them of their danger in order that they shall take steps for its ultimate banishment. We have progressed greatly since the days when alcoholic liquors were considered a necessary part of a "raising," a "logging bee," or "haying," and in my opinion the time will come when it will not be considered in good form to use them as a beverage. I believe the drinking habit to be the greatest stumbling-block which is in the way of our prosperity as a nation.

Let us look at "R's" arguments. He says: "Temperance is certainly antagonistic to prohibition, for the latter is directly contrary to the former." Friend "R" has doubtless discovered ere this, that this is somewhat circular in its reasoning. If this is good logic how can a temperate man be a prohibitionist? Temperance, according to the dictionary, means the moderate indulgence of the appetite, while prohibition is to prohibit or to refrain from the use of. "R" further says: "Prohibition is such an extreme in one phase of temperance, that well-meaning and think-

ing men are unable to reconcile themselves to its doctrines." Now if friend "R" had inserted the words some before well-meaning, I could not have found fault with this statement, but as it is written, it is not correct. He surely would not wish to reflect on such men as Neal Dow, Senator Henry W. Blair, General Fisk, late candidate of the third or Prohibition party, Nelson Dingley, jr., Ex-Governor of Maine, now member of Congress, Hon Wm. P. Frye, Senator from Maine; and of ladies:—Mrs. J. Ellen Foster, of Iowa, Frances P. Willard; and scores of others of both sexes whose hearts are as surely right and whose energies are as steadily directed to prohibition as the magnetic needle is true to its pole. He will, no doubt, be willing to recant this expression. It will not bear the full light of sober thought. Further on, I find this assertion: "History has shown and recent history at that, that it is a futile attempt to coerce a people into being good." An example to prove this would have been admissible at this juncture. The object of the penalties attached to our restrictive and prohibitive laws are the prevention of crime by compelling (coercing) good citizens to remain so through fear of the consequences of an infraction and the coercion of law-breakers into good citizens because of the punishment they suffer.

Education then is the weapon which the true prohibitionist will employ to rid the country of the drink traffic. Because his temperate friend will not take the advanced ground he does, he will not belabor him with expletives which serve only to arouse the passions but will reason with him and by friendly argument try to turn him from his lethargy. He will also invite him up higher.

There is no safe ground but total abstinence. "All other ground is sinking sand." Physicians are using alcohol in its various forms less and less as the world grows older. (See the report of the Homeopathic Hospital at Philadelphia.)

Given a prohibitory law with an intelligent, educated citizenship back of it and I will not tremble for its future.

D.

MISCELLANEOUS WEAVES.

(Prepared for BALDWIN'S TEXTILE DESIGNER.)

BY INTERESTED DESIGNERS AND WEAVERS.

THIS is a very pretty stripe, with sort of a diagonal running through the stripe.

WARP PATTERN.

1 6½	run dark olive, and 8 run white, D. & T.	} 12 threads..
1 4½	run black.	
1 6½	run dark olive, and 8 run white, D. & T.	} 12 threads.
15 4½	run black.	
1 6½	run black, and 8 run white, D. & T.	} 12 threads.
1 4½	run black.	
1 6½	run black, and 8 run white, D. & T.	} 12 threads.
15 4½	run black.	

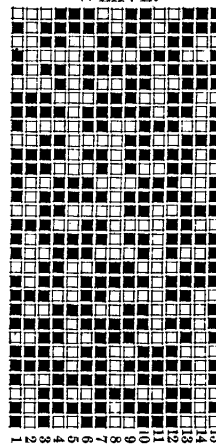
54 threads in pattern; 3888 ends in the warp. No. 10 reed, 6, 5, 5, 5, 6 to dent; 72 inches wide.

FILLING PATTERN.

2 5 run, dark blue.
1 2½ run, black backing.

3 threads in pattern; 68 picks.

WEAVE.

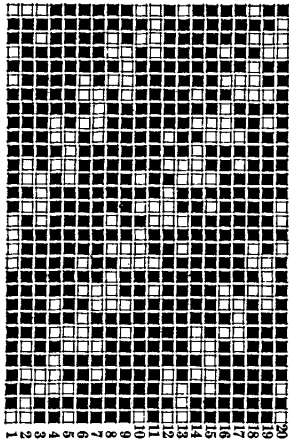


A diagonal for worsted coatings. Warp 6,800 ends of fine black, dark blue, or dark brown. This would produce a novel stripe for trouserings by using a worsted and silk twist in warp.

FILLING PATTERN.

- 2 fine black worsted.
- 1 3/4 run black backing.
- 3 threads in pattern; 156 picks.

WEAVE.

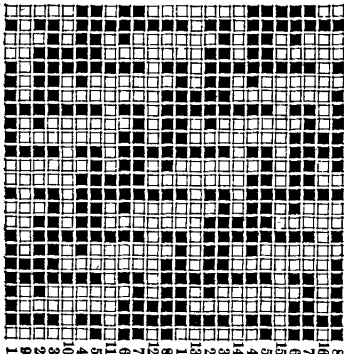


L. A.

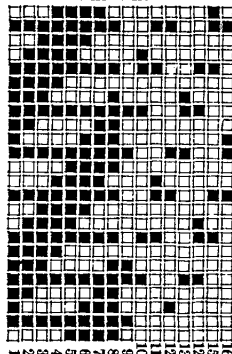
[We are obliged to leave out one weave sent in by "L. A." owing to its being a large Jacquard pattern requiring 56 harnesses and 168 bars; we could not get the length of it on the page. A sample accompanying the same shows it to be a broad diagonal wale for worsted coatings.—ED.]

An 8-harness worsted face with a 4-harness twill back.

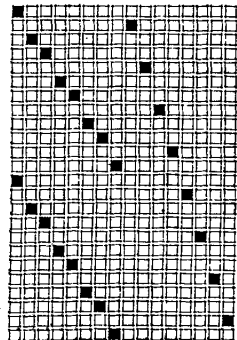
PICKOUT.



WEAVE.

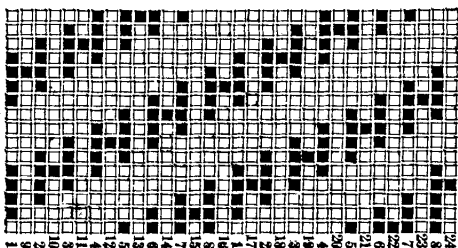


DRAFT.

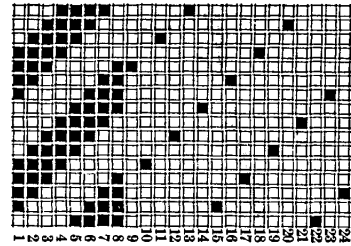


- Warp 6336 threads { 4224 worsted 2-42's
- { 2112 wool, 4 run.
- 16 reed, 6 threads in a dent.
- 64 inches in loom.
- 100 picks per inch.
- Finish, 56 inches.
- Dressing { 1 2-42's, worsted.
- & { 1 4 run wool.
- Weaving. { 1 2-42's, worsted.

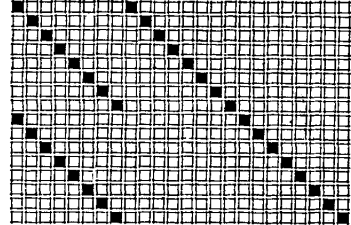
PICKOUT.



WEAVE.



DRAFT.



- Warp, 8192 threads, { 4096 worsted 2-42's,
- { 4096 wool 4 run.

- 16 reed, 8 in a dent.
- 70 picks per inch, single 28 worsted.
- Finish 56 inches.

Dressing of warp, 1 worsted 2-42's, 1 wool 4 run.

HUDDERSFIELD.

THE CRAZY QUILT.

It will perhaps, be gratifying to many persons to learn that the crazy quilt is a thing of the past. The legion of insane bed-quilts that have been the aim in life of sewing societies and invalid women, and have figured in church fairs, missionary donations and country expositions for a few years back, have at last joined the silent throng of sweet memories, and along with their "log cabin" predecessors, the alabaster vases and cone baskets of our childhood, will soon be numbered with the semi-antique; they will be relegated to the garret with the macreme table lambrquin the tidy and worsted motto and countless other questionable indications of a perverted feminine taste.

The intentions of the inventor of this affair were good; in her bosom blossomed the flower of economy and thrift; stray bits of silk—stray bits of thread—stray bits of time—the whole a fascinating diagram, a monument to memory, a memorial sacred to the past—to gowns and dear ones long since laid peacefully to rest in the ashes of the past.

When, lo! Fashion winked at folly, who grasped it in her bill and flew, sowing it broadcast.

What is the result?

Nothing too sacred to be sacrificed at the shrine of the crazy quilt.

Tapestries, furniture fabrics, altar cloths; aye, honor, truth, principle, cravats, all have gone the way of this fell destroyer of masculine comfort and human happiness.

Table spreads, tidies, scarfs, banners, pin cushions, sofa pillows, chair seats, shopping bags, all fearfully and wonderfully designed and executed; terror-strikers to the uncultivated taste of the unappreciative, have been flaunted in the face of man regardless.

But now the silk counter is no longer besieged for samples; stern-hearted man has taken the padlock off cravats and his hat lining, a woman pines for something that will produce headache and hysteria with greater speed than the loved crazy patch-work.

In country fairs they still hold good; missionaries and cannibals are receiving them in foreign lands; and on the books of the Recording Angel they are registered:

"To the memory of women who sold their souls for bits of satin: women who expended the last penny in the domestic treasury for storks in applique; women who made fancy stitches the study of a life-time; who begged, bought, stole, or otherwise surreptitiously acquired silks to cut up and sew together again, to embroider, hand-paint, applique or otherwise deface in the service of the crazy quilt; nerves, brains, health happiness—all offered at the shrine of this horrible and malignant affair."



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To prevent any misunderstanding, all Articles sent to Baldwin's Textile Designer for publication will be considered as offered gratuitously, unless it is stated explicitly that remuneration is expected.
 Readers are invited to send us items of interest to the Textile Trades.
 This office is an agency for the Patterns of E. Lehmann, Paris, France. Latest English and French Novelties in fabrics of all kinds. Orders for these samples received here.

Entered at the Brasher Falls post-office as second-class matter.

BRASHER FALLS, N. Y., MARCH, 1889.

LIFE is a leaf of paper white,
 Whereon each one of us may write
 His word or two; and then comes night.
 Though thou have time
 But for a line, be that sublime.

IF the above lines were more generally heeded by the foremen of our mills there would be more of that friendly and brotherly-love feeling among all concerned. Many a path that looks dark and crooked to the beginner would be made light and straight, while he who travels therein would feel under everlasting obligation to the foreman so enlightening his way. We are all human beings made by God's hand and placed here on His foot-stool to help, aid, and assist each other; therefore, all should be willing to stretch forth their hands and assist their fellow-craftsmen either by word, deed, or action which is the true way of rising to a higher standing in their occupation, both practically and theoretically. If these words will reach the hearts of those for whom they are intended, we trust that some good may be derived therefrom. The fact is, many of our practical mill-men—who are well qualified and able writers—are too apt to estimate their services, in this respect, too high; they seem to think that the publisher running a Trade Journal, devoted to the interests of their calling, has his coffer filled with gold ready to be handed out in any quantity for each and every hand's turn done him. To be sure, some of those men are more advanced than others, and are so fluent with the pen that their productions are eagerly sought after by publishers; and to this class of contributors it is but just that they should receive a fair remuneration for such labor: Even those, however, ought to be willing to give answers more freely to questions of interest in textile manufacturing. There is another class who, after seeing two or three of their articles in print, are inclined to believe their productions equal to the best and expect to receive the same remuneration, when in fact much time has to be spent on them to have

the same read smoothly; while on the former class the compositor can follow copy as closely as print. Then, there is still another class, who are passably good at writing, that expect to be placed on the "free list" of every new textile journal whether they have ever done anything for it, or even ever expect to. Again, there is yet another class which include contributors of all grades, who are always ready and willing to lend a helping-hand in the sustaining of trade journals, and expect nothing more in return than what can be rendered them through the journal and its editor: This class has the unbounded respect of the editors who are always found ready to assist in any way lying in their power. We will now refer to all of the above classes and ask: Do not most of you owe your present high positions to some one or more of textile journals? Has not this class of journals done more in promoting the interest of your welfare than that of any other similar amount of labor or money expended by you? and are not many of you under greater obligation to them than they get credit for? Twenty-five years ago an American textile journal was unknown. Overseers of that time were not, generally speaking, as well advanced in their various departments as those of the present day. Is it not then owing to, a great extent, the promulgation of knowledge through this class of journals which have since come into the field of textile industry? Certainly it is, and it cannot rightly be denied. These facts should constantly be bourn in mind by those who are never willing to assist in the promulgation of knowledge, but are always ready to receive. Reader, do you ever stop to think of these facts? Do you ever ask yourself if you are doing your share toward guiding the beginner in the way he should go? Do YOU ever look back to the time when you were struggling to rise and eagerly sought for any information that would aid YOU? We could, if we choose to, present many other stronger facts—all of which we have come in contact with—for consideration, but deem this sufficient for all to grasp our meaning: suffice it to say, however, that these lines are written with malice toward none, but good will to all, in hopes that good may result therefrom; ever bearing in remembrance that, he—

WHO reads and learns,
 But tells not what he knows,
 Is one who plods and plows,
 But never sows.

* * *

"It is needless for me to say that I am exceedingly well pleased with the TEXTILE DESIGNER, for certainly no one who knows how to appreciate worth could be otherwise. I value it so much that I am having the first volume bound which I have never done with any other paper, and I have taken many of the kind. Enclosed find \$2.00 for the present year's subscription." This is a specimen of many similar letters being continually received at this office. All give their praise in favor of the TEXTILE DESIGNER.

* * *

WE acknowledge receipt of a handsome picture, size 6x9, of the Cocheo Manufacturing Company's Plant, East Rochester, N. H., presented us by their superintendent, E. M. Sinclair, to whom we extend many thanks. We would be pleased to have others do likewise for the purpose of framing and hanging in our office.

* * *

THE department of "Miscellaneous weaves" is getting to be really interesting, and is deserving of an engraved heading which we propose to come out with in the April issue; therefore don't be bashful, boys, but lend a hand in that department; you will never regret it.

* * *

WE would be pleased to receive a cabinet photograph, as before mentioned, from any of our readers to whom we will credit three months' subscription. \$1.50 and your photograph (cabinet), will pay for the paper a year. Give occupation, where and when born.

* * *

WE hardly know whether to insert an obituary notice for our Philadelphia correspondent or not; but we do know that we have been unable to get a line from him for over two months.

THERE are 4,000 silk weavers in the nine silk mills of West Hoboken, Union Hill, North Bergen Township and Union Township, N. J. There is dissatisfaction among them on account of the decline in wages which has been in progress for years past, and which is attributed to the introduction of labor saving machinery, the illegal employment of children, the importation of foreign silk weavers, and other causes. They say that the average weekly wages of skilled weavers are not over \$9, or one-third less than in former years. Three years ago there was a strike in the silk mills, but it brought no relief to the complainants.

FINISH WHAT YOU BEGIN.

THOUSANDS start well, but never finish one thing at a time. They have a dozen things on hand, and no one completed. Time is wasted on unfinished work. Always finish what you begin. One thing finished is worth a hundred half done. The completion of an undertaking yields more pleasure and more profit than dozens of plans. The man who is always planing or scheming is rarely, if ever, successful. He often furnishes ideas for others, who go persistently to work and finish what his ideas suggested. "That was my idea—my plan," we frequently hear someone say, but the man who carried it out was the one who benefited himself and others. Do not begin what you cannot finish. What you undertake to do—do, and reap the reward of your own ideas and skill. Reader, follow this advice and in due course of time you will—generally speaking—find yourself better off both practically and financially.

All who find this paragraph in their paper, marked with an index hand, can take it for granted that their subscription expires with the present number. We respectfully request the renewal of your subscription by remitting \$2.00 for one year, or \$1.00 for six months at your earliest convenience. Prompt payments encourage the publisher, and will enable him to add new features to the journal. Please bear this in mind, and don't forget the "hand."

Queries & Replies.

This department is for the interchange of knowledge, with and between our readers, on questions relating to textile manufacturing. We cordially invite all to take part in asking and answering questions through this department. Correspondents must give their name and address, also *nom de plume* if any.

[ERRATA:—In the February number, query No. 20 should have been No. 22.—ED.]

QUERIES.

No. 23.—Mr. Editor, please settle a dispute by answering the following question through your valuable paper. Question: If a warp is laid 80 inches wide in a No. 18 reed, 1 thread in first dent, 5 in second, 4 in third, 3 in fourth, and 5 in the fifth dent, how many threads are there in an inch, and how many in the warp? A friend of mine says there are 57 threads per inch and 4,560 in the warp; I claim there are 64 4-5 threads per inch and 5,184 in the warp. Who is right, and how do you figure the same?

BARNABY MILL WEAVER.

No. 24.—We wish to make a class of goods called common "coarse grays," the same to weigh, when finished, 13 oz. Will some reader of the TEXTILE DESIGNER inform us how the same are made, giving the full particulars? and oblige, C. & M.

REPLIES.

No. 23.—We figure in this case as follows: $1+5+4+3+5=18$ threads in 5 dents; $18\div 5=3\frac{3}{5}$ threads in each dent. There being 18 dents per inch, multiply this by the average threads per dent and the result is the number of threads per inch, thus: $18\times 3\frac{3}{5}=64\frac{4}{5}$ threads per inch. Now this multiplied by inches in width, 80, will give total number of threads in the warp, thus: $64\frac{4}{5}\times 80=5,184$.—ED.

PORTRAIT AND BIOGRAPHICAL DEPARTMENT.

This department is for Manufacturers, Agents, Superintendents, Designers, Overseers, and all persons engaged in the advancement of the Textile Industries. It offers to them a medium through which they can learn each others' Textile History, will promote the welfare of those who appear therein, and, be both interesting and instructive to all engaged in textile manufacturing.

12 PORTRAITS WITH BIOGRAPHIES WERE PUBLISHED IN THIS DEPARTMENT, VOL. I.

Names of those whose Portraits and Biographies have appeared in this department of Vol. II.

J. M. Masson, Superintendent, Peterborough, Ont. C. R. Pollard, Weaver and Designer, Somersville, Conn.

Extra copies of this issue may be had at 15 cents each. This price will be strictly adhered to for any number of copies, and to all.

[Engraved expressly for BALDWIN'S TEXTILE DESIGNER.]



W. H. MARTIN.

THE subject of this sketch, W. H. Martin, was born December 2, 1842, in Glover, Vt. He began working in a woolen mill at the age of 13 years for Dow, Nay & Co., of Hinesburgh, Vt., and worked as an apprentice until 20 years of age when he was given the management of the weaving room. This position he held until March 1868 when the mill burned down.

In January 1869, he entered into partnership with I. Dow, (one of the old firm) and built a new mill on the site of the one burned. In 1874 sold out his interest; in 1875 moved to Houlton, Me., as superintendent of the Houlton Woolen Mills, W. H. Esty, proprietor. From here he went to Fairfax, Vt., in 1876 as superintendent of the Lamoille Mills for Gaut & Shepardson, with whom he remained five years when the mill changed hands, viz: G. S. Minot acting agent. With Mr. Minot he remained fifteen months when he again went to Houlton, Me., remaining this time five years.

Two years ago he came back to the Lamoille Mills, Fairfax, Vt., where is at the present time running the mill on fine blankets and wool wadding.

Mr. Martin has always worked in small mills, with the exception of a few weeks for the Pondicherry Co., of Bridgton, Me. He has been fairly successful in all his undertakings in the mill business, although as a fancy weaver he does not profess to be an expert, having learned himself all he knows in this branch, yet, he has a good knowledge of the Crompton, and Knowles fancy looms.

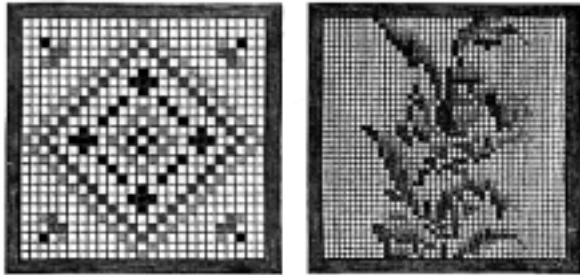
METHOD OF PRODUCING DESIGNS ON WIRE CLOTH.

BY GEO. M. HOPKINS.

WE copy the following interesting article from the *Scientific American* and to the publishers, Messrs. Munn & Co., are indebted for the engraving accompanying it:

An experiment showing a phase of capillarity is illustrated by the annexed engravings. This experiment was originally intended for illustrating tapestry and other designs formed of small squares, in colors upon the screen; but it has another practical application, which is capable of considerable expansion. For projection, a piece of brass wire cloth, of any desired mesh, say from 12 to 20 to the inch, is mounted in a metallic frame to adapt it to the slide holder of the lantern, and the wire cloth is coated lightly with lacquer and allowed to dry.

The slide thus prepared is placed in the lantern and focused. The required design may now be traced by means of a small camel's hair brush, colored inks or aqueous solutions of aniline dyes being used. The small squares of the wire cloth are filled



METHOD OF PRODUCING DESIGNS ON WIRE CLOTH.

with the colored liquid, and show as colored squares upon the screen. Different colors may be placed in juxtaposition without liability to mixing, and a design traced without special care will appear regular, as the rectangular apertures of the wire cloth control the different parts of the design.

The colored liquid squares are retained in the meshes of the wire cloth by capillarity. A damp sponge will remove the color, so that the experiment may be repeated as often as is desired. In this experiment the colored squares have the appearance of gems.

These designs may be made permanent by employing solutions of colored gelatine; but in this case the squares are so small that they are not very effective without magnification. Really elegant designs may be produced in this way for lamp shades window and fire screens, signs, etc. The mesh of the wire cloth should be quite coarse, say 10 to the inch. The wire cloth is supported a short distance from a design drawn on paper, and the different colors are introduced into the meshes by means of an ordinary writing pen. The gelatine solution should not be very thick, and it must be kept warm. Ordinary transparent gelatine may be colored for this purpose by adding aniline. Colored lacquers answer admirably for filling the squares. The beauty of this kind of work and the simplicity of the method by which it is produced recommend it for many purposes.

MECHANICAL INVENTIONS GIVE EMPLOYMENT TO MORE THAN THEY THROW OUT.

FREQUENTLY one sees appalling computations of the vast number of workmen who are constantly thrown out of employment by new mechanical inventions that take the place of human hands. But along with the displacement of hand labor there has gone a replacement in consequence of the increased productions which always follows a cheaper process of manufacture. Especially is this observable in all artistic matters. Pictures that are now produced and given away as advertisements could not be bought except by the well-to-do people a century ago. Art has been applied to a thousand articles of daily use and artistic forms thus perpetuated have come to the homes even of the poor. Cheaper processes of engraving are now in use; but instead of causing the employment of fewer artists this requires the services of more and better artists, and they are

paid now more than they ever were. A new class of artists have sprung into existence. They are known as pen-and-ink draughtsmen and it is they who have made the illustrated newspapers of to-day far superior to those of even a quarter of a century ago. They command a salary of from \$5,000 to \$15,000 a year.

But it is not alone in picture making that the progress of invention gives new employment for artists. There is an immensely wide field for designers in wall papers, carpets, all sorts of textile fabrics, silverware, furniture, and hundreds of other departments. There are armies of artists engaged in making patterns and designs that were never needed in the world until new processes of duplication created an almost insatiable demand for variety.

Other fields of employment have also been opened in the present generation for vast numbers of workmen. In the construction of electrical apparatus, of watches, of machinery and tools, and the thousand and one products of invention, there is room for the laborer. There are more women employed even at sewing, and at better wages than ever, for the skilled. The typewriting machine has already its army of wage earners. The discovery of crude oil has put legions at work, and, looking at the whole subject, it must be admitted that though mechanical inventions have put a great many persons out of work, they have also put a great many persons into work, besides producing for the multitude an endless variety of beautiful and useful as well as cheap products.

BIRMINGHAM'S NEW COTTON MILL.

The enterprise Manufacturing Company, of Birmingham, Ala., have reorganized with a capital of \$200,000, and will build a cotton mill at once. Great interest attaches to the movement, as it is the first attempt to add cotton manufacture to the iron industries in that city. The class of goods made will be finer than heretofore attempted in the South. Philadelphia parties have concluded negotiations to remove the machinery of two cotton mills from Philadelphia to Birmingham.

LOOM BOXES JUMPING.

I PRESUME the boys will think that I have gone to sleep at the approach of winter as it has been so long since I have sent anything to the chats, but I am still as interested as ever, so will write a few lines which may be interesting to the loom fixers I have seen, as no doubt have many of my readers, great difficulties arising from the boxes jumping on the Knowles looms when the following combinations are put in operation, viz., from one to three, and from four to two. This comprises all the difficult movements that the fixer has to contend with. And to explain the probable causes for such occurrences I will omit the skips from four to one, and from one to four, as these can be accomplished by timing the box fast.

I will first ask the reader, if he is a loom fixer, if he has ever had a loom on which the box would skip from one to four with ease, and work smoothly, yet if a skip from one to three should occur in the same pattern, to have the box jump so as to throw out the shuttle. You no doubt have, as the writer sees them very often in his experience. What can we do and what shall we do when circumstances are such? I have found from my experience in these matters that the only way it can be successfully treated is in the timing of the box motion; so to this point I will confine strictly the remedy for overcoming this difficulty. A great deal will depend on the ability of the fixer to put into practice the different positions that the cylinders should be set. As good tools in the hands of a bad mechanic will not insure good workmanship so that if any of the readers should find that my system is useless I will plead guilty of the charge, as I have good stock to work from and should be able to explain the cause and remedy for the difficulties I have stated. My first will be to take the following, viz., from one to four, four to one, one to three—these are on one pattern. This loom has the peculiar trait about it that the box must work late as possible from one to three, or it will cause it to jump and throw out the shuttle. We will proceed to set the cylinders so as to accomplish this when we find that we are only out of the frying pan into the fire, as in setting slow for this skip, we make it impossible for the box to drop from four to

to one in time, and here we are if something cannot be done. If we should fix as of old on these looms, all that we could do would be to put springs on the box from the floor, which in nine cases out of ten, will be of no use. Then, what would good common sense teach us to do if the movement from one to three must be made slow, and from four to one fast? Then, we find some means to accomplish it, and the only way it can be done is by the cylinders. The top cylinder rises the box, consequently, it governs the skip from one to three, while the lower governs the box from four to one. We will now proceed and set the lower cylinder in proper position for the first down motion of the box by the gear on the crank shaft. Then the top cylinder must be removed and the tooth in the gear on the end, which is made as a mark to set it by, must be filed out so that you can set it back one tooth, which will give you the late movement for the skip from one to three, while you set for the skip from four to one by the gear on the crank shaft.

The same rule will apply to the skips from one to three and four to two, as these two motions very often conflict, and one must move by the late motion while the other requires the fast. To test this you may have both cylinders set on the same time which is the manner in which the loom is originally constructed. By bringing the lay up until the protector is in striking the box will be rising from two to three. You will note the position which we will suppose is correct. Now reverse the movement from three to two, and if the cylinder is in proper position the box will move at the same time and be as far below the race as it was above on the other move. In most cases you will find that is not so if the box is jumping, which you will very often notice working from two to three, or from three to two. In this case I would do as before stated, set the cylinder one tooth fast or slow, by the gears on the upright shaft, which I think you will find with a little practice to be the solution of the difficulty.—CHAIN.—*Boston Journal of Commerce.*

CARD CLOTHING.

TEMPERED STEEL WIRE AND THE NEEDLE POINT.

THE question is often asked, "What is your experience with tempered steel wire, and do you indorse all that the makers claim for it?" It may not be asked in just these words, but this is the general tenor of the inquiries made by carders and others. While I have yet to meet one who does not indorse it, many seem to have a suspicion that it may not, for some parts of the machine or for all kinds of work, be as good as the long used and thoroughly tested common iron wire. It is not at all surprising, everything considered, that such is the case. I have before stated that I, for one, had found "tempered steel wire" to be a term of very uncertain meaning.

Some is so hard that it is broken in bending it to form the teeth, and could not be bent at an angle sufficiently square to allow the wire to fit up close to the leather. Other samples are so soft that there is hardly any perceptible difference in its grinding, standing up to its work, or holding a point between it and iron wire. Manufacturers or their agents deny this is so from the fact that all reliable makers import their wire from England, where steel wire for clothing had long been a perfected manufacture, and that a uniform temper is as easily obtained as an imperfect one.

It appears, however, that some interested parties abroad have discovered that we do not get such perfect wire as our makers claim, and, what is more, that with the present knowledge of the manufacture of steel, it is impossible to get it. Such being the case, the maker, or carder, who promulgates a certain formula for putting on grinding and subsequent treatment is by no means sure of successful results.

Close examination of the wire and a test of its temper should in all cases be the first thing done by those who use it. At the present time there will, I think, be but very little of the extremely hard wire to be found, and judging from the majority of the samples that have come under my notice lately, it looks as if the other extreme was most common. If such is the case, it is probably because it is more easily manipulated than the harder wire. But they should see that if they approach too near the common iron wire, its superiority to that will be by so much lessened. For

if steel wire for carding is in any way better than iron, it is because it stands up better to its work, and holds its point, while a soft wire, either steel or iron, will do neither. This, however, is a question that will have to be settled by experiment, and the best wire and best clothing will eventually decide the merits.

The question now is, is such steel clothing as we get now so much better than iron as to warrant its adoption, and it is a question to which manufacturers and carders should give serious attention. Facts should now be available to show whether it has proved to give better results in work, and whether it has made good its claims to durability, as it has now been in use for several years.

In connection with this there is another question upon which it would be well to have other opinions than those of the makers. That is, which is the best foundation upon which to set steel wire? As far as clothing of common wire for wool carding is concerned, nothing except a leather foundation has met with success. There are certain points of difference, however, in the two wires which force one to the conclusion that a heavy cloth foundation for steel wire is better than leather, aside from the question of first cost. The trouble with the iron wire in cloth may have resulted as much from the kind of cloth used as from the wire. The fact is that the wire would in all cases, where the foundation was sufficiently firm to hold the points up to an even surface, break out with much less use than in leather. I wish to call attention here to a fact about such breakage in cloth foundation. The wire does not break out in spots as in leather, but why only one tooth of a pair should break, and this all over the cylinder, is what is not so easily accounted for, especially as it is always the left hand tooth with the point facing the operator. With a good tempered steel wire there would be little danger of the wire breaking, as its own elasticity counteracts the rigidity of the foundation, and it really needs to be held more firmly than iron wire. In leather it seems to gain play by enlarging the holes in which it is set. This is very noticeable in much of the ready ground clothing. The teeth can hardly be held in leather until it is put on. Again, the variations in the firmness of leather is much more noticeable with steel than with iron wire, whether ground before or after putting on, and I am of opinion that much of the doubt as to the superiority of the steel has risen from this cause. With all its shortcomings, however, the tempered steel wire that we get is a decided improvement over iron wire, and I cannot see that any special treatment is needed for it. If it is found harder than iron, it will stand harder grinding, and after the burr is off the wire, a quick grinding for either iron or steel is better than a slow one.

And now as to the needle point, what is it, and is it desirable? Ninetenths of the carders say that it is desirable and that they get it, and yet not one ever got, or attempted to get, such a point. What carders understand by a needle point is a tooth with the point proper at the front of the tooth, the side corresponding with the forward pitch with the sides and back of the tooth rounded off sufficiently to just bring this forward side to a fine point without a hook. To avoid the liability of a fine point to hook, it has almost universally been the practice to grind without bending the teeth to any appreciable extent, and with a transverse motion, in order to round up the sides of the point.

The term "needle point" has misled some carders and some would-be improvers of machinery into the belief that what was required was a long tapering point. This idea has resulted in the use of extremely coarse emery, transverse grinders of excessive speed, and various corrugated surfaces for grinders. None of these except the last accomplishes the end desired. The corrugated surfaces have come and gone for many years, and will probably continue to do so until it is practically proved that a long, tapering tooth is not what is needed. The only advantage that such a tooth has is its tendency to clear itself, and thus allow it to run longer without cleaning, but that it would do this even is not readily seen, as that which remains in the card is what impinges itself against the straight, forward side of the tooth. It is also a mistake to think that any considerable portion of the tooth below the point does service in carding, as is shown by examining a freshly cleaned card soon after it is started. Although many may contradict it, my opinion still is that the short round needle point of the old cards is the best thing for good work.—*Industrial Record.*

Designs.

LATEST NOVELTIES

WOOLEN & WORSTED FABRICS FOR LADIES' & GENTS' WEAR.

EXPLANATIONS.

Weave:—The character thus ■ represents a riser or the rising of a harness. The character thus □ represents a sinker or the sinking of a harness. The top bar represents the first pick of filling—reading from left to right or *vice versa*.

Draft:—The character thus ■ represents a thread and to be drawn on the No. of harness in line with it. The character thus □ represents the skipping or passing the No. of harness in line with it. Always read from left to right—from the front to the back harness.

Warp Pattern:—Draw the threads through the harnesses in the order as laid down in pattern.

Filling Pattern:—Picks required to go into a certain shed will come right by starting the first thread of pattern with the first bar of weave and continue in their order downward unless otherwise specified.

168 PATTERNS WERE PUBLISHED IN THIS DEPARTMENT, VOL. I.

(Continued from page 29.)

PATTERN No. 24.

This represents a handsome check for business suitings, made of common yarns as follows:

WARP PATTERN.

- 8 light drab or olive.
- 2 dark brown.
- 1 black and red, D. & T.
- 2 dark brown.
- 1 black and red, D. & T.
- 2 dark brown.

16 threads in pattern; 960 in the warp of $1\frac{3}{4}$ run, spun on the heavy side; yarn for the twist spun 4 run.

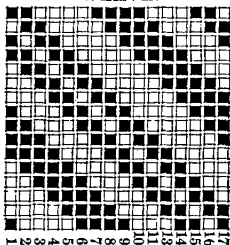
Reed No. 7, 4 threads in a dent.

FILLING PATTERN.

- 8 black.
- 8 gray mix, (80 wht. 20 blk.)

16 threads in pattern of 2 run, spun on the heavy side. Put in 32 picks per inch.

WEAVE.



PATTERN No. 25.

This pattern represents a fancy ribbed check with spots of silk and fancy worsted appearing regularly in the centre and corner of each check or figure; it is designed for fancy worsted vestings, made as follows.

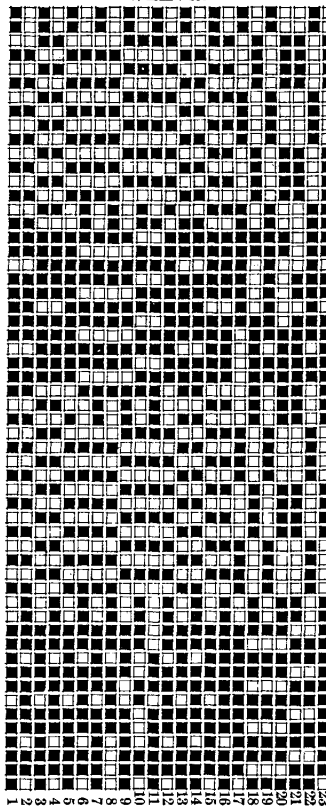
Warp 2,400 ends of black worsted; lay from 33 to 35 inches in the reed.

FILLING PATTERN.

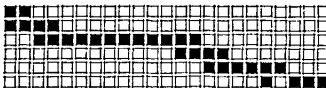
- 16 black worsted.
- 1 light blue worsted.
- 1 orange silk, (organzine.) } 12 thrs.
- 1 black worsted.
- 16 black worsted.
- 1 light blue worsted.
- 1 white silk, (organzine.) } 12 thrs.
- 1 black worsted.

56 threads in pattern; two patterns per inch in the loom.

WEAVE.



DRAFT.



PATTERN No. 26.

This represents a very handsome plaid for business suitings, made of fine stock, common yarn, as follows:

WARP PATTERN.

- 1 bright red.
- 6 black.
- 6 gray mix, (60 wht. 40 blk.)
- 6 black.
- 5 gray mix.
- 1 bright orange.
- 6 black.
- 5 gray mix.

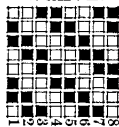
36 threads in pattern; 1,152 in the warp of $2\frac{1}{2}$ run. No. 7 reed, 4 threads in a dent.

FILLING PATTERN.

- 1 bright blue.
- 5 light cinnamon brown.
- 6 black.
- 1 bright red.
- 5 light cinnamon brown.
- 6 black.
- 6 light cinnamon brown.
- 6 black.

36 threads in pattern of $2\frac{1}{2}$ runs. Put in all the picks you can. Velvet finish.

WEAVE.

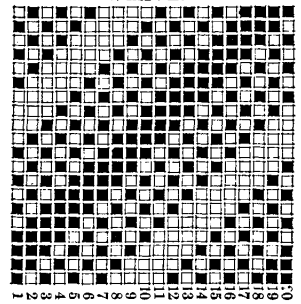


PATTERN No. 27.

This represents a broad diagonal wale for business suitings, made with course worsted warp of 1,120 ends, light brown stain, dark brown, blue or black as preferred. Lay out in No. 8 reed, 4 threads in a dent.

Filling all double any twist of any two suitable colors twisted together, spun 6 run. Put in 35 picks per inch.

WEAVE.



PATTERN No. 28.

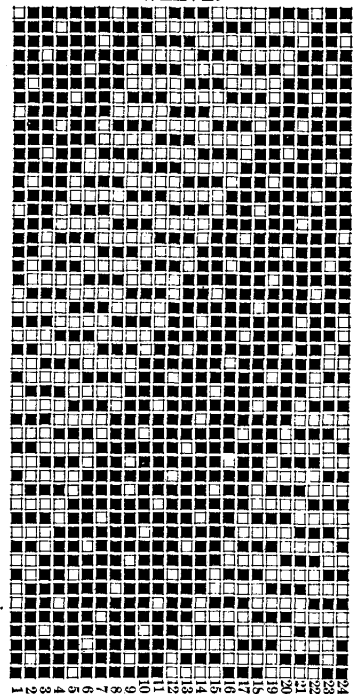
This design represents a raised and sunk wale for coatings, made of medium worsted yarns as follows:

Warp, dark plum color, of 2,400 ends, laid in the reed about 34 inches.

Filling, red brown or maroon color, about 66 picks per inch.

A handsome plaid or check may be made to a good advantage by using silk twisted with a worsted thread of different colors in both the warp and filling—the sample in our possession is so made.

WEAVE.



PATTERN No. 29.

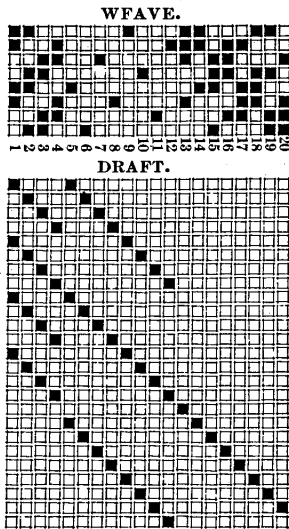
A fancy stripe for trouserings of three combined weaves, the first four harnesses and the eight back harnesses weave the face of the fabric, and the eight middle ones, the back of the fabric; made of fine worsted and silk yarns as follows:

WARP PATTERN.

- 1 olive brown.
- 1 black.
- 1 olive bro. twist with wht. silk } 32 thrs.
- 1 black.
- 1 red and blue worsted, D. & T.
- 13 black.
- 1 red and blue worsted, D. & T.
- 1 black.

48 threads in pattern; 2,880 in the warp;

lay in the reed 33 to 35 inches, as desired.
Filling, fine black worsted; 64 to 70 picks per inch.



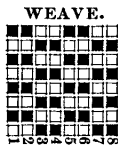
PATTERN No. 30.

This represents a good style of hair-line stripe for trouserings in fine stock. Dressed 2 of black and 2 light gray mix, (85 white and 15 black), 2,000 ends in warp of 5 run yarn.

Reed No. 13½, 4 threads in a dent.

Filling pick and pick of light gray mix—same as in warp—and black, spun 5½ run; 60 picks per inch.

The gray filling passes over the gray in warp and under the black; the black filling passes over the black in warp and under the gray.



PATTERN No. 31.

This design represents an exceedingly handsome thing for coatings or whole fancy business suitings: the ground work on the face of goods is double pick, while the backing thread in both warp and filling are thrown on the face in such a manner as to form a handsome diagonal wale about ¼ inch in width. Mills having the facilities will do well to produce this pattern as there is great a range in it.

WARP PATTERN.

- 1 dark mix (80 blk. 15 wht. 5 yel.) } 48
- 1 black. } thrs.
- 1 dark mix. } 12
- 1 light mix (80 wht. 15 blk. 5 grn.) } thrs.
- 1 black. }
- 1 light mix. }

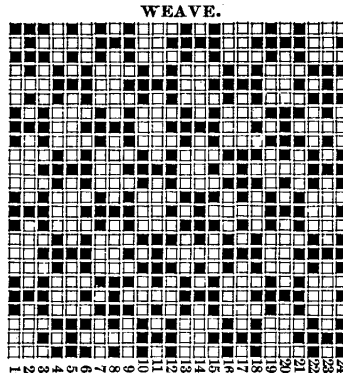
60 threads in pattern; 2,160 in the warp, of 4 run yarn for the mixes, and 3 run for the black. Draw into a No. 10 reed, 6 threads in a dent.

FILLING PATTERN.

- 1 light olive brown.
- 1 dark green.
- 2 light olive brown.
- 1 dark blue.
- 2 light olive brown.
- 1 black.
- 1 light olive brown.

9 threads in pattern, all spun 4 run;

60 picks or over per inch. Run in all colors in the order as laid down.



PATTERN No. 32.

This represents a fancy stripe for ladies' dress goods in fine worsted yarns.

WARP PATTERN.

- 11 silver drab. } 8 threads.
- 1 lemon silk. }
- 8 silver drab. }
- 3 light olive. }
- 5 silver drab. }
- 1 maroon. }
- 1 silver drab. }
- 23 silver drab. }
- 2 orange silk. }
- 24 silver drab. }
- 1 maroon. } 8 threads.
- 1 silver drab. }
- 5 silver drab. }
- 3 light blue. }

102 threads in pattern; width of pattern 1½ inches.

Filling all drab, same shade as the warp.

This same weave and the first 37 threads in the draft, and warp pattern may be used for fancy trouserings—men's wear.



PATTERN No. 33.

A plaid for suitings, made of course or medium stock, and a good thing for small mills to make.

WARP PATTERN.

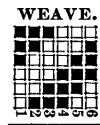
- 1 red and black D. & T.
- 4 dark blue.
- 1 red and black D. & T.
- 6 black.
- 6 dark blue.
- 6 black.
- 1 green and black D. & T.
- 4 dark blue.
- 1 green and black D. & T.
- 6 black.
- 6 dark blue.
- 6 black.

48 threads in pattern; 1,152 in the warp

of 2 run for the single, and spun 4 run for the double and twist.

Reed No. 8, 4 threads in a dent.

Filling pattern the same as the warp pattern, but spin the yarn ¼ run finer, and put in picks to make the plaid come out square when finished.



PATTERN No. 34.

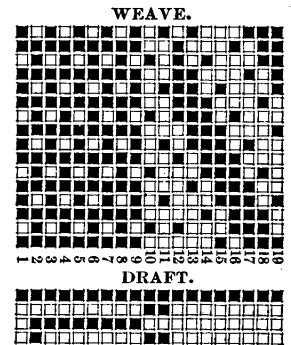
This represents a fancy stripe for trouserings, being a rib and diagonal weave combined it produces a very pretty effect.

WARP PATTERN.

- 24 dark olive worsted.
- 8 black worsted twisted with wht. silk.

32 threads in pattern; 2,688 in the warp. Lay out in the reed about 36 inches.

Filling all red brown of common woolen yarn, spun 4 run, and put in about 60 picks per inch.



PATTERN No. 35.

This represents a handsome basket and diagonal figure for suitings in coarse stock and is well worthy of attention; make as follows:

WARP PATTERN.

- 4 black.
- 4 dark gray, (75 blk. 25 wht.)
- 4 seal brown.
- 4 light gray, (75 wht. 25 blk.)

16 threads in pattern; 1,600 ends in warp of 2¾ run.

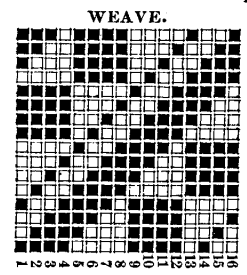
Reed No. 11, 4 threads in a dent.

FILLING PATTERN.

- 4 olive brown.
- 4 fancy mix (50 wht, 40 blk. 10 red.)
- 4 black.

12 threads in pattern of 3 run yarn; put in about 48 picks per inch.

Four colors can be used in the filling if desired which will produce a pretty effect, or only two colors; in fact by the changing of the filling various ways a nice line of patterns will be produced. Also the same can be done with the warp.



UNEVEN CHECKS IN WOOLEN GOODS.

[Written for BALDWIN'S TEXTILE DESIGNER.]

UNEVEN checks in woollen goods are not an uncommon occurrence, but their cause is not always traced to the proper source. As check goods, and indeed all fancy goods are now getting so general, it may not be out of place to mention here the opinion of some of the most competent authorities on the cause of uneven checks.

The principal cause of this fault lies with the weaving, but for all that not always in the loom. Supposing the yarn for the warp to be well and evenly spun, it may not have been beamed with the necessary care; the yarn will then settle in the soft places underneath, and when woven contain light stripes, which will naturally contract more in fulling than the looser ones will do, and in those places show smaller checks. Some mills have the old-fashioned warper reel which often proves too narrow for their work, and at times are obliged to lay the yarn on the side of the reel thicker than in the middle in order to spread it wider on the warp beam when beaming off; this gives also an uneven tension and the result is uneven goods. The best thing under the circumstances is to arrange the warp beam in conformity with the reel, but where this cannot be done, to let the warp when coming from the reel, pass over a bar which will then tend to spread the yarn, and obliterate to a considerable extent any bands which may have been formed. Such warps should always be beamed perfectly dry, for if a little moist the loose bands will dry and contract more than those where the ends are crowded.

All uneven checks will be more noticed at the sides than in the middle of the piece, because both in weaving and fulling the uneven parts will have a chance of being stretched at the ends and sides, but cannot do so in the middle.

Careless fulling contributes also to the causes of uneven checks; when the piece does not lie straight but is rolled, the ends especially will twist, which then is gradually communicated to the other parts of the piece. Sometimes, also, the stitching gets undone in the fulling machine or the stocks, in which case the piece will pull where it is still connected, and thus disarrange the checks. When this is discovered in time it may be remedied by restitching the pieces, and giving them a little extra fulling. In gigging, the checks may also be stretched if the cloth is not passed carefully and straight through the machine; this may easily occur where several pieces are stitched together, when the best thing to do is to separate them and gig them singly.

Picks being left out, fine ends, take-up working bad on the loom, friction working bad on the warp beam, and many other similar effects, all will have a tendency to cause uneven checks.

WARPER.

TECHNICAL AND TRADE JOURNALS.

THE encouragement of technical and trade journals, augurs well for the advancement of manufacturing and mechanical industries. No matter how skilled may be a workman, his fellow-craftsmen possess secrets of which he is ignorant, and which can, as a rule, only receive the proper dissemination by being published in the specially technical papers that are doing so much for the elevation of the American artisans and their numerous callings, in which the public is so intensely interested. Every mill man who prides himself in his particular line, ought to subscribe regularly to a trade journal—one representing more closely the branch of work in which he is engaged. This should be read closely and carefully, and the hints and suggestions thrown out must be noted with the view of giving him practical tests. By pursuing this commendable course, a greater degree of technical skill is acquired at a trifling expense of time and a small outlay of money. Then, too, a knowledge is obtained as to the better class of new text-books appearing from time to time bearing on the exact branch and applied knowledge. Besides all this, the general news of particular localities as to the progress thereof is an especial feature characterizing these papers of which sight cannot be lost without detriment to the loser. To be well posted, is as much stock in trade with a mill man as it is to a merchant or professional man. The trade journal is fast becoming, under wise and faithful guidance, as much of a necessi-

ty as the daily paper. There is more truth than fiction in those few remarks, and to the mill man that does not take a trade journal, it ought to set him to thinking.

WORSTED.

DURING the past two years no single fabric has attracted so much attention in the woollen goods trade as worsted. This was because of the low duty under which woollen importations classified as worsteds were assessed, and because Congress refused to amend the tariff laws to meet the necessities of the woollen manufacturing interest, and to be in keeping with the spirit of the tariff itself. However persistently the manufacturers may have pressed their claims for legislation, they have in their defence the single and very important fact that there is no such material nor fabric as "worsted." That term was first employed to describe a yarn made at the village of Worsted, Norfolk County, England. The process for making this article was to comb instead of card the long hair from which the yarn was spun. Such is the method of manufacturing worsted, hence the term "worsted" cannot be applied to a fabric made from combed wool. This, too, is the declaration of the latest and highest authority on the subject, it being pointed out that the term "worsted" is very much older than the combing machine by which wool is combed.

Although as early as April 20, 1818, the tariff laws provided for importations of worsted or stuff goods, the so-called worsted coatings of to-day were practically unknown until fifty years later. In the spring of 1860 the writer purchased in Huddersfield, Eng., a new fabric made with a weft of worsted yarn. As it was made of a long hair that would not felt easily it could not be dyed a fast color. Of this fact he was reminded by the manufacturer at the time. The colors "crooked" very badly, but the novelty of the cloth made it desirable, though it remained in vogue for one season only. From that time until 1867 nothing more was heard of worsted coatings. Then, however, the Washington Mills, of Lawrence, Mass., produced them in fast colors. These mills were poorly equipped to manufacture economically, and the Wanskuck Company, Providence, R. I., soon took a leading position in that direction. They were followed by the Riverside Mills, and in due time others also joined the movement. Until a few years ago the fabric, for want of the machinery to treat the raw material, could not be felted, hence it was wiry in the handling and more or less porous. Inventive genius saw its opportunity and was not long in providing a remedy for this. Combing machines were constructed that would comb wool of less than two inches in length, while cards were provided that would card wool of six or eight inches in length.

For these reasons the former contention that worsted was made from long wool that was combed, and woollens from short wool which was carded, are no longer tenable. The very latest authority on the subject, and a practical spinner at that, asserts that the only difference between worsted and woollen depends upon the arrangement of the wool, that in the worsted the fibres so lie that the serrations with which they are covered will point in the same direction, rendering them less suitable for felting than if arranged indiscriminately, as in the case of woollen.

Compared with the so-called worsted coatings of a few years ago, the worsted fabric of to-day shows greater progress than woollen. This is the result of the felting properties of the fine merino wools from which our modern worsteds are made. Worsteds coatings, it is seen, are more or less "fulled." This gives to them a leathery feel, makes them more solid, and susceptible of a lustrous finish. All these results are obtained through new machinery for combing short and fine merino wools. For these reasons worsted coatings very properly are as much a woollen cloth as any fabric made from the wool of the sheep. Their designation as "worsted" is only to show that the raw material from which they are made has been combed by the process mentioned. The fibre of the wool, if drawn from the woven cloth, is much nearer its original condition than if drawn from the cloth made of carded wool.

As a substitute for faced cloths solid color worsteds in the plainer weaves have been increasing steadily in popular favor. For other than full dress they are worn by all classes. They are more springy and do not soil so easily as finished cloth made

of carded wool. Moreover, they are more serviceable in all respects, and this fact is the most important of all with the majority of consumers. In woven fancy styles they are more attractive than carded wool goods, because of the brilliancy of their colors. They are susceptible of higher finish than carded wool goods, and because of their general adaptation to the wants and tastes of the American people the indications are that the general demand is likely to exhibit a steady increase.—*U. S. Economist.*

EARLY AMERICAN CONTRIBUTIONS TO TEXTILE FINISHING MACHINERY.

THE records of the Patent Office for its first quarter century show that during the earlier years of American independence the attention of our inventors was very largely directed to the origination and improvement of textile machinery. This was natural, since the rude domestic appliances for cloth making which had been handed down from almost prehistoric times required for their use an abundance of domestic help not found in the new country.

England's commercial development had made a fair beginning and the demand for woven goods by her adventurous shipmasters in foreign trade had called into existence the beginnings of the great factories which subsequently won for England a large part of her industrial supremacy. Steam machinery was becoming an important industrial factor in such establishments, and their owners were competing for labor-saving processes and appliances. The origin of many of these has hitherto remained untraced, the presumption being that they were of English invention. Doubtless most of them were; yet when a more critical study of the history of a single branch of textile operations is made it is surprising to see how largely the mother country was indebted to American inventors for the means of her industrial success. It is hardly possible that the branch of manufacture referred to was entirely exceptional in its history.

During the past fifteen or sixteen years, Dr. Hermon Grothe, of Berlin, the highest European authority on textile technology, has been making an elaborate and minute study of the history of machinery for finishing cloth and other woven fabrics; and in a communication to the National association of Wool Manufacturers (*Bulletin*, Nos. I and II, 1881,) he sets forth a large number of interesting discoveries touching the contributions of early American inventors to this branch of the art. The idea has generally prevailed that all the inventions of textile machinery until the beginning of this century were made in England; but on examining the letters patent and specifications of England since 1616 he finds that many of the inventions were only imitations and improvements. To trace their origin he has examined the literature of technology and many old pamphlets and journals, finding "repeated proof that American finishing machinery has been exported to England and France, and essentially contributed to establishing in those countries the industry of the construction of this class of machinery." "This," Dr. Grothe adds, "is prominently the case with machinery for fulling, gigning, and shearing cloth."

We have gone over the evidence cited by Dr. Grothe with considerable care, and have been able to verify most of his references, except for dates earlier than 1793, the beginning of the United States patent record. It would be an interesting task to examine the lists of British patents before the American Revolution to discover what contributions were made from the colonies. The invention of Walter Burt (1774) must have been of that number, and possibly also that of John Dyer, whose name does not appear in the records of the United States Patent Office. The date of his patent as given (1833) must be wrong; perhaps 1733 was the date intended. Another obvious slip in that part of Dr. Grothe's communication printed below is corrected, and the number of details elsewhere added in brackets. The name "Ellis Jonathan" does not appear in the American record. Mr. Jonathan Ellis, who took out a patent in 1807, is probably the person meant. Dr. Grothe says:

"The fulling mill with rollers is completely an American invention, namely, that of John Dyer (patented 1833), and was introduced by Hall, Powell and Scott from Boston to Rouen, France as the brevets and bulletins of France fully establish.

The invention of the double-crank fulling mill was made by Levi Osborn in America, (Fairchild Coon.) in 1804, commencing a great series of construction on the same principle. The first idea of a gigning mill is contained in James Delabard's patent No. 237, in England, and several inventions were made by others; but all these constructions have only imitated the operations of gigning by hand. In 1774 Walter Burt had in America a patent for a gigning mill, and after his time the gigning mills with a rotating barrel became common in England, with improvements of Lewis, Price, and others. All these English machines were patented after the gigning mills in America of Jerseys, Christie (Joseph A., Elizabeth, N. J., 1816), Olney, (Joseph, Westmoreland, N. Y., 1813-1817), Barrows, Beck, Wells, and others had appeared.

"Very important, I find, is the portion of merit which I must concede to American inventors. The merit of the invention of the cylinder shearing machine belongs to Samuel Griswold Dorr, (Albany, N. Y.,) (patented October 20, 1792). He named his machine the 'wheel of knives,' which are arranged radially, and parallel to the axis of the cylinder, and around it; but the construction of 1793 contains the knives radially and *spirally* arranged around the cylinder. The constructors, Price, Lewis, and Davis, of England, have imitated this construction, and with much merit improved it, after 1815. It will be observed that the English inventors from 1792 to 1815 had taken out many patents for shearing machines; but all of them followed the construction of the old hand-shears, or the old shearing machine of Harmer, containing a series of hand-shears. In 1806 and 1810, Beriah Swift, of Washington, had obtained patents for a shearing machine with an oscillating cylinder. This invention appeared in England as that of one Miles, and was patented in the name of the latter; but Miles was only the agent of Swift. A document relating to 'the importation of American shearing machines with spiral knives,' contained in the testimony of A Mr. Rathgate in Galashiels in 1823, shows that such shearing machines were built in England at that time as had been imported from America ten years before. Mr. Alcan has also shown that a Mr. Ellis Jonathan, in 1812, had received a patent in France for a cylinder shearing machine which George Bass had exported to France from Boston. This was a longitudinal shearing machine with a spiral cylinder. That much attention was given in America to the improvement of shearing machines is demonstrated by list of patents from 1792 to 1817. At this latter date all the improvements then known in these machines had been completed in America, and after that time commenced the construction of the improved machines in Europe. The fact is interesting that Edmond Durrin of Weathersfield, N. Y., (Vermont) in 1814 invented a shearing machine with two saw blades, one of which was fast, and the other moved with great celerity over the fast blade.

This machine was patented in Europe in 1823, under the name of John Bainbridge.

"The invention of the pressing machine with steam belongs to Seth Hart (Hempstead N. Y.), who received a patent in America in 1812. This invention appeared in 1824 in Europe, John Jones taking out a patent for the same in England. It appears that John Beverly, an owner of woolen and cotton mills in America, made the first use of the hydraulic press in 1803 (patented Dec, 26 1803). He named his construction a 'hydro-mechanical press.' Bowker & Hall of Boston, constructed, in 1814, a rotating cylinder press, heated by steam. This press is believed to have contained the first idea of the steam cylinder cloth-press, now so much in use."

The volume which Dr. Grothe is at work upon will no doubt clear up many doubtful points in the history of cloth finishing machinery, and Americans will rejoice with him in his ability "to award the merit of priority in invention claimed for England to America, the country which has created inventors through her system of home industry and personal liberty"—aided, Dr. Grothe should have added, by an official disposition to deal justly with inventors.

[We reproduce the above article from an old number of the *Scientific American*, believing that it will prove interesting to our many readers.—ED.]

NEW PATENTED FABRICS.

PLUSH OR CUT PILE FABRICS.

AN invention has been patented relating to a process for making plush, or cut pile fabrics, which differs essentially from the mode of manufacture previously employed, inasmuch as the nap or pile is produced without being woven into a back or supporting fabric, the fibres of the said pile being connected together by means of a layer or film of adhesive material which may itself form the back or ground or the medium of connecting the pile to the backing of ordinary woven fabric. The material from which the pile of the plush is to be made, whether in the form of threads, fibres, or ribbons, is wound on cores in the form of flat plates or strips of uniform width, corresponding to the intended length of the pile; these are placed with their broad faces in juxtaposition, and are clamped firmly together in a suitable press in which they stand up edgewise, their upper edges, over which the material to form the pile is wound together forming an approximately level surface. Upon this surface, a layer or film of adhesive material, such as caoutchouc, is spread, to which a thin fabric may be caused to adhere, in order to strengthen it and form a backing. The material to form the pile is then cut along the opposite edges of the cores, which then fall out, and the plush is finished. The plush material may either be wound on pairs of plates or on laths of any suitable substance, for instance, of cardboard, wood, iron, ribbon, bands, or sheets, &c., either by hand or by a reeling machine, suitably adapted for the purpose. A number of pairs of plates are wound as above stated, squeezed or pressed together on a bed or table between pressing cheeks, by means of screws or other means. To prevent those near the middle from rising with the pressure, they are held down by clamps applied over their ends, the clamps engaging under the bed or table, and being drawn down by screws. The upper side of the series of plates thus wound and pressed together is, as above mentioned, coated or covered with an adhesive substance (caoutchouc) whereby the threads, fibres, bands, &c., to form the pile, are united together. The operation of cutting the material to form the pile is effected by passing a knife along, and between the lower or opposite edges of each pair of plates. When the adhesive substance is dry, a thin fabric may be caused to adhere upon it, the root ends of the pile being thereby more securely fastened. When the pairs of plates are made of iron bands or strips, each pair of strips is soldered together along one longitudinal edge the knife for cutting the pile being passed between them at the opposite edge. Instead of pairs of plates as above described, single plates may be employed, provided throughout their length with a groove along one edge, through which the knife for cutting the pile is guided. Further, the plates may each be provided at their ends with upwardly directed knives which cut through the threads of the pile when the plates are being drawn out. Instead of winding the plush material upon the plates, it may be brought upon a warp beam and conducted to the above-mentioned pressing table, where the warp threads are led in a zig-zag direction, alternately over, and under, and between plates, or pairs of plates, the plates being placed in succession on the table, and alternately under and over the pile threads, &c., as they come from the beam, so as to cause them to assume the desired zig-zag direction. When thus arranged and clamped as before described, the upper side of the whole series is coated with an adhesive substance, to which a fabric is caused to adhere, whereby the bends of the threads which are uppermost in the press are united to the fabric. Or the fabric may be dispensed with, if a suitable adhesive substance be used, as before mentioned. The lower bends of the threads are then cut through in the manner above described, and the plush is finished.

PRODUCING PERMANENT COLORED LINES ON
WATERPROOF CLOTHS.

To produce colored lines upon waterproof cloth is the object of a recent invention, and to carry this out, there is mixed with a rubber solution, such as is employed in waterproofing cloth, a suitable pigment of any desired color, and this colored solution is used in the manner in which an ordinary solution (whether colored or not) is employed in waterproofing, but for the purpose of marking on the lines, or bands, a knife is employed, constructed along its lower or bearing edge as a graining comb, that is with

notches in such edge corresponding in width and position to the lines or bands which it is desired to form on the surface of the cloth or rubber, and of only such depth as will allow the proper amount of colored solution to pass through as the cloth or sheet is drawn under the comb. The comb may be conveniently formed of a piece of zinc or other sheet metal, or of any suitable material, fixed by screws passing sideways through it, and screwed into a spreading knife of the ordinary description, or into a bar employed in lieu thereof, as will be readily understood, or may be otherwise fixed to such knife or bar. The solution employed is, of course of a sufficiently liquid character for the purpose, and it is laid upon a surface of unvulcanized rubber previously laid upon the cloth in the usual manner, or forming the substance of the sheet. After the colored solution has been laid on in lines or bands, the cloth or sheet is vulcanized or treated in an analogous manner to make it fit for use. In carrying out this invention, there is frequently a tendency, in making the lines or bands direct upon the surface to be ornamented, for the colored solution to spread somewhat, and prevent the clearness of the outline which is desirable. In this case, it is better to mark the lines in the manner above described upon a "taping" cloth, and after they have set to a slight extent, to transfer them to the surface to be ornamented, or lined by rolling the taping cloth in contact with such surface between "doubling" rolls. Very clear lines may thus be produced with certainty upon the surface to be ornamented. It is impossible to describe in words the exact consistency which is best for the colored solution in laying on the lines or bands, or the degree to which it should set upon the taping cloth before being transferred in the manner described, but these matters will be readily understood by persons skilled in the art to which the invention relates, and a very little experience will enable a workman to carry out the invention with the best results. The lines or bands may be formed wavy, zig-zag, curved, or slanting, if desired, by reciprocating the comb endways by means of a cam or crank action, or by the operation of inclined bearing surfaces, as the cloth or sheet is drawn thereunder, as will be readily understood by mechanics; a check pattern may be formed by first laying on the lines in one direction on the cloth and afterwards in the other direction, in which case, if the taping cloth is employed, as is preferred, the lines are first laid on in one direction and transferred and afterwards laid on in the other direction and transferred. In some cases, such as when a small surface only is required to be marked with lines or bands (as, for instance, for sheet rubber intended to be made into tobacco pouches or the like, or formed into rings such as are used with umbrellas), the comb may be drawn across the surface by hand, the colored solution for producing the lines or bands being, in such case drawn forward by the comb, except for that portion thereof which escapes through the notches as the lines or bands are being formed.

FELT STAIR CARPETS AND SQUARES, AND BORDERS
FOR SQUARES.

This invention relates to the manufacture of bordered stair carpets and squares of felt, and borders for squares, the object of the invention being to produce upon the material a border having a more artistic and ornamental effect than hitherto obtained. In the manufacture of such bordered stair carpets and squares, and borders for squares, it has always been usual to produce the border by printing only, and if it was desired to obtain an artistic effect, this could only be done on plain dyed wool felts by printing, which does not give so clear and distinct a design as is obtained by this invention, according to which the whole width of the carpet can be made of white, gray or dyed wool, as preferred and a border of the most artistic effect that can be desired can be worked thereon by taking a piece of felt, either dyed and printed, or plain dyed or printed on the white or gray and cutting it up into strips of the required width for stair carpeting, or borders for squares, or into squares of the required size, and embroidering an ornamental border thereon by means of a chain stitch, or other embroidery machine, in woolen thread, or other suitable material, and by these means, the most brilliant ornamental borders in bright or sombre colors on different colored grounds can be produced, much superior to, and more artistic in appearance, than any borders that have hitherto been produced upon felt carpeting by printing or other ordinary means.—*Journal of Fabrics, Eng.*

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CHAPTER I.....	The Art of Weaving.
CHAPTER II.....	Taste in the Selection and Designing of Patterns.
CHAPTER III.....	The arrangement of colors in Patterns.
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