

much increased; different construction requirements to be met, according to the uses of the fabrics; different selling conditions, etc., etc.

A very great mill, with an established connection, can permit these complications, for it has so much machinery that in each of many diverse directions it is able to operate enough looms to make a respectable business of it and to have special salesmen for each branch of the work. With small or moderate-sized mills the case is essentially different.

Policies of Production.

Leaving aside these examples of opportunism that we have been discussing, what directions are there in which a broad silk mill can work which could be properly designated as policies?

In answer to this it may be suggested that a mill may specialize on one or more staple fabrics or on one division of staple fabrics, such as blacks, or exclusively cater to one trade, such as making plain or fancy dress silks, necktie silks, etc., or it can exploit one or more trademarked fabrics, either as an exclusive business, or in connection with other goods.

A mill desiring to specialize on a staple cloth has many to choose from. It may make umbrella silks, chiffons, crêpes de chine, Shantung, foulards, taffetas, cotton-back satins, liberty satins, wash silks, lining silks, tailoring silks, etc., etc.

If the mill manager knows his business, and if the sales department can market the product at the full market price, a mill, employing, say, two hundred looms steadily on one of these fabrics, ought to do very well during most seasons, as the unit cost of both production and distribution should be so low that at any fair market price there should be a reasonable profit in them.

Add to this the fact that the output in yards would be so respectable that the mill would have some standing in the market as a producer of that article, and buyers would then make it a point to look at its goods when in the market. Again, a mill may specialize in the same way on blacks—nothing but blacks—be they satin, taffeta, peau de soie or what not.

In this, as in the previous case, great economies of production result from the simplification of the work, as but few kinds and sizes of silk or other materials are used, few different sorts of weightings, a uniform kind of machinery, and a minimum of superintendence and other labor.

A concern may also cater to one trade exclusively, and may make, say, plain dress silks, covering only the ordinary weaves, widths, and colors; and this may be further specialized on as by working only for the jobbing trade, or the retailers, or the cutting-up trade.

Without going too deeply into novelties there may be a field in the fancy goods trade, checks, stripes, plaids, print warps, printed foulards, figured satins, etc., etc. These articles are naturally much

more hazardous than plain goods and persons undertaking this trade must be very well qualified for it at every end of the business.

In each of these lines, some of the goods may be skein-dyed and some piece-dyed. In the piece-dyed branch, also, is another field for specialization.

Some Considerations Affecting Piece Dyes.

Its advantages are a simplification of the kinds of raw material used; the elimination, in large part, of the paying out of much money for throwing or dyeing in advance of the production of the goods; the quick conversion of raw materials into finished goods; the relatively low cost of piece-dyed goods and their consequent larger sale; and the fact that they can be dyed up as needed into the colors most in demand at the time.

There are times in the year, of course, when these piece-dyes may have to be stocked heavily, entailing the locking up of much capital, with interest charges, and, even when made on advance orders, buyers are unwilling to give dye orders until close to the time when they will require the delivery of the goods. There is then difficulty in getting large quantities of goods through the dye-house in reasonable time, and, with the rush of orders that the dyer has to contend with, much unsatisfactory work is produced.

It may also happen, owing to some oversight or bad work at the mill, or some unsuitable lot of material getting into use, that, when the accumulations of goods that have been stacked up begin to come through the dyeing, serious unsuspected imperfections and damages may appear, and which, owing to the large number of pieces in which they may occur, will entail heavy losses.

It is the part of prudence, therefore, to keep dyeing up, right along, representative pieces of the lots coming through, so that if anything about the goods is wrong it may be discovered and checked before it has reached large proportions.

The Production of High Novelties.

Another direction in which a mill may work is in the manufacturing of high novelties.

This branch of the business cannot be got into over night, for, to be really successful at it, a mill must build up its reputation gradually and over quite a period. During that time the trade has become accustomed to look to it for novelties, and to expect that such ideas as it brings out will be good and profitable things for them to handle.

This prestige is hard to acquire, but when once gained it is a great help to the mill in placing its product, season after season, as confidence plays a large part in transactions in novelties, and the mere fact of a successful fancy-goods house presenting its styles is an argument with the buyer in favor of purchasing them.

To do this business well requires qualities of no common order, and

very serious risks have also to be faced, for the price that fancies will bring when they are not wanted bears little relation to their cost.

The management, both at the store and at the mill, should have originality of ideas, educated taste, and much ingenuity in the construction of fabrics and employment of materials.

Their sources of information as to the drift of taste both at home and abroad, and as to what is new in styles, colors, cloths and fashions, should be many and accurate.

It is necessary to sample very far ahead and on a wide scale, and, to a greater or less degree, to gamble on the market and to have on hand assortments of novelties at the time they are needed by the trade.

If the firm understands its business and attends to it keenly and closely, a fine and profitable trade may be built up, but very few people, even with the best equipped plants, have the talent necessary to do it.

Losses Entailed by Fancy Goods.

While the nominal profits in fancies look large, it is very seldom that they really are so, for the drawbacks are so many that, unless a large margin of nominal profit was figured on, there would be no real profit at all.

The cost of sampling, with all the collateral outlay that it entails, directly and indirectly, is a colossal expense; many goods are sure to be late and subject to cancellation, so what with returned goods, left over goods, and seconds, there is always a very large percentage of stuff to close out at a heavy loss; the production of the mill is greatly cut down by the everlasting changes necessitated by the rapidly passing fashions, and then there is the chance that in making goods ahead the demand may be misjudged—and this happens not infrequently—and there may in that case be a big line of goods to throw overboard at the best price obtainable.

Creating a Demand by Advertising.

Another policy, coming more and more into vogue, is to make one or more sound, serviceable fabrics, of a kind that should have a wide and general use, and create a demand for them by advertising.

Unless advertised, even a trade marked fabric comes very slowly into use, and the question is not whether to advertise the cloth, but how to do it, and how much money to spend on it.

If not advertised, the most meritorious goods will rarely see the retail counter, for what the distributors want are low prices, and low prices are not often commensurate with good merchandise.

The distributor has really grown to be a barrier between the manufacturer who desires to make honest goods and the customer who wishes to buy them, and the manufacturer is thus compelled to go over the head of the retailer, appeal by advertisement to the consumer, and so create such a demand for the goods that the retailers will find it

both necessary to carry them in stock and to pay the manufacturer a fair price for them.

When advertising has to be done, it is a great problem how to properly spend the necessary money, for in no direction can money be so absolutely thrown away as in this, if not intelligently expended.

Protecting One's Trade Marks.

After an advertised cloth has come into prominence, it will not only be widely copied, but its trade mark is sure to be pirated, and the manufacturer must be prepared to begin legal proceedings against all infringers, big or little, far or near, and so compel the trade to respect the brands that so much money and effort have been spent in developing.

This is not so expensive a process as it would appear to be, for merchants do not like to have to defend lawsuits, and when those gentlemen with piratical proclivities see that a house is determined to protect its brands at any cost, they let the marks of that firm severely alone.

Good trade-marked fabrics, well advertised and introduced, will find a steady sale year after year, and always at a profit.

Considerations Governing the Policy to be Pursued.

There are, no doubt, many other methods of directing the production and distribution of merchandise that are both sound and profitable, but the foregoing will show the desirability of adopting some well settled policy.

What this policy will be each must determine for himself, and according to the circumstances.

Fancy goods production should not be undertaken in localities where skilled labor is scarce, and where, if help gets scattered owing to slack work, it is difficult or next to impossible to get them back again. Country mills, therefore, should generally aim to make plain, or reasonably simple goods.

The number of looms and their character will be another limiting feature, as it is well to make what a mill is best equipped for, and the character of the goods that its selling force is best able to dispose of is of much importance. Whatever is made, there should be enough looms devoted to it to give it a proper standing in the market, and to permit the proper selling staff to be employed.

The knowledge and abilities of the partners, the demands of the day, all will influence the determination.

Shaping a Course and Following It.

Even established concerns, doing a good and fairly profitable trade, will often find themselves largely in pocket by a careful analysis of every part of the business that they are doing, and the rigorous elimination of every article that they are not headquarters on.

Every mill, in fact, after patient investigation, should frame a law for its guidance and allow nothing to deviate it from that path. Our mistakes are generally made not because we really do not know better, but because we allow ourselves to be talked into believing that it will be different this time.

Goods Should be Sold the Season Made.

One feature of any policy that may be adopted should be always to sell goods during the season for which they were made, be the price good or bad. They rarely will bring more, and, if carried, will usually bring less, besides locking up capital and entailing interest charges.

This fixed determination to sell is well illustrated by the familiar figure which is here reproduced, and regarding which I quote from "Dry Goods" as follows:

"Sell and Repent."

One of the most familiar trademarks in the dry goods world is the portly old gentleman whose portrait is herewith reproduced. He has a history handed down to posterity through generations of good goods and persistent advertising.

His strength of mind and body is typical of the house he so strongly represents.



This symbol has been used by the present house of Fred. Butterfield & Company for upwards of sixty years. Below we print a reference to him issued by the firm in Bradford, England, May 24, 1895:

"In referring to the property lying between Mrs. Newby's shop and the corner of Cheapside, we have to note the erection of buildings

comparatively modern. Prior to their erection the site was occupied by private residences with gardens in the rear. In one of these lived John Preston, one of the first woolstaplers in Bradford, and one of the original shareholders in the Low Moor Ironworks, established in 1788. In the early rate-books John Preston is described as being assessed at £60 per annum, an item large enough to clearly establish his position as a leading man in the trade. The figure of the old woolstapler, attired in knee breeches, thick hosen, a coat reaching to his heels, and with his hands deeply thrust into his plush waistcoat pockets, would form an interesting feature could it be more vividly reproduced. John, despite his homely garb, could hold his own at a bargain. At any rate, he must have felt assured of his position before making use of his usual phrase, 'I'll sell if I repent.'"

XXVI

ADVERTISED FABRICS

The question of whether to advertise textile fabrics or not, and, if they are to be advertised, the question of the best method of dealing with this important problem, is a matter of much concern to many houses from time to time.

The destructive and unrestrained competition in the silk trade eliminates the possibility of making more than a brokerage on a vast volume of the standard fabrics consumed by the country, and, too often, even this cannot be made, and manufacturers, whether they like it or not, are more and more being forced to adopt methods that will give their goods distinctiveness and remove them from the influence of price-cutting.

The Demands of the Distributers.

The necessity, or the greed, of the distributers leads them to demand lower and still lower prices from the manufacturers for standard goods to retail at standard prices, and this even when goods are costing more to make owing to increased raw material or other costs.

The dictum is calmly laid down by these middlemen that, in addition to the 7 per cent. cash discount, they cannot handle anything that does not show them a profit of, say, 40 per cent. or upwards.

Manufacturers Try to Do the Impossible.

The manufacturers supinely submit to this pretension, and move heaven and earth to accomplish the impossible, growing poorer as their customers are growing richer, and, incidentally, being compelled by the necessities of the case to produce fabrics of seeming worth, but so grossly overweighted that they greatly injure the esteem of silk goods with the consuming public.

The distributers of merchandise are a necessary link in the chain

between the producer and the consumer, and, as such, they are entitled to a reasonable return on their business, but the intolerably one-sided condition of affairs that exists at present calls for a fundamental change.

Necessity of Appealing to the Public Direct.

This change is now being brought about in part, and will be more and more as time goes on, by the action of manufacturers in going over the heads of the distributors and, by various methods of advertising, presenting meritorious goods to the ultimate consumers, and thus, by creating a demand on the retailers for these special fabrics, compel the latter to buy goods from the maker at prices fixed by him and not by them, and perhaps, to sell them at prices fixed by him also.

Most retailers are apprehensive of the effect that the general handling of trade-marked cloths would have on their profits, and many of them are bitterly opposed to carrying them, but sooner or later they will all have to take their medicine and to a far greater extent than they now dream of.

Margins of Profit.

In fixing the relation between the wholesale and retail prices of their products, most of the makers aim to allow the dealers a fairly liberal margin of profit, for, in exploiting their brands, they desire as little hostility at the counter as possible. Later on, when their trade-marks have become household words, they may have it in their power to cut the retailer's profit to a point commensurate with the greater ease of marketing the goods, brought about by the advertising done by the manufacturer.

Different Views Regarding Advertising.

Great diversity of opinion has existed among manufacturers about this question of advertising. Some have thought it entirely unnecessary, in fact have sneered at the idea; others have thought that the money thus spent would so increase the cost of the goods that they would be no better off even if they should create a market for them; some imagine that a fortune is required for such work, and, not having much money to spend, they do nothing; others think that business so reached is, at the best, limited in extent and can only be kept up by heavy expenditures; and no doubt there are some who think that so many are already in the field that they would be too late to accomplish much even if they tried.

There is, however, really no reason why the great bulk of the products of the silk looms should not be sold in this way, just as they are now sold without being branded. In other branches of trade, all goods of decent quality (and large quantities that are not), from hats to machinery or from carriages to stationery, are marked with the maker's name, and the sooner this comes to be the custom, instead of the exception, in the silk business, the better it will be for all concerned.

Goods Suitable for Trade-Marking.

Any decently made cloth, having a wide, or a fairly wide, range of continuous usefulness, is a fit subject for an advertising campaign, and a fabric free from any adulterant is the most desirable. The quality must be sound, and its merit constantly maintained, and, of course, from season to season, it may be brought out in new and desirable colors or weaves.

A name that does not indicate any particular weave is useful, as it can then be made to apply to any of the many fabrics that may be required over a period of years. This name should be woven or stamped on the edges, and on the ends of the pieces, and it is well to have some distinctive character about the wrappers.

Of prime importance is the intrinsic value of the article, that is, the price per yard or per inch that the woman who gets it has to pay. Honest fabrics cost money to make, and, any way, very low prices are neither necessary nor desirable, but it is absolutely necessary that the purchaser shall appreciate that she has got full value for her money. Fictitious prices may be maintained for a season or two, but not in the long run.

Textile Advertising Costs Not Paid by Public.

It is an error to say that the buyers of advertised goods must get less value for their money, owing to the cost of the advertising and branding having to come out of the goods. Supposing that on a certain cloth, retailing at \$1.00 a yard, $2\frac{1}{2}$ cents a yard had been spent in advertising it and 1 cent a yard in branding it; now, does the consumer have to pay for this? By no means. It come out of the retailer, for he is compelled to buy the cloth at, say, 75 cents a yard, while otherwise he would have bought it at 70 cents or $67\frac{1}{2}$ cents.

He, however, may be no worse off, and perhaps be better off. As the manufacturer is advertising the goods, the trade is created for the merchant who otherwise would have to advertise them himself. As it is the necessary and proper practice of makers, in putting an advertised silk on the market, to require all purchasers to agree not to break the established retail price, it follows that the cutting of prices by competitors at the end of the season is eliminated on such goods, and the merchant is not compelled to reduce the prices of what he has in stock to meet such cuts, and therefore the profit already made on the goods is unimpaired.

Agreements to Maintain the Retail Price.

The manufacturer will, of course, require all buyers to sign an agreement to maintain the price, and will compel strict compliance with its terms. He will not sell to those who decline to thus obligate themselves, and any who have broken their agreements will be shut off from getting any more of the fabric, directly or indirectly.

It is almost impossible to keep standard qualities of meritorious

goods before the public, with a living profit to the producer, unless the retail price is controlled.

This is because there are many unscrupulous retailers, who, as soon as an article with merit is beginning to have a wide sale, make it their business to get together a lot of the goods and make a big advertised sale of them at cost, or thereabouts, to make the public believe, by this tricky method, that they can sell cheaper than their competitors, and so attract custom to themselves.

When this comes about, other dealers will refuse to handle the goods, as they will not wish to have the name of asking higher prices than their neighbors, and they also have no intention of handling goods without profit, and as the maker finds himself without customers for the fabric, he has to drop it.

Then the public wonder why they cannot get more of the goods that had been so satisfactory.

Prosecuting Infringers.

Persons pirating the name, or infringing on the trade-mark, whether their goods be inferior or superior, should be promptly prosecuted, no matter in what part of the country they may be, and no matter how high or how low the standing of the infringing firm.

This is a less formidable task than it would seem at first sight, for nobody likes to be sued, and when chronic infringers realize that a firm is prepared to take them into court, if necessary, they carefully avoid taking liberties with any of its brands. When large sums are being annually paid for the establishment of a brand, it is the worst possible policy, and a most expensive one, to show the least sign of weakness in this regard.

How a Beginning May be Made.

It must be borne in mind that one need not spend an ocean of money when beginning advertising.

Suppose that a mill is running along in the usual way, then, let a start be made with one article, and, whether it sells largely, or slowly, or not at all, the general business is in no wise interfered with.

It is of great importance that a good name be selected or devised. It should be descriptive of the article, if possible; it should have character, and be of a kind easily remembered and not too long; and it should be one that can be legally registered.

The advertising could be begun on a small scale, but in some well-thought-out direction, and it must never be forgotten that much of the value of this kind of publicity is in its cumulative effect. Erratic and intermittent methods fall far short of the results that can be got from a steadily pursued policy.

Trying Out Various Methods.

A useful plan is to set aside a definite amount of money for ad-

vertising and entrust the laying out of it to some specialist in that line, who will advise as to the best methods to adopt. It is well to try and arrange it so that the results from each kind of publicity can be identified, with a view to pushing those that have proved most successful and eliminating the others.

Certain methods may prove best in the great cities, others in the country towns. If, for instance, it was desired to reach the dress-makers in the big cities, and two or more methods were under consideration, one of them could be tried out in one city, and the others in other cities, with a view to finding out by actual test which was the better.

When it is known that you are advertising, the people who want your money for such service flock round you in swarms, each one protesting, and apparently proving, that by his medium alone shall you be saved. You must, therefore, as before stated, enlist an experienced and reliable man for this service, allot your money, plan carefully your campaign, be it large or small, and—stick to your text.

Different Mediums for Publicity.

Among the mediums that will afford you publicity, there are the trade papers, particularly those that have a fashion side; the fashion papers—weekly or monthly; the widely circulated weeklies, particularly those catering to women; the ordinary monthly magazines; the daily papers; theatre programmes; street car, subway, or elevated railway advertising; wall display; posters at railway stations; signs alongside the railway lines; and a host of other ways.

Then, there are circulars, letters, and samples to be sent to distributors and to dressmakers, notices by fashion writers to be arranged for, display costumes to be got into the show rooms of those who display advance models to the dressmaking interests, the inducing of customers, who have bought the goods, to make a special display of them in their windows for a week or so, and the arranging to have gowns, made of your materials, worn by stage celebrities and then have them cleverly written up.

Judicious advertising can even be done in Paris, and, by getting in return favorable notices about your fabrics from the fashion papers of that city, it has a reflex effect on the buying public here.

All of these and many other methods will come up for discussion, but only a few of them can be followed. It should always be borne in mind that it is extremely easy to waste money in this branch of the business, and money so misused is gone, never to return. In fact, it is probably safe to say that more than half of all the money spent in all kinds of advertising, and applied to all kinds of merchandise, is absolutely wasted. Great discrimination, coupled with fair liberality, is necessary.

The Value of an Established Brand.

When a brand is once thoroughly established, it is a fortune to its possessor. The owners of some great textile trade-marks do not own or operate a loom, but have all their goods made for them on contract, they reaping a large profit, while the manufacturer, who weaves the goods for them on commission, may be hardly getting his cost back.

Time Needed to Produce Results.

One should not be discouraged if returns seem slow in coming. They will come in time, and the slower they come the surer they are. A year's careful trial, and perhaps less, should be sufficient to show if the right path is being followed, and if so, and if the returns are encouraging, the scope of operations could be increased. As the sales of the advertised articles grow, the least desirable parts of the other product of the mills could be weeded out, and eventually the greater part of the output would be the specialties.

Other Important Points.

It may be necessary for the advertiser to carry a fairly good stock of his branded goods, so as to be able always to promptly supply the people whose trade he is soliciting. He has also got to be careful not to allow his customers to over-buy themselves, particularly on questionable colors, for, if they cannot sell them, and as they are not allowed to cut the price, they may have to be taken back, and he will suffer. Sometimes they may be successfully redyed, at the customer's cost, of course, but it is much the best to feed out the goods, a few at a time, and then, at the season's end, the distributor has a clean stock, has made money on his purchases, is pleased with you and with your goods, and is ready to buy more the following season.

In fixing the prices, it is well to try to arrange them at figures that will permit the paying of a price for raw materials rather above the average cost, as it is very undesirable to have to disturb established prices on account of raw material fluctuations.

In this way, if raw materials were very high, there would be a little profit—at any rate, no loss; if at medium prices, a fair return; and, if low, a large profit.

Let Consumers Know Who Manufactures Their Goods.

Those manufacturers who have reason to be dissatisfied with the returns from their business, may do well to consider the matters herein set forth, and each with his own fabrics, and each in his own way, should go over the head of every intermediary and explain their merits to his real customer—the woman who wears them.

XXVII

THE QUESTION OF MAKING GOODS FOR STOCK

Theoretically speaking, a mill is not supposed to carry any stock goods at all; that is, goods made at its own risk, to be sold either at the time when they are being made or subsequently.

Its sales agents are also supposed to be clever enough to foresee what sort of goods, and at what prices, the market is going to require, and then, from the samples that they cause the mill to get up, they are to book sufficient advance orders to keep it fully employed, so that all goods coming in will be sold to arrive, and not a piece of stock goods will have been manufactured.

This policy is always difficult, and generally impossible, to carry out in practice, and for many reasons stock goods will, and do, accumulate, and the well being of a concern is in a great measure dependent upon how closely it keeps these accumulations sold up. Some of the causes that lead to the piling up of unsold goods may be briefly referred to here.

How Stock Goods Accumulate.

There are the type-pieces made for the purpose of properly displaying the goods. Some of these are necessary, but many of them are ordered with but little thought, pieces being called for when a short sample length would do as well. Full pieces will be ordered when demi-pieces would answer all purposes, and many are made without any sufficient reason.

These sample pieces, trifling in amount as they may seem, accumulate quite fast, and lock up considerable money, and, as they are all odd pieces, when they are cleaned up they seldom bring as much as fifty cents on the dollar.

Then, there are imperfect goods, or seconds, sent in from the mill, and some of them must always be looked for, in addition to those pieces

that are fairly merchantable but are erroneously considered not good enough to send out by the salesmen, and so are held back in the stock.

To these should be added those pieces that are made as the result of mistakes, whether on the part of the sales office by carelessness in transmitting the orders, or on the part of the mill in executing them.

A heavy accumulation comes from the cancellation of orders by the buyers, greater, of course, in bad seasons than in good ones, and naturally entailing at such times a loss to the mill of an unusually aggravated character. Rejections of goods by buyers on the ground of imperfections, or for not being up to sample, are frequent and in many cases are without substantial foundation.

Another important class is that of goods cancelled on account of late deliveries, and late goods there always will be, so long as the custom obtains of allowing the mill insufficient time in which to make them, which is the rule rather than the exception. The production of goods requires the correlation of so many various activities, the bringing together of so many different materials, and the loyal service and conscientious work of so many skilled operatives, that, if there is any delay or trouble in any one direction, late goods will be the result, and late goods are generally stock goods.

Again, there will accumulate at the mill, from time to time, odd lots of material that are not just in the direction of work, and which are practically dead. When business is slack, these lots are frequently worked up into such fabrics as may seem fairly salable—and thus a few scores or hundreds of pieces come into being.

Then, there are pieces made to fill out warps. Mills generally desire to make full warps, say 300 yards, and in some of the colors of a line only three or four pieces may have been ordered, and full warps of these colors will be put in work in the expectation that the odd pieces over will be readily sold. These odd pieces are generally not easily sold, and help to swell the stock, and the consequent loss when they are marketed. To make one 60-yard piece of plain goods will probably cost 15 per cent. more per yard than it would if 300 yards had been made, and yet in the long run it pays better to make the short warp at a loss rather than to suffer the heavier loss on the stock.

The foregoing instances will show to what an extent stock goods can accumulate on the shelves of any mill, even of those doing a strictly order business, and the necessity of a well thought out and vigorous policy to keep such stock always at a low limit.

Inducements to Manufacture Stock Goods.

We will now consider the more serious and important phases of this problem—namely, the questions of whether it is necessary that there should be an underlying stock to do business on; the making of quantities of goods so as to have a full stock of desirable goods on hand

ready for the buyers when they want them; the making of stock for the purpose of obtaining money advances for the financing of the business; and the weaving of goods to keep machinery employed, and prevent the organization from disintegrating, at times when advance orders are not obtainable.

Salesmen Insistent Upon Carrying Stock.

Most salesmen will strenuously contend that a reasonable amount of goods, of each line shown, must be carried in stock, so as to make a proper display to customers and so assist sales, and they also point to the fact that by having some goods in stock pieces can be furnished to those buyers who must have immediate deliveries, and who otherwise would have to seek elsewhere, and that the volume of these spot sales is by no means inconsiderable.

As the salesmen have to sell the goods, and are thus closer in touch with their customers than are the manufacturers, their opinion regarding all such matters should receive careful attention and full consideration.

As the losses, and very heavy losses they can be, that always attend the final closing out of such lines of stock merchandise, do not fall upon the salesmen, it becomes pertinent to consider what would be their views on this question if their own pockets had to stand a liberal share of the losses. Would they then think it was necessary to provide a line of stock goods, at their own risk, for the sake of enabling the buyers to keep out of the market till they were exactly sure of what they would need, and who then would come in at the last moment and find that the manufacturer had accommodatingly anticipated their wants? Emphatically, no! And yet this they desire the manufacturer to do. And would the trade, so catered to, feel in the least obligated to interest themselves in those other fabrics and other colors, also provided for their convenience, and which they had not thought of buying? By no means.

Bare Shelves Mean Larger Profits.

From the salesman's standpoint, an underlying stock facilitates sales, and sales are supposed to be made for the purpose of securing a profit; but if, owing to the heavy losses in the final closing out of this stock, the total profit will be heavily cut into, it follows that, by avoiding the making of stock, a much larger net profit may be secured by a much smaller volume of sales.

A mill does not make a jobbing profit, though in a large measure, selling pieces and demi-pieces, it is compelled to do a jobber's business; but if, on the top of this, it is to be expected to carry a jobber's stock, its chances of making money are very remote.

When salesmen, therefore, insist that to have a liberal stock on hand is a requirement of the business, and that, as the saying is, it is necessary to gamble on the goods, it is well to remember that they

want the gambling to be done at their principal's risk and not at their own, and the value of their advice can be measured accordingly.

Difficulty of Getting Full Price for Goods on Hand.

The truth of the matter is, that, very frequently, the having of goods on hand militates against their sale. Buyers are not so likely to place advance orders if they feel they can buy what they need from stock. Salesmen lose faith in the values of goods lying in stock and not moving rapidly, and do not have the same heart to make a fight for a full price against the attacks of the buyers as they would have if they knew the goods had to be made, and that, therefore, lower prices would not be considered.

The buyer, also, except for very desirable goods, would never dream of paying full prices for any decent sized lot of stuff if he knew it was in stock. That this is the case is evidenced by the fact that many sagacious sales agents find it advantageous to keep all their stock out of sight, except a few pieces of each line, and, no matter how much they may have, never profess to be able to deliver more than a piece or two, alleging that they will have to get more in from the mill before they can complete the quantity needed.

It is axiomatic in this, as in other affairs of life, that what is difficult to get, and what has to be waited for, is valued, and that which can be had for the asking is held in small esteem.

In presenting a line of goods to the trade, suitable type-pieces must be shown, and it is no doubt well to show them in a number of different colors, so as to make the best impression possible, but half-a-dozen pieces of a line should be ample for all ordinary purposes.

Let us now consider the matter of the policy of doing the business largely on a stock basis, the taking of advance orders being somewhat incidental.

Stock Required for a Novelty Business.

In certain directions, this is more or less of a necessity. Thus, a house making high novelties and bringing forward new things continually, must, to be successful, be able very accurately to forecast the demand, for in such articles it is difficult to get customers to commit themselves to orders long in advance.

A concern with the necessary prestige, engaged in this business, may find it to its interest to have the proper stock on hand at the time the buyers are ready for it, and if they can judge the market correctly four times out of five, and demand and get a sufficient profit, all will be well.

On novelties, in fact, many manufacturers are shy of an advance order business, for, with the many cancellations that may be expected, they may find themselves with a considerable amount of very ill assorted goods on hand, made on the other fellow's judgment, and which they would have never woven if at their own risk.

What Is Necessary When Handling Advertised Fabrics.

Then there are the advertised goods, carrying trade marks and specially branded. If the advertising is well done, such lines should gradually increase in sale, so that a demand considerably in excess of the advance business booked could be reasonably looked for. Furthermore, if, after leading people by your advertisements to demand your goods, you should not be able to supply the demands for your merchandise in reasonable time and in reasonable quantity, you would give real grounds for serious dissatisfaction. In such cases it is obvious that a stock, sufficient in amount to meet the demand fairly to be expected, must be prepared in advance.

How Certain Staple Goods Are Distributed.

On certain goods, again, of a staple character, the business is largely done from stock, or at any rate the orders are not placed far in advance. People making black taffetas, cotton-back satins, foulards, and other goods of a plain character, must either weave the most of their goods in advance of orders, or do relatively little business on them. On those lines in which the trade is practically a one-season business, the goods so accumulated may have to be held for a long time before the season for selling comes, and the consequent locking up of capital is very embarrassing.

Making Stock for Commission House Advances.

Now comes the very serious evil of the making of stock for the purpose of obtaining advances of money on it from the commission house which clears the goods. This practice is very common under the prevailing system of mill financing—in fact it is created and fostered by it—and no practice is more demoralizing to the market than this.

The commission-house system has come into being from the fact that the banks of the country cannot, or will not, furnish to the mills the funds necessary to finance them, in transacting their business along the lines on which it is necessary to do it.

The facilities that the commission houses offer, in the shape of advances on goods sent to them for sale, are such as to enable mills to operate much more machinery on a given capital than they otherwise could, or should.

This is a gain to the commission house, as it thus has more goods to sell and consequently receives more commission, and the manufacturer likewise has a basis for larger profits, both benefiting—if business is good and all goes well.

Whenever business is bad or slack, and orders are not to be had, the mill, with its too limited capital for the business it is doing, finds that it has no orders to go on with and that it must let its looms run out, while its capital is all locked up in plant and machinery or tied up

in equities in undelivered order goods, or stock goods, in the hands of its factors. Meantime, raw-silk bills and notes, and other obligations, will be falling due in a constant succession, and how are they to be met if there is no product coming forward? Either orders may be got under pressure at prices below the cost of manufacture, or stock goods must be made for advances.

The commission-house people do not feel justified in advancing funds beyond the limits which their experience has shown them to be safe, and at such times it is most difficult to sell the stock goods and thus release the equities in them. In fact, if the stock goods were forced to a sale, a price so low would probably be realized that all the equity in them would be wiped out.

Under such circumstances, no matter how much he may dislike to do it, and no matter how his business judgment may rebel against it, the weak manufacturer is forced into making stock goods as his only chance of avoiding disaster. The same cause, acting in many quarters at once, burdens the market with such an excessive stock of merchandise, and at a time when fewer goods are needed, that the effect upon prices is most disastrous and the whole trade suffers.

So long as the system continues which creates those conditions, there is but little use in quarreling with the effect. Just so long as manufacturers are forced by imperious financial necessity into adopting this course, just so long will it be done.

Stock Goods Mean Commissions for Factors.

While commission houses seldom encourage their mills, at such times, to make unsold goods, it may fairly be pointed out that the practice is of distinct advantage to them so long as they can keep their advances properly protected. It is evident that if mills produce no goods there will be no sales, and consequently no commissions, and a full production of goods, no matter at what price finally sold, is very much to the interest of the selling agent.

Stoppage of Production Is Disastrous.

The heavy general expense attendant upon the operation of a mill makes a full production obligatory, if the costs are to be kept at a properly low figure, and competition with other concerns thus made possible.

When order business is unobtainable, most manufacturers prefer to make more or less stock, rather than stop their looms, so long as they do not bank up goods to an excessive extent.

If a mill lets a lot of machinery run out, it takes a long time to get it all going again after the orders come. Meantime, the valuable skilled help gets scattered; the organization becomes badly disintegrated; and raw materials provided for the mill remain unused, with loss of interest, a locking up of capital, and probably, also, with rapidly

declining values. The mill expense is not much diminished, and the cost per unit on the output that is left is greatly increased.

To avoid these evils, it may often be better to risk the stocking of such goods as would fairly seem to be soon marketable, and, even if they had to be sold at a low price, it might be better for the mill than if the looms had been idle, in which event neither the mill expense or the selling expense on the goods so produced would have been earned.

Piece-dye and Yarn-dye Costs.

In such cases it is generally safer to bank up piece-dye goods than yarn dyes, as on the latter the difficulty of knowing what colors to make is obvious, and wrong colors are fatal.

Most piece-dye goods are made of material that does not have to be thrown, and of course they are kept undyed till wanted, so these charges are not then incurred. On the other hand, schappe and cotton yarns are sold almost on a cash basis, and silk for single-weaving on a relatively short time, so that there may not be such a great difference in the financing of a piece-dyed product as compared with a yarn-dyed one.

Importance of Preventing Stock Accumulations.

With all of these factors operating to cause the accumulation of stock, it is evident that the problem that faces every mill as to how to deal with the matter is one of first-class importance.

Generally speaking, all goods should be forced to a sale during the season they have been made for, as they will rarely bring a better price than what can then be obtained. The thing is—and too often it is neglected—to force the sale while buyers are still to be had. If goods that have recently come in are not moving, it is hard for the one who ordered them made to admit his error even to himself, and, instead of facing the mistake and taking the medicine, he maintains the price in the hope of still placing them, and so lets the season go past, entailing a locking up of money, a loss of interest, and a worse price later on.

Odd lots of stock goods, if in any quantity, bother the salesmen and paralyze their efforts, and take much of their attention off the getting of the order business that is so necessary.

Enlisting the Auctioneer's Services.

Some big houses used to have a cleaning-up sale in the auction room every year, into which sale went everything of a questionable or undesirable character, with often enough new and desirable goods to help to attract a good company of buyers to the sale. This policy had much to commend it.

In conclusion, it may be stated that nothing is of more importance than an aggressive, well considered, and closely followed up policy for the prompt marketing, at the best price obtainable, of each and every lot of these constantly accumulating odd lots of stock goods.

XXVIII

REGARDING AUCTION SALES

It is a surprising thing that so few of the selling agents who represent textile mills are in the habit of making sales at auction, and that often those who do so dislike to have their names known in connection therewith. In fact, this valuable means of marketing goods is seriously neglected, though most houses could regularly use the auction-room facilities to great advantage.

Yet the reasons for making forced sales of this kind are recurring semi-annually, or annually, and are very potent.

How Stock Will Accumulate.

In spite of good management and good salesmanship stock will accumulate to a greater or less degree. There are goods cancelled, rejected, and returned; goods late for delivery; others made wrong in color, design, or weave, from mistakes at the store or mill; lots made to work up parcels of raw material that otherwise would lie unused in stock; some goods made here and there to fill gaps between the running out of warps in the looms and the mounting of other warps for goods wanted for orders; and then, of course, there is the unsold portion of lines of goods, purposely made for stock, when it is the policy of the mill to put goods in work in advance of orders.

Most selling agents consider it desirable, or necessary, to have a reasonable underlying stock of goods as a basis on which to transact business, and such a stock will seldom be less than an amount equal to one month's production of the mill, and may be much more. While some of this basic stock goes out all the time, much of it moves sluggishly, and much always remains unsold, and in the regular course, day by day, becomes more passé, while it is essential to have it fresh, new, and constantly changing.

Perplexities of the Sales Manager.

With these accumulations occurring, season after season, the sales manager has ever a difficult and perplexing problem. He does not wish to sacrifice values, to break the prices of regular goods, or to discredit himself, yet sell them in some way he must.

To market these goods in the regular way and at fairly full prices is, in practice, impossible but that is what many houses fatuously try to do. The result is that the efforts and energies of managers and salesmen are paralyzed by the constant struggle to work down the stock, and the time and thought that should be given to the production and marketing of new fabrics cannot be sufficiently applied to that important work. The dead weight of the stock lies like an incubus upon the department.

Losses Incurred by Carrying Stock.

Then there is interest constantly piling up on the slow stock, as well as the large insurance that must be carried, and, as many goods will lie unsold year after year, the accumulated interest and expenses eaten up by these old lots is appalling. Much money and time is lost in the constant sampling of stock lots, and when taking stock, and at other times the recording and checking off of them is no inconsiderable task. Then styles and colors become obsolete and many weighted fabrics become tender or rotten.

To avoid such a condition of affairs it would be necessary to force the sale of them in some way, either by private sale at a known, but very low, figure, or at public sale, taking all the chances that attend such a manner of selling.

Low Prices Made at Private Sale.

Of late years, clearance by private sale has been the fashion, but I believe that it is rare that goods, so sold, will yield as much as they would under the hammer. They have to be sold in large lots either to jobbers or big retailers, and these distributors will not touch them except at prices so extremely low that, when they resell them, they can offer them at bargain prices to their customers. Such sales entail absurdly heavy losses.

The general method is to attempt to peddle them out as occasion offers, but the expense and time that this involves, the interest, and interest on interest—ever accumulating, and the constantly diminishing value of the merchandise, makes the aggregate loss entailed by this policy generally much greater than that entailed by the quick clean-up of the auction room.

What is it, then, that makes men with heavy stocks that are worrying them afraid to auction them, for unquestionably most sellers are afraid of the auction room? Even when an auctioneer suggests to

some loaded-up manufacturer that he try a sale, the answer will probably be that he has no unsold stock on hand worth talking about, although the next week he may let out some thousands of pieces through a jobber at about 60% of their cost.

Why Sales Agents Are Against Auctioning.

There are a number of causes that may affect the seller's feelings in this matter. Prominent among them is his amour propre. It seems to him a confession of weak management if he has to ask the public to name the prices on his product, and he fears the criticism of his manufacturer and the remarks of his competitors. By selling the goods even cheaper at private sale he may incur a bigger loss, but he "saves his face" before the trade. This is a false sensitiveness.

Then, if goods have only recently been made, he finds it hard to admit, even to himself, that he has committed an error of judgment in making them, and so holds on to them too long in an attempt to realize the regular price. They are thus carried past the time when they can be sold and lie over till the next season, locking up capital, eating up interest and expenses, and bringing an even lower price in the end.

Goods will rarely bring more than they will during the season for which they have been made.

If the manufacturer's financial standing is not of the best, he may fear that it might have an adverse effect upon his credit, and certainly it would be apt to cause inquiry.

He may be afraid that customers who had bought lines of goods at regular prices, and which lines would be represented in the sale, might be provoked, and would be disinclined to trade with him in the future unless he guaranteed his prices.

By carrying the stock, and peddling the goods out, the financial statement of the firm might show up better than if the inevitable loss were faced at once and a sale made, with the consequent shrinkage of assets that the books would then show.

Again, if the merchandise had been advanced on to the limit, and most concerns taking advances generally call for all they can get, the commission merchant might not sanction selling the goods at auction, fearing that the sale might go badly and that the equity of the manufacturer in the stock might not only be wiped out, but that there might be a substantial deficit for which he would be unprotected.

A broader point of view on the part of the commission merchant might save heavy losses to the manufacturer, and perhaps to himself, later on.

If the dead or inactive goods will not net the amount of the advances on them under the hammer they are hardly likely to do at private sale, and keeping them in stock to look at will not make them any better.

They should be auctioned, but if there is a shortage it should not be charged to the goods then coming in from the mill—the advances on which may be imperatively needed for current requirements—but should be carried along, and substantial time given to the manufacturer to make it up.

If this was the custom, manufacturers would be less inclined to try and bolster up the value of a stock that was rapidly declining in value, fearing that if a sale was forced on it their money supplies from their factors would be cut off until the deficit was made up.

Some sellers, too, may be afraid that, after having made one or two large sales, customers would not place advance orders with them but would say that they preferred to wait for the auction.

While all these objections must be well considered, yet a careful analysis of them will show that they are largely unsound, and they should not be allowed to stand in the way of a rational policy.

Limitations of the Use of the Auction Room.

In the employment of the auction room, as an agency for keeping the decks clear of accumulated stock, it must be clearly understood that this does not imply the regular manufacturing of goods to be sold in this manner. Under some circumstances such a policy might possibly prove profitable, but with the conditions that usually prevail in the silk trade it would probably be a losing business. The auctioning should be distinctly regarded as merely a cleaning-up process, which would take place as regularly as the seasons came around.

Conditions Incident to a Successful Sale.

To have a sale successful, that is, to have it yield the maximum that the trade can be made to give for the goods at the time, certain conditions are essential. The quantity of goods offered must be large enough to attract the buyers from every house, and the merchandise must be sold without reserve; the date of the sale must be at a time when buyers are in the market for goods; the manner of putting up the pieces into lots and assortments must be such as to facilitate buying; the sale must be well advertised and well catalogued; and, finally, the auctioning of the goods must be entrusted to some first-class house which can sell them in the best manner.

Under these conditions it may fairly be said that, taking the sale as a whole and with all collateral circumstances considered, in nine cases out of ten the prices got will be better than could be obtained in any other way, and often very much better.

Even in the occasional instances where the returns from sales have been a bitter disappointment, one rarely or never finds a seller who, two or three months later, would wish his goods back on his shelves again at the price for which he parted with them.

Quantity of Goods to be Marketed.

The quantity of goods that one would have to prepare to auction annually should be somewhat proportionate to the output of the mill. Five per cent. of the output might frequently cover it, fifteen per cent. certainly should.

The number of pieces that might have to be brought into a sale to insure the presence of a good company would be pretty large. Probably from seven thousand pieces upwards would give the best results.

It would be well, therefore, for those mills whose accumulations would not be so great, to make an arrangement with one or more friendly competitors to combine in a joint sale, so that it would then be of large proportions, the names of the sellers being made public also.

Advance Preparation to be Made.

These sales should be prepared for long in advance, so that, by a date previously determined upon, all will be ready.

Such preparation will be the working up into finished merchandise of odd lots of dyed or other silks, at the mills, which have been side-tracked for one reason or another, or not in the way of any immediate use. Then there will be a few goods made to piece out the assortment of important lines which may have been broken. Lastly there is the deliberate making of some new and desirable goods to "sweeten" the sale.

These goods should be of some popular market fabric, made in the most desirable width, of a quality low in cost but not trashy, and should be divided among as few colors as possible, but all of them good. It would probably be judicious to make them to the extent of perhaps 10 or 15% of the quantity of the goods to be sold. It is true that they may not bring cost, though any loss will likely be small, but they will help the sale very much.

It is evident that preparations such as are here referred to must be begun months in advance.

When to Sell, and What to Sell.

Suppose, now, that such dates as February first in the Spring, and September first in the Autumn, are recognized as times when the buyers for the distributing houses are open for spot goods, then sales to take place on or about such dates should be determined upon and prepared for.

In these clean-ups it is not intended to sell everything in sight. Active lines of seasonable goods would not go in, nor would advertised fabrics with protected prices. Fancy goods, also, must be carefully judged, as, for the sake of moving perhaps only a few pieces of some

novelty that are left over, it would be injudicious to invite the breaking of the prices in the sale while customers had many of the goods still unsold on their shelves, and which, in fact, might have just been delivered to them.

It is very necessary that the lots be judiciously made up, both as to assortments of colors and as to the number of pieces in the lots.

The sequence in which the different lines of goods in the sale are to be catalogued requires careful consideration.

All Buyers on the Same Footing.

When a large company is gathered at an important sale the individual buyers find themselves at an unaccustomed disadvantage. Here they cannot play one house or one lot of goods against another. Any kind of finesse is out of the question. They must make up their minds in advance as to what they want, what they would like to get them for, and what is the most they will give, and when the goods are cried they must act in a hurry and either pass them or buy them.

Relation of Prices to Values.

The excitement of the sale will also frequently cause buyers to pay distinctly more than they would have done at private sale and in their cooler moments. The prices realized at a well conducted and well arranged for sale are a fair measure of the real value of the goods at the time. Here and there a line will sell much too low, or perhaps too high, owing to some whim of the moment, but it is the average figure obtained that must be considered.

If prices are very bad, it will generally foreshadow a heavy fall in market values, so that the bad price of to-day may be a good price six weeks later. Sometimes very handsome figures are realized, and comparisons of sales, averaged over a period, will usually leave little to complain of.

Terms of Sale.

The cost of selling must not be overlooked. The regular auction rate for silks sold on a credit of four months, the auctioneer carrying the credit risks, is 8%, and the customer gets the full amount of the sum realized by the sale, less this 8%, in ten days or sooner.

For large sales, special selling rates may be arranged with the auctioneers, and these rates will depend on the size of the sale, the character and condition of the goods, the condition of business, the state of the money market, and other considerations.

When goods are sold at private sale the customer gets 7% off, or more, and then there is the entire sales expense to come off. Auction figures are therefore much better than the corresponding prices for regular sales, a fact which is very often overlooked.

Clean Stocks and Profit Making.

Apart from any question of profit or loss on the goods disposed of under the hammer as here described, it is obvious that the concerns adopting this policy will always have clean stocks at mills and at sales offices; that what goods they have will be fresh, new, and attractive, and that the efforts of the entire staff can always be concentrated on the live present and not be tied to the dead past.

Any profits that are to be had must be got from new goods and not from old, and a policy which automatically eliminates old goods from the stock, with a minimum of loss, is a sound one.

XXIX

FINDING FOREIGN MARKETS FOR SILKS.

In view of the fact that it seems to be absolutely necessary to have a very considerable tariff protection, to enable us to meet the competition of foreign silks in our home markets, it may sound chimerical to suggest the possibility of working up an export trade in such goods, and competing on even terms with European made fabrics. Nevertheless, this matter is one that has been engaging the serious thought of many far seeing men, and when we see what has been done in the cotton cloth trade it does not seem to be quite such an impossible matter.

Exports of Cotton to Asia.

The export of plain cotton fabrics to China, and elsewhere, has reached really large proportions, not a few mills running exclusively for this trade, and the business has been secured in spite of the competition of goods made in England, Germany and elsewhere, where wages are much lower.

Necessity of Wide and Accurate Information.

It is much to be desired that a large body of accurate information and statistics should be secured, which would throw light on the question of the possibilities of an export trade in silks.

The really important questions, of course, are whether there is a market of reasonable size in this or that country, what kinds of goods are required, and whether we can make any or all of such goods in an open competition with other countries.

The information to be gathered should be of the fullest and most accurate character, and it should be got by persons thoroughly familiar with both the producing and distributing ends of the silk business, if it is to be of real service. Its value would be as great, or greater,

if the conclusions to be drawn would show that certain lines of merchandise could not be exported profitably, as when it would point out paths of prospective profit.

Markets With Which Business Might be Done.

Among the countries with which the working up of an export trade might be considered, would be Canada, Mexico, most of the South American states, South Africa, Australia and New Zealand, India, China, etc. Possibly, also, some of the European countries might be reached, and the great English market, where goods enter duty free, should be especially considered. China, though a silk producing country, imports more or less silk merchandise from Europe.

No two of these countries will be found to do their business just alike, and the conditions to be met with in each one will require a special study.

Conditions Which Must be Inquired Into.

How many yards of different kinds of silk, per annum, and of what value, does each country import, and what is the extent of its home manufacture, if any? How are the goods bought and sold? Do commercial travelers have to visit each town to get the orders, and at what times of the year is the buying done? Do jobbing houses distribute the goods or do manufacturers' agents, or importers, sell direct to the retailers? Are firm orders taken from samples, or is it necessary to send out, on consignment, stocks of merchandise, and sell goods from stock?

Then there are the questions regarding the fiscal aspects of the business. Is it necessary to do business on time credits, and for how long? How is the credit of the merchants to be ascertained? Are time accounts left open, or are they closed by note payments? What facilities will the bankers on the ground afford for financing the business? How are collections made, and what percentage of loss by bad debts may reasonably be looked for?

The political and financial stability of the country must be reckoned with in considering the risks of the business.

Then, it is of interest to know just about what is the lowest percentage of profit that the European shipper is willing to do the business on, and to consider how that will affect prices, and if we would be satisfied with the same profit or not.

We should also know what margins of profit the importers, jobbers, and retailers customarily expect, and what are the ordinary retail prices that the consumers look for on the different goods that they buy.

Full information should be had regarding the custom-house duties in each place, and as to the nature and amounts of any other imposts or taxes that would fall upon the goods, as well as the amount of ordinary costs and charges that would have to be met when import-

ing merchandise. Data regarding preferential tariffs should also be got.

The question of transportation facilities is not a light one. It is of material importance that freight should be transported cheaply, regularly, safely, and quickly. Deficiencies in this regard constitute a considerable handicap.

Special Requirements of Trade.

Again, the manner in which goods should be put up and shipped is of vital interest. Every locality has its own requirements, its own customs, and its own prejudices. None of them must be disregarded, for often the merest apparent trifle, left unconsidered, may entail failure.

As an example, it may be stated that in some of the mountainous states of South America, Peru for instance, much of the merchandise for villages and towns in the interior has to be transported on pack mules. These mules will carry panniers of a standard size, and which, when filled, constitute an average load.

For such transportation it is obligatory that pieces of goods should be, say, double-folded, and of a length, width, and weight that will not exceed certain limitations, or otherwise they could not be conveniently packed. If, therefore, the maximum length of the wrapped up pieces should not be in excess of, say, 20 inches, and that goods of 38, and 40 inches, double folded, were being used by this trade, it would follow that a manufacturer sending out goods 42 or 44 inches wide, even when double folded, would find himself entirely out of the game.

American Manufacturers Neglect Important Details.

American manufacturers are notorious as paying scant heed to these local conditions, and for sending goods abroad for sale of a width, weight and character that may be quite unsuitable, simply because they do not go to the pains and expense necessary to properly inform themselves, and thus, with really better values, they find themselves often quite out of the market.

The widths of goods, the thicknesses, weights, and weaves that are suitable for the climate and conditions, the colorings, the lengths of the pieces, and the manner in which they are put up, are matters of prime moment, as are also the brands and the tickets.

Precautions to be Observed in the Packing of Goods.

Goods must arrive at their ultimate destination in good condition and with unblemished appearance. In the ship there is the chance of damage from sea water, and when goods have been discharged at their port of debarkation the cases may, perhaps, be left lying exposed to the tropical sun and rains, and they may also be handled in the roughest and most careless way.

It is therefore necessary that individual pieces of goods be extremely well wrapped; that cases be thoroughly well lined with waterproof material; that the cases be made of a size and weight not too large for convenient handling; and that they be stout and well made, and well hooped or strapped.

The lids of cases should be, preferably, screwed on, so that, when opened for inspection in the foreign custom house, they will not be wrecked or damaged by careless workmen. The names and addresses, or other markings, on the cases should be stenciled on in the language of the country to which they are going, and the side that is to be opened—that is, the top—should be so marked.

Collection of Full Information a Formidable Task.

When it is considered that all such information as has been outlined should be collected for each of the regions that we might wish to trade with, it will be seen that it is a formidable task, and the question will naturally be raised as to whether the game is worth the candle.

Overproduction and the Home Market.

We, practically, have our home market to ourselves at present, but we have only it. If manufacturers install productive machinery at a greater pace than our normal increase of consumption will take care of—and they generally do—this surplus production, or potential production, hangs like a weight over the market, and at the best of times compels the manufacturer to accept business on the most meagre basis of profit, while, at other times, the slaughtering of goods demoralizes prices everywhere, and, perhaps for seasons together, compels the whole trade to run at a loss or without profit.

A reasonable foreign outlet would do much to mitigate this state of affairs, and it is greatly to be desired that some initial movement in this direction should be made.

Going After Business in a Businesslike Way.

Foreigners, when going after trade abroad, usually send out a responsible and able man to take charge of the business, and who takes up his residence in the place. Living there, he is, of course, in the best possible position to give proper advice to his home concern, and a business, so undertaken, is patiently and intelligently nursed till it begins to pay.

When it is not possible to have one's own man continuously on the ground, good introductions should be got to the best houses doing an import trade in the locality, and suitable arrangements made with one of them. In such cases, the standing and reputation of the local house means everything.

Evils of Intermittent Efforts.

American manufacturers are much criticized by foreign agents for the intermittent way in which they do things. Trade here will be bad, and a manufacturer will look for trade abroad, get a good agent, make the necessary samples and send out some goods. After a year or two of effort, a nice trade is being established, and the agent looks forward to doing a really large business in the near future. Then comes a very active demand for goods here, the mill can sell more than it can make, and at a better profit here than abroad, and, the first thing that the foreign agent knows, he can get no goods for his trade. That trade, being unsupplied with goods from here, buys elsewhere, and the foreign made goods again hold the field. Then, when more export business is wanted by the mill, the whole work has to be done over again.

Manufacturers, therefore, who wish to exploit the foreign markets, must be prepared to furnish their agents there with such reasonable quantities of goods as they can sell, even if a temporarily larger profit might be made by selling them at home.

Conditions Which Affect Our Ability to Compete.

What position, now, are we in to compete with other nations in exporting silks?

Of course, the cost of labor varies everywhere, and in America just as it does in Europe. Some silk producing centres pay higher wages than do others, but still there may be compensations in other directions. We need not therefore necessarily assume that it is the cheapest labor centre that would do the exporting, either here or abroad.

Raw-silk costs practically the same everywhere. Europe has lower cost mill labor, lower salaries, lower interest, less depreciation (as machinery costs less), and lower cost of throwing. Skein dyeing is dearer there, piece dyeing in many cases is cheaper, while printing will vary. Coal is cheaper here, and, as to supplies, some cost more—others less.

In those articles into which labor enters most largely we are visibly outclassed, and particularly so in those directions where the business is made up of small quantities of each of a large number of different fancy patterns.

Plain Goods the Most Promising.

With plain goods, made on a very large scale, the unit of labor cost is much decreased. Where a mill is running many hundreds of looms on the same fabric—three or four looms to the weaver, and at high speeds—both the weaving cost and the general expense item fall to a really low figure, and it is in these directions that we must look.

There are many fabrics such as liberty satins, cotton-back satins, crêpes de chine, taffetas, etc., etc., that have been so specialized on here as to encourage the belief that their cost is so low that an export busi-

ness might be done on them, but, first of all, exact information about the foreign conditions must be had.

The First Steps to Take.

If the Silk Association of America, or some other representative body, should draw the attention of the Government to the importance of this matter, no doubt steps would be taken to secure, through the medium of the Consular Service, much preliminary data along the lines required.

This would indicate what fields seemed the most promising, and then arrangements might be made to send a specially qualified representative to such places to procure the fullest information possible.

With this to work on, manufacturers here would be able to direct their efforts intelligently when seeking to find an outlet abroad for their goods.

XXX

COTTON MILL COMPETITION.

For several years past, silk manufacturers have been aware of an adverse undercurrent due to the invasion of their field by cotton mills which had ventured out into the realms of silk. Occasionally, some special circumstance has brought the serious nature of this competition sharply to their notice, but many manufacturers do not realize its extent or importance.

It is, however, one of the great causes that underlie the chronic state of insufficient business that many mills have had cause to complain of during recent years.

Immense Scope of the Competition.

To show the importance of this conflicting element, it may be stated that at this writing, (February, 1913), some eighteen mills, nearly all of them in the New England States, are recorded as operating on cotton and silk fabrics, and that these mills represent a total of 42,000 looms.

It is true that many of the looms in certain of these mills run regularly on all-cotton fabrics, and that others are at times employed on all-cotton goods, and at other times on silk-mixed goods, according to the state of the trade.

A careful consideration of the status of the different mills in this respect would lead one to believe that, as constant or as potential producers of silk goods, one-half of these looms are constantly in the field competing for business in silk-mixed fabrics. These figures, moreover, do not include those mills specializing on grège warp, cotton-back satins, as these goods are more nearly a silk-mill product than that of a cotton mill.

These cotton mills run their looms far faster than do the silk mills,

the average speed being probably between 152 picks and 172 picks a minute. Let us assume an average of 160 picks.

What the Annual Production May Amount to.

From the fact that the cotton-mill organization, owing to the staple nature of the goods produced and the continuity of operation, has achieved a much higher actual production, compared with the theoretical, than what the usual silk-mill organization has been able to effect, it has followed that a similar large production has been found possible in silk-filled goods also, particularly as they are nearly always woven in the grey.

A conservative estimate of the production might therefore be stated as being about 80% of the theoretical.

If the running hours averaged 58 per week, there would be produced on this basis, with 100 picks to the inch, a weekly output of about 124 yards, or about 6,300 yards for a year of 51 weeks, an out-turn probably 20% or more in excess of what a silk mill, making the same goods, could accomplish, per loom.

This would give the 21,000 competing looms an effectiveness, measured by silk standards, of 25,200 looms, and would give a potential output of about 159,000,000 yards a year, or nearly 2,650,000 pieces of 60 yards each.

As the regular broad silk looms in the country are at present figured at about 75,000, the effect of this outside competition is to throw on the market, if all these cotton-mill looms were running full, a volume of part-silk merchandise which, if made in the silk mills, would employ about one-third of the entire silk loomage of the country.

Some of the cotton mills have run looms, on some of these fabrics, night and day, with double shifts, thus further cheapening their cost, and increasing the yardage produced.

How the Low-grade Silks Have Been Displaced.

The cheap end of the silk trade has been hit the hardest. What demand is there to-day, compared with a few years past, for narrow width, heavily-weighted silks, either plain or fancy, fast-edge or split-edge? Low-grade crêpes, cheap foulards, cheap Shantung and a number of other lines have equally suffered. The business has largely gone, and much of what remains is going fast.

It must be observed, however, that all of these cotton-mill goods do not necessarily displace silks. Some of them displace cottons, and others probably create a market of their own, but all of them have a profound effect on the prices of low quality silks, on account of the immensely greater values given.

What chance has a silk mill to compete with 24-inch, light-weight, cotton-warp, silk-filled, reed ombré stripes, sold in the grey at 9 cents a yard, terms, 10 days net, or with 26-inch cotton-warp, tus-

sah-filled Shantungs, of good heavy quality, and delivered, boiled-off and finished, at 21 cents regular.

Wide Variety of Attractive Goods Made.

The variety of goods now made by these cotton mills is surprising. Marquissettes, aeoliennes, foulards, Shantungs, surahs, stripes, brocades, crêpes and a host of others. These are dyed in solid colors, cross-dyed for glacés, printed and treated in a variety of ways.

Fast blacks or fast colors, of cotton, may be used for stripings in warps, so that they will stand dyeing in the piece, and very attractive striped fancies can thus be made.

How the Production is Marketed.

Some houses in this trade prepare and market their entire product themselves, or through their regular selling agents. Others sell only in the grey, and to all comers, doing much business through brokers, and dealing principally with those houses that make a specialty of converting. This trade is done on a basis of cash, ten days, and for that reason appeals strongly to the manufacturer.

These converters, however, are keen traders and generally hammer the manufacturer's prices down to a point where his profit is merely a brokerage, and then, by clever dyeing, printing and finishing of the goods, they are able to sell them at what appear to be very low prices, but which include an exceedingly handsome profit for themselves.

Some of the houses dealing in these mixed fabrics prepare their lines of goods in a manner deserving of the highest admiration—beautiful, novel and tasteful prints, superb dyeing—plain or cross-dyes—and with a finish on all that leaves nothing to be desired. The goods, so treated, are soft, brilliant and silky in appearance, and, in weave, design and color, they measure up to the most exacting standards.

True, they are part cotton; but they neither look cottony, nor, except in a quite minor degree, do they feel cottony.

Average Range of Prices.

The average range of prices for such fabrics, dyed and finished, will probably run from about 14 cents to 25 cents, regular, with some special goods perhaps as high as 37½ cents. They will mostly retail at prices ranging from 25 to 50 cents a yard.

Usual Materials Employed in Construction.

The makers of these fabrics use principally single cottons for warps, while, for fillings, raw, spun, or thrown silks are employed, the goods being dyed, or printed in the piece.

Canton is a favorite silk on account of its lustre, and is used in doubled singles or in two-thread tram of 14/16 denier size, or in 20/22 deniers—or coarser—used in the single. Tsatlees have been largely used also, on account of whiteness, nerve and brilliancy, but

they are somewhat neglected now because of their extreme irregularity.

The cheaper grades of yellow Europeans find some sale for filling purposes, while tussah silks—raw or in tram, tussah spun-silks, and the lower grades of Japans are freely used as occasion requires.

Conditions Attaching to Sales of Silk and Cotton Mixtures.

The following details of how this business is done may be of interest.

Contracts are largely placed for these goods in the grey through the medium of brokers, who get their commissions from the mills for whom they effect sales.

The general conditions of such contracts are that the customer must deliver his silk, properly wound on suitable shuttle bobbins or quills, f. o. b. at the railway station of the town where the mill is. When woven, the weaver makes delivery to the railroad, and after that his responsibility ceases. Both the freight on the filling and the freight on the goods is paid by the buyer.

If any delay occurs in the delivery of the filling, and looms are stopped in consequence, a charge is made to cover the expense of the standing looms, a common figure being 50 cents a day per loom.

A percentage of "tailings" is provided for, say 10% in excess of the order, if made, so as to allow for a clean-up of the material.

For seconds a limit is also set, and a customary amount to allow is 5%. The reduction in price for these defective goods is, however, very slight, often not more than 5% being allowed from the price charged for the regular goods.

Remnants are sent in, too, but on them the allowance, of course, is larger and 33 $\frac{1}{3}$ % may be deducted for them.

Times of delivery are carefully arranged for, and terms are usually net 10 days, and options for additional quantities are often given.

It is considered desirable to have the goods woven in double cuts—110 to 120 yards—as it enables the purchasers to cut them into either 40- or 60-yard lengths as may be needed.

Yarns Used and Usual Widths of Goods.

The yarns used for warps are generally 1/40 or 1/60 combed peeler cotton, and may run from, say, 72 to 100 ends per inch.

The filling, be it Canton, tsatlee, tussah, or what not, may run from, say, 68 to 100 picks per inch.

Customary widths are 23 to 24 inch, 26 to 27 inch, and wider widths also, as 36, 42, or even 46 inch.

What the Cotton Mill Provides.

The weaving concern provides the warp yarn and the entire mill labor, with all of the attendant expenses.

Prices at Which the Mills Make Sales.

The prices charged by these cotton mills for their fabrics look startlingly low to silk weavers.

With the price of "middling" cotton ruling at about 11 cents a pound, such figures as the following might be expected.

Plain goods of fine construction, in widths of 23 to 24 inches, about 4½ cents. Dobby figured goods, of coarser construction, about 5 cents, and Jacquards about 5½ cents. Dobby figured goods, of fine construction, about 6 cents, and Jacquards about 6½ cents.

Small differences are allowed for variation in picks, ends, and widths, and fancy stripings in the warp can be had at a most trifling additional charge.

Thus, instead of a coarser 23- to 24-inch Jacquard cloth at 5½ cents, one in 26 inches might be had, made from 1/60's cotton, and with 96 ends per inch, and 96 picks per inch, at 6¾ cents, while the same cloth in 28 inch would be furnished at 7 cents.

Competition Among the Weavers.

These low prices are doubtless accentuated by stress of competition among the cotton mills bidding for this business, and must leave little enough of profit for them, but the slightest consideration of them will serve to show the impossibility of silk manufacturers attempting to compete in this line of work.

Prices Charged to Distributers.

Such fabrics, with fillings of unthrown Cantons or tussahs, after being dyed and finished, or printed, will sell to the distributers at prices averaging between 15 and 25 cents a yard, regular.

Silk Filling Provided by the Converters.

The actual weight, and cost, of the silk used per yard in many of these fabrics is, and must be, very trifling, yet it shows up wonderfully in the goods when finished.

A large amount of the business done by the cotton mills is based upon the requirement that the buyers provide the silk filling on suitable quills or bobbins for their shuttles, so that they have nothing to do with it but to weave it in as they would cotton.

Troubles Entailed by the Procedure.

This method of having the silk for filling supplied by the buyers leads at times to friction between them and the mills on the question of whether the right quantity of goods has been produced from it or not.

The weavers may make undue waste, or silk may be stolen or lost while in their possession, or they may put more picks in the goods than what were ordered, by mistake.

On the other hand, the silk may be coarser than the buyers thought it was, or excessive waste (covered up by the free use of soap and oil) may have been made by the concerns which wound and quilled it, or some of it may have been lost or stolen while in their possession, or, in some rare instances, perhaps stolen by themselves.

If these differences run into large figures, very serious trouble between the parties may arise.

Another Way of Handling the Matter.

Some of the mills, therefore, insist on handling the silk part of it themselves. They will furnish any kind of silk for filling that their clients desire, and as they can buy it as cheaply, ~~or~~ cheaper, and are in a much better position to get it manipulated with a minimum of waste and expense, they find it more profitable and less troublesome to avoid the complication of a divided interest in the ownership of the raw material entering into the goods.

Silk-warp Goods Made in Cotton Mills.

Some silk-warp goods, with cotton fillings, are occasionally made by these cotton mills.

For instance, four looms will be run by one weaver on a 24-inch Jacquard foulard, the ground being a well-covered eight-shaft satin, and the filling a fine mercerized cotton.

These goods, beautifully printed, and having a splendid appearance and touch, may sell for 37½ cents, regular, and one house handling them distributed over 100,000 pieces in one season.

All-silk goods of similar character, made in a silk mill, would hardly find the retail counter at less than \$1.00 a yard, while these could retail at 50 cents. No wonder that it is found hard to move foulards, when a slump comes, except at prices that would enable them to be sold in competition with these.

Mill Conditions.

In cotton mills there will be usually run eight looms to the weaver on cotton warps, and they will be run at high speeds. Their winding and warping arrangements are such that very low unit costs are obtainable. Owing to their large and steady output the general expenses are also low.

The dyeing and printing are done by the silk dyers usually, and must be paid for at silk rates, but the immense lots of each fabric processed enables substantial concessions in prices to be often obtained.

Wages in the Cotton Mills.

Cotton weavers, on the other hand, demand higher weekly wages than silk workers do. A minimum of \$12.00 a week, and from that up to \$16.00 is largely expected. Some other branches of labor are also more highly paid in cotton mills than in silk mills.

Where the Silk Mill Has the Advantage.

It is this higher weekly wage that makes cotton mills unable to compete with silk mills in making skein-dyed goods. On such cloths the cotton weavers cannot, or will not, operate more than two looms each. They do not understand well how to make silk knots and production suffers, and methods of warping are materially different. The fineness of the silk thread is also a serious trouble to the cotton operative.

In the skein-dyed field of silk, the cotton mill is not a competitor except as it displaces trashy, over-weighted goods, by cotton-mixed stuffs.

Merit of the Cotton-warp Fabrics.

This competition from the cotton mills, distressing as it is, must be fairly faced and properly judged. In its last analysis it is right, logical and beneficial for the public. The goods so produced are sound, honest merchandise, with excellent appearance, and relatively very low in price, and so far as durability and wearing qualities are concerned they are infinitely superior to the over-weighted trash that they have displaced.

As one of the most prominent market handlers of these cotton mill products stated, in substance, to the writer, "The low end of the silk manufacturing business is gone from the regular silk mills forever, and the sooner they awaken up to the fact the better for them."

Cotton Mills Also Have Their Troubles.

The cotton-and-silk goods producers have troubles of their own. So long as they were taking business away from silk mills, and there was plenty of it to go round, it was profitable and the sailing was smooth.

When, however, the amount of the trade that could be got away from the silk manufacturers was getting near to its limit, and when, at the same time, there was a great increase in the cotton-and-silk loomage, trouble began to appear. Goods would no longer sell themselves and the buyers—principally converters—play the producers of gray goods against each other till they can hardly find any profit in their transactions.

The Clever Man Can Always Find a Profit.

Here, as ever, those handlers or converters who have taste, experience and commercial courage, by means of cleverly got up patterns, colors and styles, and suitable preparation of goods for the trade, will continue to do a good business at a handsome profit, while others will not know which way to turn.

Lost Business that can Never be Regained.

What, now, can the silk manufacturers do to regain this lost trade? Practically nothing. To try to place cotton looms and cotton weavers

in their silk mills would disorganize both branches. They might start mills of their own, in the East, but these would be new mills, requiring their own organizations and capital, and would have strong competition to meet, and, as newcomers in the trade, much expensive experience would have to be gone through with, and, anyway, it would not help, but would only make harder the running of the standing silk mill looms.

There is nothing to do but to say good-by to the lost trade and face about in the direction of better goods, goods that are really silks and not shams, and to try not to copy the ideas of one's neighbors but to build up business on original lines.

XXXI

DIRECTING THE PRODUCTION OF A TEXTILE MILL

A heavy responsibility rests on the shoulders of the man who undertakes to determine what lines of goods a textile mill should make. No branch of the work requires such knowledge, good judgment, up-to-date information, experience, caution, honesty of purpose, and business sanity as this.

Knowledge and Intuition Both Needed.

To have the gift of prophecy can hardly be expected of man, and yet this gift, or something akin to it, seems to be necessary if one is to be a successful sales agent.

The knowledge, care, and keen observation that some agents bring to the work enables them to guide their course so well that it seems almost as if they were endowed with a special intuition, but this insight into the market requirements is really the result of unremitting patience, observation, inquiry and work.

Very Few Who Measure Up to the Situation.

Unfortunately, there are few, very few, who reach or ever could reach the standard demanded by such an exacting position, whether the fault lies in their lack of proper training, their mental limitations, or in an indolence of mind that leads them to guess at things, and, generally, to allow their decisions to be largely governed by chance.

The result is that, as these properly-trained and highly-qualified men are so scarce in number, it follows that but few mills enjoy the advantage of such direction, and the great majority of manufacturers are compelled to place their interests in the hands of representatives who are at the best but fairly good and are too often hopelessly incompetent.

How to get the right man is the problem; and season after season

a manufacturer will see his efforts thwarted, much of his machinery idle, his goods butchered, and his assets diminishing. He may change representatives and may find that he has only gone from bad to worse, and his life becomes one of ever deferred hope.

Requisites Which a Sales Manager should possess.

To be properly equipped for such a task, a man should have a good working familiarity with the processes of a mill and its machinery. This is necessary, so that in considering fabrics on which he might desire to sample he will be able to appreciate which ones it should be practicable for the mill to undertake, considering its machinery and conditions.

He must also well understand to what extent the cost of manufacture or the difficulty of the work will be influenced by the different characteristics of the goods.

His mill knowledge will, in addition, guide him aright in keeping clear of fabrics of a kind that are difficult to produce so as to be merchantably perfect. He must also thoroughly understand merchandise and have a sound idea both of costs of production and commercial values, and of the requirements that have to be met for each class of goods, for the different seasons, and for each branch of the trade.

Then, his practical experience as a salesman must have been considerable, both on the road and at home, and he should possess a large acquaintance and a friendly standing among the buyers.

His knowledge about the conditions of wholesale and retail distribution must also be extensive and accurate.

All of the foregoing accomplishments can be acquired in time by intelligent men who are willing to concentrate their whole minds and efforts upon the task.

Then, there are fields in which relatively few are able to achieve success. Good taste in style and design, a keen eye for color harmonies, a power to accurately observe and note the rise or decline of the demand for various fabrics, and the ability to "size up" the market situation are not always to be attained.

Added to all this, there must be an underlying honesty of purpose, for, when an agent wants a quantity of goods made for stock, it must not be forgotten that such an operation is in every sense a gamble, and there are many agents who will lightly run such risks when the chance of loss falls upon their principals, but who would never dream of taking the risk if the loss, or part of it, that might result, would have to be paid from their own pockets.

Lastly, the sales manager must have that firmness of character which will enable him to withstand both the unjust exactions of his customers, and the undue pressure of his salesmen on their behalf, and he must also have that quiet determination which will cause him to adhere patiently, steadily, and unfalteringly to the lines of a sane

policy, carefully mapped out, and which, if followed up, must insure success.

There are, doubtless, many men who, with proper opportunities, would measure up to these standards, but, somehow or another, extremely few of them seem to have found their vocation.

The Usual Training of the Sales Manager.

What, then, is the usual training of many of the sales managers whose misdirected activities spell loss or ruin to the manufacturer?

A boy from school finds a place as office boy, or stock boy, in a wholesale silk department. He is bright, clean, and industrious, and is well liked. He keeps the stock in order, folds up pieces, cuts samples and makes sample cards, and is generally useful.

When salesmen are busy, or out, he sometimes gets a chance to wait on a customer and may do so acceptably. After a while, he is allowed to go out and see what trade, not already covered by the other salesmen, he can drum up in the city, and in time he builds up a connection.

Then, there may be a vacancy on the road over a good territory, New York State, the Middle West, or wherever it may be, and he is given a chance and does well at it, and perhaps becomes a widely known, popular, and well-paid salesman with a good following.

A vacancy now occurs in the management of the department, or some other mill needs a sales manager, and he is offered the position and accepts it without the slightest doubt as to his entire fitness for the post.

Is he fit? Compare the knowledge and experience that his training could have given him with the qualifications that he should bring to the task, and the question answers itself.

Profit Making, and Volume of Sales.

The function of a sales manager is to keep a mill sold up on profitable goods, and to do so he must select constructions, styles, and colorings that can be marketed at good prices, and at satisfactory profits, but the making of profits is a matter entirely foreign to the ordinary salesman's experience.

Volume of sales is his aim, and he is prone to believe that there is a profit, and a good one, on all the goods that he sells, and that every offer—so long as he can persuade his superiors to accept it—is a good offer.

Then, when he takes charge of the production, he cannot understand why the mill costs appear so high, considers them ridiculous in fact, and, in private conversation, probably reflects severely on the ability of the manufacturer and the equipment of his plant. He assumes that if a mill cannot find a satisfactory profit in its goods at a price as low as the lowest the fault lies with it, and that to

expect him to get the price that the manufacturer insists is necessary to leave him any profit at all, if that price is higher than any one else's quotation, is to expect the impossible.

A Common Type of Department Manager.

The half-baked, cock-sure, untrained, sales department manager is the bane of the market and the ruin of many a manufacturer, and there are those who believe that a specially warm place is reserved for him in the next world.

Organizing to Sell the Mill's Production.

In mapping out a programme for the disposal of a mill's product many points must be well considered.

The first thing to look into is the character of the mill machinery and equipment, the number of its looms, the character and supply of the labor in its vicinity, and the capital available for operation.

The great bulk of the goods that annually go into consumption are plain fabrics, and these goods are made on a large scale by the big mills. Such must always be the case, for, while a small or moderate-sized mill may employ most, or all, of its looms on specialties, novelties, or goods away from the beaten track, yet no great production can be distributed along these lines.

Costs Affected by the Size of the Output.

In a large mill, operating, say, a thousand looms or upward, the general mill expense, and the selling expense, per yard, would be distinctly lower than would be the corresponding expenses of a mill of one-third of this size, and, therefore, on goods on which the competition was particularly fierce, and the prices cut in consequence to the lowest possible figure, there would be no use in the smaller mill attempting to compete with the larger.

Of course, if business were active, and a fair profit obtainable all along the line, it might be possible for the small mill to make the goods at a small profit while the larger one was selling its production at the same price, but with a better margin.

What Competition Necessitates.

To compete effectively on staple goods of a kind largely used, it is necessary to have employed on them a considerable amount of loomage; to have these looms of such a type, and mounted with warps of such a good quality of silk, that they can be run at maximum speeds; and to have the width of the cloth in each loom the greatest that is commercially possible. Added to this, the labor cost, if not low, must not be high, and the product will then probably be sufficiently low in cost that, at almost any reasonable price, there will be a profit in it.

Should the mill that is to be directed possess such advantages as these, it can be safely employed in making plain goods of large general use.

On the other hand, and as is usually the case, no such decisive advantages are to be looked for, and some other course must be pursued.

Determining Upon a Selling Policy.

After weighing all the pros and cons, bearing in mind not only the character of the mill's equipment, but also its standing in the market as a maker of one or other classes of goods, as well as the acquaintance of the sales manager with the branches of the trade under consideration, a definite decision must be arrived at as to the direction in which the selling activities shall be pushed.

In a small or modest-sized mill, it is rarely judicious to cater to more than one class of trade, and usually not to make more than one general class of goods.

To do otherwise would mean a frittering away of effort, an extra heavy sampling expense, an accumulation of odd lots of goods, difficulty in making deliveries, and no chance of ever being regarded as headquarters on anything.

The question of whether piece dyes or skein dyes shall be featured is of interest. With piece dyes, the preparatory expense for throwing and skein dyeing are largely diminished, and raw materials are turned into manufactured goods in very short time.

On this account it simplifies matters somewhat for firms working on a limited capital, although the advantage is somewhat offset by the fact that the cotton and schappe filling that is largely used is sold on very short time, and the terms on the high-class European silk used in the warps are by no means long.

The character of the trade that it is desired to secure will have much to do with the methods that are employed to get it.

Advance Orders and Stock Goods.

It is, of course, very desirable to do business strictly on an order basis, but this can hardly ever be done in practice. Some underlying stock or assortment of goods seems to be a necessity as a basis for trading, but even if no such foundation be intentionally provided it has a wonderful way of accumulating of itself. Sample pieces, goods late for delivery, seconds, cancelled or returned goods, goods made for customers whose poor credit prevents their delivery, and what not, all help to make an accumulation of stock.

In many branches of the trade, both in plain and in fancy goods, some advance preparation of stock is customary, and a manufacturer is often practically compelled to carry a jobber's stock, on which, in-

stead of a jobber's profit, he only makes a brokerage, and if he has made any considerable mistake in his preparation he is certain to come out seriously to leeward. At the same time, undue accumulations of stock argue a distinct lack of capacity on the part of the sales management.

Dealing With Accumulations of Stock.

All stock accumulations should be courageously dealt with each season, and merchandise should nearly always be forced to a sale in the season it was made for, as it will rarely bring more, and if carried over will nearly always bring less and will eat up interest in addition.

This pushing of goods to a sale must be done early and while the trade is still active, but selling agents, in the hope of being able to do better than current offers, are apt to hold on to the goods too long and so overstay their market.

When the accumulations are so large that it is clear that they cannot all be marketed at private sale, at any prices in reason, they should be sold in the auction-room and without reserve. Auction-room prices sometimes appear to be unpalatable, but it is rare to find any one who regrets having made such a sale.

Sales Policy Must Conform to Equipment.

The equipment of a mill with regard to Jacquards and other appliances for producing fancy goods, box looms, doup or grenadine harnesses, facilities for silk printing, high-speed looms, extra-wide looms, etc., etc., will have much weight in determining the selling policy to be pursued, but a settled policy there must be and it should be courageously lived up to.

Should the mechanical equipment be far from what is desired for the needs of the day, and for the directions in which business appears to be shaping, it is well to arrange to change over or renew a fixed amount of it, say ten per cent., each year, so that in a measurable time the equipment will be raised to a state of productiveness second to none.

Laying Out the Work.

In the laying out of work, the sales manager will learn from his customers, salesmen and others what fabrics and colorings seem to be in active request. Through the medium of trade journals and fashion papers he will then try to inform himself as to the directions in which the fashions abroad are leaning.

The next thing should be a careful consideration of the styles and shapes of garments that are likely to be wanted for women's wear, and a consideration of the suitability of various fabrics as applied to them. If skirts and sleeves are to flare out, a crêpe de chine will

certainly be unsuitable, while, if costumes are to be soft and clinging, taffetas will be at a discount.

Careful consideration along these lines will lead to a district narrowing down of the number of fabrics to be reckoned with, and if certain of those that remain are receiving favor abroad, and if it be known that any large people on this side are sampling on them, it would fairly indicate that in this direction some business might be reasonably looked for.

Opinions of Distributers Are Valueless.

There is no use asking distributers of goods, or any other friends in the market, as to what is likely to be good. Their opinion is valueless, and the effect of such consultations is generally to persuade you to drop some promising thing on their say-so, and which, later on, brought out by some other house, scores a big success.

The sales manager must absolutely rely on his own taste and his own judgment, and, if he knows his business, he will see that his cloths are of the proper widths, weights, assortments of colors and patterns, and of sound construction, and that the only remaining questions will be as to whether the customer likes the styles and will pay the prices.

Goods Should be Priced at What They Will Bring.

Unless fabrics are being made akin to commonplace market articles, with which comparison can be easily made by any one, the proper method of fixing the prices is to determine the figure at which the goods could be sold reasonably freely over the retail counter, and then make the prices to retailer and to jobber accordingly. If these prices do not then afford at least a working profit, the fabrics must be either re-constructed on a less costly basis or abandoned.

Fabrics and Colors Which Are Dead or Dying.

One thing of value can be learned from the distributers, and that is, what fabrics and colors are either dead or appear to be dying, and this negative information in helping to guide one as to what not to make, is of very real importance.

The selecting of colors is to be treated in the same way as the selection of fabrics, in that there is a weeding out of colors that are passé, and of such others as are distinctly unavailable, and then considering which of the remaining classes of colors seem to be having a vogue abroad.

Foreign Sample Collections.

The foreign sample collections often contain many good ideas, but it must not be supposed by any means that all of the patterns contained therein have been in evidence in the Continental markets. Many

of them are made solely for the purposes of the houses purveying the samples, and have never been on the market at all.

In studying these foreign sample collections, excellent ideas can be got from collections provided for entirely different lines of business.

Getting Up the Samples and Fixing Prices.

Having formed some general views as to what will likely be salable, the sales manager consults with the manufacturer who proceeds to get up samples of various kinds and qualities, but in the general directions indicated. Here good taste and good designing, coupled with high-class constructive skill are prime necessities. Comparatively slight changes in the proportions of warp and filling, and in their arrangement and method of interlacing, will make all the difference in the world as to their desirability, and what are known as "invisible values" must be carefully avoided. This is the task of the mill, and it must be properly done if the selling end is to be successful.

The sample blankets now come forward, and critical judgment is here necessary. Questions of prices, widths, finishes, patterns and colors must be decided and complete and comprehensive sample ranges laid out.

When the ideas are novel, and not likely to be found in competitors' collections, an effort should be made to get some really large profit, for, on a new article, not even an expert can tell, off-hand, within 10 to 20% of the cost.

In such cases, and possibly in most cases, it is highly undesirable that the salesmen should know the real cost of the goods, as very few have the moral courage to stand out for a profit—and get it.

Assortment of Colors Should be Limited.

It is well to limit the number of colors in a range to the minimum, in spite of opinions to the contrary. Too many colors means too much stock, and difficulty in delivering assortments on time. Few colors, but the right ones, should be the aim.

Color Harmonies and Discords.

In combining colors when laying out fancy goods, color harmonies should be studied and carefully worked out, and color discords must be avoided.

The effect of various colors upon each other is not as well understood as it should be, and, even when already known, is apt to be forgotten.

It is a useful thing to have a chart made out for use in the sample room which will indicate, in a general way, the colors which contrast well or ill.

An Interesting Color Chart.

Such a chart for haberdashery has been worked out and printed by The Haberdasher Company, and I present it herewith to illustrate the method that might be employed in making them up for other colors and for other lines of business.

Heavy Expense of Sample Collections.

In bringing out a collection of fancies a great deal of money has to be spent, particularly for Jacquards and prints, and this expense should bear some reasonable relation to the business to be effected, but it rarely does. The expense is always grossly in excess of a proper pro rata expense per yard, and the effect is seen in the comparatively small profit cleaned up on a fancy goods business, which, considering the risk, should by rights pay handsomely.

Copying Competitors' Ideas.

Some sales agents adopt the apparently simple course of copying the fabrics that their competitors are making. Their salesmen come running in and tell of the "land-office business" that Smith or Jones is doing on this or that fabric, and how much they themselves could do if the same cloth, or what would answer for it, could be got out to sell at 2½ cents a yard less, etc.

The effect of listening to such everyday silly talk is the undertaking of an ever fruitless task, for the profit on most goods of large sale is so close that, to get the business away from those who are doing it can only be accomplished by selling on a basis of no profit at all, and frequently even that cannot be secured, while the firm that tries to do it becomes visibly a tail-ender and all pretensions to leadership must be abandoned. Chronic copyists may save in experimenting and sampling expenses, and their brains are not liable to wear out from overwork, but they are a contemptible, though unfortunately very numerous, class.

Difficulties Attending the Making of Printed Goods.

People sampling on warp or surface prints must well consider that in busy print seasons, when the market printers and others are rushed to death, they are more than likely to be very late in the delivery of many of their orders and samples, which will entail cancellations of serious extent, involving heavy losses.

Other Points of Importance.

It is also to be remarked that the time to stop making a line of goods, and to take active steps to run through and clean up all that have been made, is at the moment when they are in red-hot request. If this is done, the profit already made will be secured, and losses that always come when the market falls off will be avoided.

The question of marketing the product of a mill by means of an advertising campaign on trade-marked fabrics is one of special interest, but it is so broad that it cannot be treated of here.

The foregoing remarks will serve to shew both the difficulty of properly directing the production of a textile mill, the great importance of the subject, and the manifest lack of the proper qualifications on the part of many persons who have such work in their charge. Perhaps, if sales managers were more generally graduated from those having had experience at the mill end, than from those brought up at the selling end, some improvement might result.

XXXII

IMPERFECTIONS IN MANUFACTURED GOODS

To those engaged in the handling of textiles it often seems as if the goods they are buying or selling are very imperfect, and remarks are freely made at such times reflecting severely on the care or knowledge of the manufacturer.

These criticisms, while no doubt frequently justified, are more often the result of ignorance on the part of those making them, as all goods, according to their nature, are liable to certain imperfections, some showing one class of defects more clearly, and some another.

Absolutely Perfect Goods an Impossibility.

It may, I think, be truthfully stated that an absolutely perfect piece of goods—perfect in material, in construction, in dye, and in finish—is impossible of production, and perfection in merchandise is therefore a matter of degree.

The true test is whether a piece is *commercially* perfect, that is, whether it can be used, without loss, for the purpose for which it is intended; and there are comparatively few of the goods that are stigmatized as being “seconds,” or “unmerchable,” that could not be used without loss if a fair effort was made.

Then, again, a piece may be defective for one use while satisfactory for another, as in the case of certain fabrics that slip very easily, and which, while quite unsuitable on that account, say, for dress purposes, might not be at all objectionable for millinery uses.

Claims, Unjust and Just.

There are many things that cannot be classed as imperfections which subject goods to claims and allowances, and many purchasers, particularly those in the cutting-up and other manufacturing trades,

make such exorbitant claims, and often on such flimsy pretexts, that, plainly stated, they are simply dishonest, but, for reasons of policy (though the soundness of the policy is more than questionable), they are generally allowed.

In the case of certain purchasers it is notorious that, be the goods bad or good, their claims will be so made as to never average less than a certain percentage on the business done, and most of the claims so made and allowed are simply money extorted from the seller under the threat of the return of the goods, and the consequent greater loss that would have to be faced in marketing the lot elsewhere.

No examiner of goods in a cutting-up establishment could hold his place if the claims he made did not greatly exceed his salary, and, therefore, no matter how perfect the goods, he has got to find pretexts for claims.

If a cutter-up makes a claim and gets an allowance he rarely loses that. It is generally a clear profit to him, as his cutters have got to work the imperfect places into the goods somehow, and if a retailer gets an allowance the goods go on the counter at the same price that they would if he had not.

While certain claims are thoroughly equitable and not open to any objection, they are in the great minority, and the unfair or disproportionate ones form a very serious expense to the manufacturers, and an unwarranted one.

The fierce competition among sellers has brought the profit on goods down to practically a brokerage, in which profit there is no margin to offset heavy claims; in fact, goods are priced on the assumption that they will all come perfect, and yet the claims are made and allowed just the same.

Remarkable Perfection Attained.

The more one knows about manufacturing, the greater is the wonder that goods can be made as perfectly as they are. While men and women have their limitations as to skill, accuracy, or what not, yet the same people performing the same work, year in and year out, become marvellously skillful at it.

Thus it is that mills running steadily on staples produce very perfect goods, while those making novelties, or shifting constantly from one fabric to another, must make many seconds. It takes some time for the weaver to get his hand in on a new job, and during that time he will make more or less imperfect work. The most skillful billiard player in the world, if compelled to play nothing but pool for a year, would make but a sorry hand at billiards, at first, when he would return to it. So it is with a weaver.

The manufacturing of a piece of woven merchandise is a most complex and technical matter—even for the simplest cloth—while for high-class fancies it is kaleidoscopic in its difficulties.

The Manufacturer's Load of Care.

Manufacturers as a rule are the most careful and painstaking of men, as their responsibility lies heavily upon them and the detail of the work is a crushing load. The wealth of care that has to be used in the selection and preparation of the material, and in the laying out of the work and the following up of it through all the numerous processes, is no child's play, and with the many adverse elements that have to be contended with, both human and mechanical, in addition to those things not within the control of the mill, it is wonderful how such a good average of perfection is got.

How Damages Might be Classified.

Damages, or things causing losses on goods, fall into certain groups. They might be roughly classified as follows: defects in the raw material used; defective preparation—throwing, dyeing, etc.; damages caused in the weaving or preparatory processes; injuries during the piece dyeing, printing, or finishing; and mistakes or miscalculations in laying out the work.

Every Thread has Its Allotted Place.

Let it be clearly understood that the threads composing the warp and filling of a fabric do not occur at random. Every warp thread, from the time it is unwound from the bobbin, has its allotted place in the warp, its special heddle on a particular shaft of the harness, and its special dent in the reed. Let a single end out of the thousands in a warp be missing, or wrongly drawn in, or crossed, or wrongly reeded, or of a different twist, or of a different tension, or be of a wrong color, or thickness, or material, and you have a piece of goods that is a bad second. Every pick, too, has its allotted place in the weave, and every thread must interlace with every other in the prearranged manner. Think what this means.

We will now consider some (though by no means all) of the drawbacks and damages that are incident to the manufacture of silk textiles, and possibly the recital of them may help to make some of the critics more lenient.

Trouble Arising from the Raw Material.

Trouble with raw material may begin with its variation in size or twist, which makes streaky warps and irregular weft; with its color, which, if uneven, will make shady silk, which is particularly noticeable in the filling; with its strength or elasticity, which, if poor, makes many broken ends with consequently increased weaving imperfections—knots, and ends missing for a greater or less length; or with its cleanliness, which, if inferior, may introduce into the goods many slugs, nibs, etc.

With other yarns, cotton, for instance, their hardness or softness

are important factors; they should not be hairy, and their evenness, cleanness, and twist should be regular and good, or else inferior goods will be the result.

How the Throwster Can Make Damages.

The throwster can injure silk by injudicious soaking which opens up the fibre; by stretching it unduly or unevenly; by irregular twist and imperfect doubling, producing "corkscrew" and other objectionable effects; by allowing the silk to get scratched or cut on worn-out guides or flyers; or he may mix one kind of silk with another, and do damage in many other ways.

Bad Work by the Skein-Dyer and Piece-Dyer.

The skein-dyer, by carelessness, can so process the silk that it will become rotten in short order; he can mix up the silk; he may match the colors badly, and the silk may be irregularly weighted or colored, shady or lustreless, or subject to "cockling," or "lousiness."

The piece-dyer may make bad matches; shady goods; goods spotted, streaked, or scorched; he may run them in too narrow, or stretch them out too wide, or allow them to run up unduly in length; they may have chafe marks, damaged selvages, or be so handled that the warp threads spread apart, as it were, making a crude, streaky effect; the goods may have an oily or other objectionable smell; the color may crock or rub off; they may not be properly boiled off and so may lack in lustre; and they may be so treated as to have an undesirable touch.

Damages the Printer is Responsible For.

The silk-printer may not fix or set his colors properly, so that they may crock; if his rollers are out of true, or badly aligned, the pressure will vary and the depth of the colors will be irregular in places in consequence; the different rollers may not register exactly; the white of the ground may not be pure, but may be tinged with color; many colors or color combinations may be tarnished; streaks called "doctor-marks" are common; the goods may be damaged in strength by the injudicious use of acids or other agents; and there will be misprints, spots, and other defects. In warp prints, threads may be badly stuck together, or may be broken—causing damages in printing and trouble in the looms later on.

How the Finisher Makes Trouble.

The finisher may get goods too soft or too hard; he may use too much heat and so fade or alter the colors; the spray used may not be well controlled and spotted or mottled goods will result; fabrics that are to be sized on the back may have the dressing squeezed through to the face; the singeing machine may scorch the goods; in separating split-edge goods, the edges may be damaged; defective or

wrong buttons on the breaker may make streaks through the pieces; the calender or press may nip, or cut, or scorch the goods; cylindering machines may soil them, and they may be burned on the tentering frames, as well as being damaged in many other ways.

Defects in the Warp and Their Causes.

Let us now consider some of the bad appearances produced in the goods, and the causes of the same.

A fabric may appear streaky in the warp. If the streaks come in broad bands, of a regular width, they may be due to section-marks, caused by irregularity in the tension of the different sections of which the warp is composed.

Bad streakiness may result from the use together of two different dye lots, even of the same color of silk, unless great care has been used in the regular alternation of the ends. Any tight ends in the warp will show up as streaks, and so will any threads that have more or less twist than the others.

At every loom, bobbins called "piecing bobbins" are hung up, and material for piecing up broken threads is drawn off them. If they are of a different dye from the body of the warp they will probably show as streaks where they are used. On print warps, where it is not practicable to have exactly suitable printed threads for the purpose, this trouble cannot be prevented.

Silk that was originally of irregular color, or silk irregularly dyed, may also give a striped appearance. So will silk that shows great variation in size in the raw, or when different sizes of the same color of silk get mixed.

If the warp is passed through too coarse a reed it will show reed marks throughout, and reed marks will show locally where there are any dents too wide or too narrow, due to injury to the reed, and, if it is rough or cut, it will then scratch and fray the silk, and, if dirty, will soil it.

The warp may also be chafed by the heddle eyes in the harness if they are cut, and harnesses, or ends in Jacquard harnesses, working irregularly or out of time, will produce what are known as harness skips—places where the warp ends skip over more filling picks than they should.

Many goods are woven wrong side up, when by so doing it will entail less effort upon the loom, and in such cases harness skips are very hard to detect. In many piece-dyed fabrics, also, it is very difficult to observe them till after the goods have been dyed.

Too many broken warp ends make a multiplicity of knots, and when a smash has occurred—a place where a shuttle has got jammed into the warp and which takes many hours of weary work to piece up—a bad place will be caused by the hundreds of knots that are tied in there.

With hair-line patterns, a specky or mottled appearance is not uncommon, caused by extra fine or extra heavy places in the warp threads falling together, which to the eye appear like light or dark spots.

Ends that are missing, those that are drawn in through the wrong heddles or through the wrong dents of the reed, and extra ends, all make very noticeable stripes. The warp may be all right at the start, but as ends break down from time to time as the weaving proceeds it is very easy for the weaver, in replacing them, to get them into the wrong places.

Where very fine reeds, with the dents made of very thin wire, are used, the wires will spring considerably as the lay beats up, and bad effects are sometimes produced in this way. Also, when a filling stop motion is used, placed in the centre of the loom, the feeler wires may make a streak where they work up and down through the warp.

In goods with cords, the cotton filling of the cords may "grin" through the silk covering, particularly if it be of a strongly contrasting color, and Milanaise or sling-cord effects are not only troublesome to weave, but are very hard to get perfect, as any irregularity in the working of the doups, or breakages of the thread, will leave the rib uncovered in places, or make a bad appearance where it is bound at the edges, and if the cord be stuffed too full it will make trouble.

Print warps, when the attempt is made to weave them without having had crossing picks first woven into them (to be afterwards picked out as the regular weaving proceeds), will "chiné" badly, producing a very uncertain appearance in the pattern, owing to the irregular stretching of the threads.

Filling Damages, and How They Occur.

Bad effects, filling ways, are seen in silk that was of irregular color in the raw, or that has been unevenly dyed, which makes a cross-over effect. Mixed bobbins from other dyeings of the same color will produce a very bad "rowy" appearance.

A damage known as "rusty silk," where very fine, faint, brownish streaks are seen scattered through the filling on white or light shade goods, is due to stained cocoons having been reeled into the raw-silk. This trouble is not uncommon with low grade silks, and cannot be detected till the goods are woven.

Irregularities in the size of the silk, also, make very visible differences in its apparent shade, and poor spinning of schappe or cotton yarns gives a similar result. Material of irregular size, when used in figured patterns, gives trouble due to the very fine places not sufficiently covering the figures, which then have an open or "hungry" look, and, as the size varies from thick to thin, the pattern will be more or less distorted. Tsatlee silks are particularly troublesome in this respect.

A faulty working of the take-up motion will cause the cloth to be

woven with thick and thin places, and when the loom is started up, after the cloth has been loosened for any purpose, it requires much skill on the part of the weaver to avoid having a thin place, or a heavy bar across the piece; or there may be two picks in the same shed, or a shed may be left empty, if the weaver is careless.

The shuttles may be mixed, and in patterns where a cotton pick works on the back, and a silk pick floats over the figure on the face, the materials may be reversed, the cotton appearing on the face. In crêpes, too, where right-hand and left-hand hard twists are woven in alternately, any mixing of the shuttles or quills will produce bad puckered places across the cloth.

If anything interferes to prevent one or more of the harnesses from rising or falling in its prearranged sequence, we have harness-skips, where the threads do not properly interlace, and there appears a row of skipping warp threads across the piece. There are mispicks, also, when the filling thread gets in the wrong shed, making a bad cross-over defect. Then there are floats, where the pick floats over warp threads when it should be under them. If two threads are accidentally wound on the quill together, or if the filling drags in double in any way, we will have a double pick, and if the thread in the shuttle runs entirely out, or the thread breaks, we get a missing pick or a broken pick.

Cockling and Its Cause.

Cockling is a most serious trouble at times, the genuine cockling lying largely at the door of the dyer. Silk in certain sizes and weightings is more susceptible to it than other lots. Cockling effects may be produced in a variety of ways, such as by uneven doubling in the throwing, or of the dyed silk, uneven shuttle tension, etc., etc. The cloth may also be puckered from various causes, such as tight selvages or ribs.

"Lousiness" in Silk.

Some silk is very subject to "lousiness," shewing a specky appearance in the finished goods, and careless boiling-off by the dyer will promote this defect. Cotton yarns, too, carry more or less speck or leaf, or bits of broken cotton-seed hulls, in them, and for any goods that are to be dyed in whites, or light colors, very specially selected cotton must be used to avoid these specks, and the yarn must be double combed.

Difficulties With Chameleons.

Chameleon effects, where two colors are used in the filling, are quite impossible to get perfect in the cheap or moderate-priced grades, for, in these qualities, the two colors must either be doubled together, or two quills of the different colors must be put in the same shuttle, and, owing to the silk twisting itself more or less as it is laid in the shed, a "rayé" appearance from the sides is certain to result.

Other Troubles in the Filling.

Wrongly built box-chains may also cause box-work patterns, plaids, etc., to come out most incorrectly.

The filling may show slugs, knots, loops, or bunches of thread, and loose threads may be dragged in with the picks. Good picking will correct much of this. Then, lint from the weaving threads may be beaten in, and when black stripes, whether schappe, cotton, or silk of a hairy nature, are woven upon white or light grounds, the black hair or lint is apt to get mixed in with the light ground, giving it a very dirty or blackish appearance, resulting in a bad damage and one that cannot be rectified. Dirty harnesses, particularly those that have previously been weaving on black or dark warps, and which have not been thoroughly cleaned, will produce the same effect.

Soiling of Goods.

Soiled places in the goods may be due to simple contact with dirt in various ways, or to the dropping into, or onto, the goods of dirt from overhead. There may be finger marks, and grease, oil, or water spots. Where stains have been removed with benzine or turpentine an "aureole" may be shown—a noticeable outline at the limits to which the fluid has floated the particles of dirt.

Dirty or rusty reeds will streak the warp, and dirty shuttles will make marks filling ways. The injudicious use of paraffin wax, when weaving certain warps, may make waxy streaks. Iron-rust stains may come from drips in the finishing room, or come similarly on hard-twist silk when it is being steamed, or on print warps or surface prints when the color is being developed in the steaming kier.

Clean Goods, and What It Entails.

To attain perfectly clean goods, for whites, etc., it is necessary to use the greatest precautions. New harnesses, reeds, and shuttles are needed, the spools or bobbins are wrapped in white tissue paper, the quills are kept in boxes with white chalk, and the weaver's hands must be cleanliness itself. The warp, and the woven cloth, must be kept well covered with paper, and the head motion, or Jacquard, must also be protected by cloths or paper to prevent it from throwing any oil or dirt down into the weaving warp. The extra cost of making whites, or very light shades, particularly in very wide goods, is obvious, and yet buyers are unwilling to pay more for them.

Perspiration Stains, and Other Soiling.

Perspiration stains are due to the falling of it on the goods from the person of the weaver, picker, or other operative, and the contact with the weaver's hands when replacing or adjusting warp threads. Perspiration affects colors, and tin-weighted silk, most injuriously, but the effects are often not developed till weeks or months afterwards.

Silk may be dirtied in the throwing, and cotton in the spinning,

in such a way that, when dyed, the stains will still remain. If the throwster uses any mineral oil in the soaking it is sure to make trouble in the dyeing process.

Trouble With Selvages.

In woven goods, much trouble is often found in the edges or selvages. They may be woven too tight, or too slack; if split edge, the binding may be insufficient, and at the cut the threads may pull off; they may be cut or torn off in the finishing, or may have been originally woven in an open and ragged manner; and, if moiréd, they may have been cut or pinched.

Faulty Designing.

Faulty designing may be responsible for irregular tensions in the cloth, causing puckering, or other troubles; for the design appearing to "stripe"; for poor binding and consequently for loose places where the figures in patterns occur, and for sleazy cloths; for lack of balance to the fabric, or injudicious proportioning of the materials in it; for imperfect repeating of the pattern, or for distorted patterns; for designing two or more weaves to be worked from one warp, when they should be made in separate warps on account of their different take-ups; for making the filling or warp threads to float injudiciously far, and for a host of other troubles.

System At the Mill.

In laying out and following up the goods at the mill, any carelessness, or lack of system, will entail all sorts of expensive mistakes. Wrong sets in the warps, or wrong numbers of picks in the fillings; irregular lengths in the pieces (which in necktie sets is an expensive matter); wrong weaves, and wrong Jacquard patterns; wrong warp stripings, or box effects; bad color matches and mistakes in colors or qualities; and laying the goods too wide or too narrow, are only a few of the mischances possible.

Damages to the Woven Merchandise.

Damage in the merchandise may be due to holes, as when a weaver cuts his cloth with the point of his shuttle; chafing or scratching of the face from friction against the sand-paper roller; friction marks running end ways, from contact with anything that would rub against the cloth; streaks caused by irregularities in the buttons of the breaker in finishing; gum spots, which drip down in the spray room, and mottled appearances due to badly managed spray.

If silk that is to be bleached with peroxides, such as tussah, has been affected by contact with rusty iron, the threads so impregnated may be entirely eaten up in the bleaching.

Troubles That Occur in Finishing and Printing.

The colors may be faded, regularly or irregularly, in the finishing, due to too great heat; moirés may be badly executed, and cutting of goods is frequent in moiréing, as it also is in embossing; goods may be scorched, or, when they have been singed, the black ends of the singed hairs may give a bad appearance; chafe marks may also appear on the piece-dyed goods.

On prints, the white grounds may be unduly tinged with color, or the solid colors may be mottled, and the density of the colors may not be uniform from repeat to repeat, or from side to side.

Additional Defects.

Fabrics may slip; they may have "pinholes" in them which, as for umbrella silks, may have to be corrected; they may lack in lustre, due to quality of silk or cotton, or to the dyeing, or finishing; they may be badly folded, making creases and distorting the lay of the pattern; they may have been so handled in dyeing as to be full of "crows' feet"; and, lastly, they may be rotten or tender.

Things the Dyer is Responsible For.

After dyeing, goods may have an oily or soapy touch, as well as a similar smell, and they may also smell strongly of logwood or other dyeing agents, and prints may smell of acetic acid. The color of the blacks may be rusty, or greyish, and blacks and other full colors, both in dyed and printed goods and in print warps, may crock or rub off. The finish, too, may be too glazy and of the stove-polish order.

The touch of the goods may be boardy, hard, or stiff; it may be papery, or soft and mushy, or it may have a harsh or coarse feeling.

When goods are dyed in the piece, the color may collect more at one end or at one side, so that these will be of different shades. Finishing on a tenter frame or on a can dryer will give different results. The matching of colors, too, is no exact science, and approximate matches are all that a dyer can promise, so that each dip will probably vary in shade from the preceding one. If the amount of boiling-off given the piece is too little, it will lack in lustre, and the nature of the silk used will also greatly affect the brilliancy. If goods are too hairy, they may be singed, but this is a process to be avoided if possible. Hairiness is much increased by the electricity produced in the weaving and other processes.

Imperfect Goods Must be Stopped.

Silks being generally dry finished, it follows that any defects that occur in them are there to stay, and everything shows up in them. In well-managed mills, therefore, when a damage is detected during the weaving, the weaver is obliged to stop his loom, loosen his cloth, and pick out all the filling back to the defect, and then weave it over again. This is expensive in time, labor, production, and material.

Requirements for a Cloth Examiner.

A good cloth examiner is necessary, and they are not easy to find. He must thoroughly understand weaving, and know exactly the cause of each defect, so as to be able to explain to the weavers what the trouble is. He must be severe on those needlessly making bad work, but if too exacting, and demanding impossible perfection, the good weavers will get disgusted and leave. Weavers soon learn just how good their pieces must be to pass the examiner without criticism.

Troubles of Various Kinds.

Schappe or spun silks are liable to have sundry black hairs in them, that, so far as possible, must be picked out, and certain stock is injured by the presence of odd cotton fibres.

Many defects are very obscure, and much skill, knowledge, and patient effort are required to ascertain how they occur.

Some fibres, such as certain tussahs, will shrink considerably, and, if this is not well understood and allowed for, serious differences in width and length, and consequent cost, will result.

The apparent color is often much affected by the twist of the material, and the dyer is frequently blamed for what is really the fault of the spinner. Ill judged color combinations may make the shades objectionable to the eye.

In the piece dyeing of cotton-filled fabrics, the dyer not infrequently gets the cotton of a distinctly different shade from the silk, thus giving the goods a raw and coarse appearance. This cannot be guaranteed against, and, anyway, the same color on different kinds of fibre, or on different twists of the same fibre, will look different owing to the varying play of light.

Heavy and Light Goods.

In even the most carefully made lines of goods, a respectable percentage will be heavier than the average, and others will be lighter than they were designed to be. Salesmen are prone to cut type samples from the best and heaviest pieces they can find, thus leading the customers to expect goods better than they will get, and which gives them ground for rejecting the deliveries. Customers, to whom extra heavy pieces have been delivered, will often hold cuttings of them, and claim that subsequent deliveries should be up to that standard.

Salesmen never like to have the lighter pieces delivered to their own special customers, and so the light pieces are often laid aside until, at the end of the season, a fine job lot of light pieces of all kinds, colors, and quantities will have been accumulated, to be sold later on at sixty cents on the dollar. The only way to do, is to keep shipping out the light pieces, and, though return express charges may often have to be paid, the expense on this score is trifling, as compared with having the goods left in stock. If 10 per cent. of the goods are

light send out one light piece in every ten, and similarly with the heavy pieces. The buyer thus gets his fair average, and that is all he is entitled to. If the buyer needs the color in which the light piece is, when he gets it, he will keep it, and if he does not need a color he will find some pretext for sending it back, even if it was a piece regular in every respect.

All Mills Make Some Imperfect Goods.

When department men and salesmen are angry and disconcerted over merchandise imperfections, let them reflect that every other distributor is in exactly the same position, and that they are better off in that respect than many others; and let them feel that a certain amount of imperfection must be discounted, and that similar troubles exist in the goods delivered by every one of their competitors. Let the buyers learn this, too, and, by being decent and reasonable, avoid forcing absolutely unnecessary losses upon the manufacturers.

XX XIII

CLAIMS, CANCELLATIONS AND RETURNS

Some of the most serious abuses connected with the business of manufacturing and distributing textile merchandise, may be grouped under the heading of Claims, Cancellations and Returns. In fact, were it not for these drains upon the profits of the business, the making of money in the manufacture of fabrics would be a far simpler affair than it now is.

It is, of course, to the more or less unjustifiable claims, etc., that I refer, for it must not be forgotten that buyers have also rights, and were they not free to claim, reject, and cancel, when the circumstances fully warranted it, there would be no limit to what they might be called on to endure in the way of imperfect goods or late deliveries.

What Has the Buyer a Right to Expect?

Taking up, first, the matter of claims, we are at once confronted with the question as to what the buyer has a right to expect in reference to the perfection of the merchandise. It is true that every order that is accepted implies the delivery of perfect goods in the filling of it, but was there ever a piece made of absolutely perfect goods? Possibly so, but such perfection is so rare as to be negligible, and the best that we can ask for, or promise, is that a piece of goods shall be commercially perfect.

This presupposes that some minor defects may exist and must be expected, and that their presence should not be made the basis for a claim. Were everything to be claimed on, the deductions thus made would be so considerable as to eliminate any possible chance of profit in the goods, and, in truth, this is frequently the case.

It should not be forgotten, either, that the prices made on goods, and the extremely narrow margins of profit on which they are sold, ignore entirely the element of losses from claims, cancellations and

returns, and that, if these chances of loss should be discounted, the average of prices would have to be on a distinctly higher plane.

True Test of Reasonableness of Claims.

The true test for determining whether claims are reasonable or not is whether the buyer is likely to suffer any loss, or serious inconvenience, in using or marketing the merchandise claimed upon.

If this test be applied, it will be seen how few allowances would have to be made as compared with the present practice. Cutters-up claim on all sorts of trifling things, and then compel their cutters to so arrange their patterns as to cut them into the garment without loss, thus making a profit of the amount claimed. Many allowances are made to retailers, and the goods go on the counters and are distributed without the consumers getting a fraction of concession in price, or being a bit the wiser. Such claims are just so much additional profit for the buyer, and have in practice become a regular "graft."

In a previous article, I discussed in detail the very numerous imperfections to which silk goods are liable, and the causes of them, so it is not necessary again to traverse that ground.

Different Causes Entailing Claims.

Claims fall into a few general groups, such as claims for short length, narrow width, spots or holes, manufacturing imperfections, slipping of the threads, streaks or shadiness in warp or weft, unevenness or cloudiness in the dye, inferiority of quality, chafe marks, tenderness, etc.

Some goods, from their nature, always invite trouble, and sellers should carefully draw the attention of buyers to such matters when business is being booked. Thus, goods with markedly disproportionate amounts of warp and filling will often slip easily; if too little material, or too much weighting, be used they may be tender; chameleon taffetas have a strong tendency to streak in from the edges; black-and-white hair-lines and fine pin-checks, show specky, etc.

Manufacturers should guard carefully against ever putting fabrics on the market that are not good merchandise, such as cloths that are too tender, or that slip too much for the purpose for which they are intended, etc. If they do so, they have only themselves to blame if trouble follows, for they must remember that retailers of reputation cannot be expected to put goods on their counters that are grossly defective in character.

Piece-dyed goods that are very unevenly colored can properly be rejected by the buyer. One side, or one end, of the piece may be darker than the other, making it impossible, almost, for the dress-maker to use it.

Chafe marks in pieces cannot always be avoided by the dyer, and

he will give no guarantee on the subject, and, as they are incident to the process, it is not fair that claims should be made on the maker on this score unless the defects are excessive in amount.

To subject goods to claims for narrowness, the difference in width should be material. In the cases of fabrics of an elastic character, such as crêpes or crêpons, it is hard to say what the width really is; within limits, it is almost a matter of opinion.

Similar remarks will apply to the length of the pieces, and it is easy to give a piece an undue stretch. Probably the fairest way to determine the length is the method largely used in the woolen industry, that of drawing the goods over a long table, and measuring them when so drawn out, as it is in that shape, and at that stretch, that they will be finally cut up for garments.

Allowances Should be Kept at a Minimum.

While all claims should be received and investigated with an open mind and a desire to be fair, all sellers should fight hard to reduce these losses to their proper proportions. Badly managed mills will have many defective goods, and well managed mills may have few, but, with the best of management, imperfections must and will occur.

Selling Agents Expect Impossible Perfection.

Much of the trouble that now exists, in the large amount of claims that every business is called on to stand, has arisen from the fact that the people at the selling end often expect from their mills an impossible perfection, and, not being well enough informed themselves to judge what claims should be contested and what should not, they have fallen into the habit of making allowances on practically everything claimed on.

Cancellations a Heavy Burden.

The cancellation of orders, given to a mill for execution, is a custom that outrages both business sense and honesty, and is a fearful burden on the manufacturers.

They spend time and money in getting up their sample collections, and then pay the salaries and traveling expenses of the salesmen to secure the business. Having booked the orders, they must then assume binding contracts for the raw material with which to make them, and must proceed to mount looms and spend much money in the various processes of manufacture as the goods are being brought forward. When made, the orders must also be held ready for delivery till the stated time has arrived.

At any time during this period, all, or part, of any order is likely to be cancelled, and with probably no truthful reason given.

Motives for Cancellations.

The motives for the cancellations may be various. There may have been a change of buyers; or too much stock has been bought; or the

buyer wishes to increase his line in other directions, so has to decrease in this; or prices have fallen and he can buy cheaper elsewhere; or he may find he has misjudged his styles or colors; or there may be some personal reason, or what not. Perhaps as common a reason as any is that he may have instructions from his financial superiors to cancel everything that he can, on account of office reasons.

Not one of these reasons is a justifiable cause.

How the Manufacturer is Hurt.

Meantime, the manufacturer has committed himself to an expensive preparation of fabrics, patterns and colors, made at his customer's selection, many of which styles he would never have dreamed of making if he were stocking them at his own risk. If the raw-silk market has fallen, he may also suffer heavy loss in that way, and orders are cancelled freely on a falling market and infrequently on a rising one.

Contract Breakers Should be Sued.

The seller may or may not have a signed contract, or it may be a well drawn one or a loosely drawn one, but there would rarely be any difficulty in proving that the goods had been duly ordered by the properly accredited buyer of the house.

In such a case, the rational and proper course would be to refuse to accept the cancellation, and, by due process of law, if necessary, compel the buyer to live up to his contract.

How often is this done? Occasionally, it may be, with some house regarding whose business indifference is felt, but with important customers a real fight is rarely made; sham fights, if any, are the rule.

Responsibility of the Selling Agents.

When raw-silk prices crumble, and values of goods fall correspondingly, as will happen during times of panic, the bulk of nearly everything on order will be cancelled by the buyers, and this cancelling has, in the past, been generally allowed by the selling agents, causing the mills to suffer untold losses, and being the real cause of the bankruptcy of many of them.

Manufacturers have to deliver what they sell, and can in no wise advance the price of goods once sold, nor are they permitted to back out of their raw material engagements. Why should they continue to allow themselves to be thus held between the upper and the nether millstone till their existence is crushed out?

If, before an order has been put in work, a buyer wished to modify it, or even cancel it for some reasonable cause, although it might be somewhat of a hardship, there would be little trouble in so arranging it, but, after it has once been put in process, no change should be allowed.

Underhand Methods Employed.

Some houses practice a peculiarly mean trick, in that they have

copies of orders, given by their buyers to the travelers who have called on them, sent on to their New York representatives to see if they can buy them there any cheaper. Many of these city buyers, to show their superior smartness, will then try, by hook or by crook, by lies or promises, to get concessions from the stated prices. In this way, the purchaser plays his buyers one against the other, in the hope of profiting somewhere.

Withholding Assortments on Orders.

Another way of cancelling goods is to withhold assortments. A buyer contracts for a quantity of goods; color assortment for all, or part, to be given later, sometimes at a stated date. If the goods are to be skein dyed, and the giving of the instructions as to colors is delayed, the manufacturer cannot proceed with the order, which is then of practically no use to him. If the goods are to be dyed in the piece, he can prepare them, but is unable to get them dyed up for delivery.

The buyer has contracted for the goods to take advantage of a low market or an attractive price. If he has had occasion to reverse his judgment, he will never give his delayed assortment if he can possibly help it.

Others, who only want 50 pieces of goods, will order 250 pieces, if a lower price can be got thereby, giving assortments for the 50 pieces at the start, and will never take, or intend to take, the remaining 200.

Orders of Cutters Are a Joke.

With the cutting-up trade, orders are not even seriously regarded. They are almost a joke. The most that can be said of them is that they show an expression of interest on the part of the buyer in the qualities ordered. Should the market rise sharply, however, these same buyers expect to have their orders filled, and they do have them filled.

Cancellations for Late Delivery.

Many cancellations for late delivery, while technically right, are only so because sufficient time has not been given the makers to bring forward the orders, and it is a constant study with buyers to fight for the minimum of time, so that, as the chances are that the delivery in whole or in part will be a little late, they will then be in a position to decline the goods should they so desire. Then, if they wish, they may consent to accept the goods at a substantial concession in price.

Sellers who have been finessed against in this way ought to be very careful never again to concede dangerously short delivery time to the offending house. Better pass the business than take the risk.

United Action Required.

To grapple with such a serious evil, united action by all the selling offices is urgently needed, and there should be a well-defined pol-

icy agreed upon, having for its aim the immediate bringing about of a state of affairs which would exempt no one from the obligation of keeping a contract. Credit men have their associations and discuss the standing of the various houses, and their manner of doing business, and the sales managers could do the same.

Side Lights on the Situation.

At the present time, houses that have every disposition to enforce their contracts are restrained from doing so, because other large competing houses permit their customers to break theirs.

During a recent panic, when prices were breaking heavily, cases like the following arose. A mill, selling direct, refuses to allow Smith, a retailer in a large Western city, to cancel. Smith says he would not want to cancel, but that his competitors—Jones, Brown, and Robinson—had been allowed to cancel by the houses from whom they bought; that, if forced to do so, he would take the goods he ordered, paying, of course, more for them than what his competitors could then buy them at, but that he feels that if he is not to be in as good a position regarding cancelling as those who had bought elsewhere, he, in turn, would in future have to buy elsewhere himself. He was permitted to cancel.

Standard Sales Contracts and Their Enforcement.

It is, as stated, much to be desired that sellers would come together to take united action in the premises, and that a standard form of contract of sale, comprehensive in its nature, covering every possible debatable point, and legally enforceable, should be adopted. Then, a policy of contract enforcing should be judiciously entered upon and firmly pushed to its logical end.

If, at the same time, steps could be taken for the formation of a commercial textile court, or tribunal, for the prompt settlement of disputes over merchandise, a great step forward would have been taken.

XXXIV

THE QUESTION OF PRICES TO USE IN STOCK-TAKING

When the annual balance sheet is being made for a mill, one of the most important preliminaries is the stock-taking, or the recording of the amounts and the values of the various classes of stock on hand. For this purpose it is a fundamental necessity that a proper valuation be put on the raw material.

Objects of Stock Taking.

The objects to be attained by this periodic tabulation of assets and liabilities are both to know the exact financial status of the concern, and to determine the amount of profit or loss made since the previous stock-taking.

It is needless to say that a mathematically exact result is much to be desired, but this can never be, as the values put on the assets must always be a question which must be decided according to individual views and opinions.

The opinions, too, that are held on this subject may often be interested ones, consciously or unconsciously; great ignorance of correct methods is frequently displayed, and hap-hazard pricings of stock are very common.

The pricing of the stock may be done by a partner or principal of a business, and partners may disagree; or it may be left to the judgment of a superintendent or trusted subordinate.

Kinds of Goods to be Enumerated.

In a silk mill, the stock to be recorded, outside of mill, machinery, supplies, etc.,—resolves itself into a number of broad groups. These may be as follows:—contracts for silk not yet due for delivery; contracts due but undelivered, being held on call by the raw-silk merchants, subject to interest; raw-silk on hand; thrown silk, and silk in

process of throwing; silk in process of dyeing; dyed silk of various weightings, sizes, colors, etc.; silk wound and in winding; silk on quills and in quilling; silk in warping and beaming; warps made; warps drawn in or twisted; warps in the looms; woven cloth on looms; unfinished goods; goods finished, etc., etc.

Apportioning the Costs.

As the silk advances from one process to another its value increases, and the collective costs of the processes, together with an allowance for the wastes made in them, and their proper share of the overhead charges, must be added to the cost of the raw-silk when figuring out its value.

When silks have been weighted, due allowance must be made for this increase. Thus, if there were 22 oz. dyed tram in bundles, and if the silk were priced at \$4.00 net, the throwing 35 cents, waste in throwing 10 cents, and dyeing 80 cents, making a total of \$5.25, the price put on it should be $5.25 \times 16 \div 22 = \3.82 per pound, plus its share of the general expenses.

This is the ordinary and well understood method of figuring the value of silk in its dyed condition, and there should be no trouble in arriving at the proper proportionate value if any reasonable care is used, but it is not in regard to these things that the real questions arise. The difficult problem to solve is what basic prices should be put on the raw materials, and what values should be attached to silks in a partially manufactured condition that are not in the direction of current requirements.

How Personal Interests May Affect Matters.

A fair and logical determination of these points is further complicated by the way in which various interests in the organization may be affected by them, and apparently good arguments may be advanced for quite different methods of treating them.

The persons whose interests may be affected in this matter will be partners or stockholders, and mill managers or others, whose compensation is made up, in part, of a percentage of the profits of the business. Those who have specially to do with the mill will also be anxious to have a good showing made by the returns.

These different interests may be by no means identical.

If the season's business has been profitable, the owners, or representatives of the shareholders, may desire to scale down the value of the stock so as to cut down the amounts that would come to some of the subordinates who were entitled to a percentage of the profits. They would argue that, as these latter do not pay in a percentage when an actual loss is made, they would be only casting an anchor to the windward in case the next season should prove unprofitable.

Again, if the business had done extremely well, the managers,

in case it were a stock company, might dislike to have the books show just how much profit had been made, as the shareholders would then demand a bigger dividend, while they, the managers, would like to pay just the regular dividend and keep the remainder for the active uses of the concern, or as a reserve against the lean years that commonly follow the fat ones. By taking the goods at the store and the materials at the mill on a sufficiently low basis, all these extra profits could be covered up.

If the concern had not been doing well, and there was fear that its credit might be questioned, those in charge might think it judicious to put very full values on the stock, so that the books would show a healthy trend of affairs, and they would thus be enabled to make a satisfactory statement to their raw-silk friends and to the mercantile agencies.

When the active managers of the business do not hold the financial control, they might fear that a bad showing would cost them their official positions, and, therefore, whenever it might seem necessary, they would be interested in boosting up the values. This is frequently the case with mill superintendents, and, as the valuing of mill assets is often left to these men by those who feel that they do not have sufficient technical knowledge to properly appraise them themselves, such prices as are applied should be subjected to careful scrutiny.

Sales managers, and others at the selling end, who are interested in the profits or who are desirous that a good showing should be made, are equally liable to overvalue the manufactured goods.

Sometimes corporation officers, when business has been profitable, will scale down the assets so as to show no profit, or even a loss, not only for the purpose of euchreing participants out of their share of the profits, but to cause a decline in the value of the stock, and so to enable themselves and their friends to buy it in at a price far below its real value as demonstrated to them by the earnings of the mill.

Necessity of a Settled Policy.

In view of these many and conflicting interests, and of the changing circumstances that may sometimes cause a desire to unduly overvalue the stock, and at other times to under-value it, it is of real importance that some settled policy be adopted for the pricing of the stock, both at the mill and at the store, which will be a continuous one. Thus, whether the method be the best or not, it will at all events be freed from outside bias, and the result of the operations during the period under review will be fairly shown.

A knowledge of the stock-taking policy of the house, as well as the methods employed in figuring the annual depreciation of plant, is of first-class importance to each one connected with the business whose compensation is derived in whole or in part from the profits, and it

is a matter on which he should have the right to require information. When such percentage arrangements are being entered into, these questions are very pertinent ones to ask.

Defrauding Subordinates of Their Profits.

It is notorious, in all lines of business, that many employers who have promised a certain share of profits to employees, cannot bear to see them earn more than the most modest amounts, and, therefore, when business has been good and their share of profits would be substantial, they often cheat them out of the bulk of what they are entitled to by under-valuing the assets.

Skepticism When Losses Have Been Made.

Employees, on the other hand, who are entitled to share in the returns, can seldom be made to understand that the business has been run at a loss instead of at a profit, and, therefore, after bad seasons, when they are told that there is nothing coming to them, they are often not slow to express their opinion in private that the firm has gouged them out of profits that they should rightfully have had.

It is therefore desirable that, so far as may be, there should be left but little room for controversy on this important subject.

Basic Costs for Different Silks.

In pricing the mill assets, it is a proper method to take a basic cost for each class of silk—Italians—Japans—Chinas—Tsatees—Cantons—Tussahs—etc., etc., and from these work out the values of the different lots in their various stages of manufacture.

To get the proper basic prices is the rub, for the method of valuing may be most varied.

Methods of Valuing the Raw-Silk.

The actual cost of the raw-silk in each individual lot, old or new, may be used; or the costs of all the regular silks on hand (French, Italians, Japans, Chinas, etc.) may be averaged up for each class and taken. This digging out of the raw costs of all the-dyed lots is a very tedious matter.

Then, a price may be taken for each class which represents the market of the day; or, if the market be a rising one or a falling one, what it is likely may be the market level in the immediate future. These may be, or may not be, averaged up with the undelivered contracts. There is frequently a handsome profit or a smart loss in such contracts, and these may be included or excluded from the accounting as interest dictates.

Many people never include contracts, even when due for delivery and being carried by the raw-silk people, arguing that the future must take care of them, and, as they do not appear in the ledger, that the stock-taking should not be burdened with them.

There is the question of prices for the various grades of silks of the same nature. Thus, a mill may have booked orders for a full season's business on a line of fabrics requiring, say, an Extra Japan Filature for warp, and a fair No. 1 Japan Filature for filling; at the same time, there may be on hand more or less Double Extra and Best No. 1 Filatures, and best Re-reels, all of a suitable size, and which it is more than likely will be worked up into the goods sold, rather than be allowed to remain in stock eating up interest. Should these be taken at the values dictated by their use, or values based upon their quality? This question is often answered by mills, whose grades of silk are not very diverse, by putting one price on all Japan tram stock, one on all Japan organzine stock, and similarly for silk of other natures.

Then comes another question. A mill, in the autumn, has bought and contracted ahead heavily for raw-silk at an average price, say, of \$4.00 a pound, and has sold its production up to the end of April on that basis. When January first arrives, there will be large quantities of this silk on hand, and much on contract, and the market then may be \$5.00 a pound. If the silk was costed at current market value the effect would be to throw a dollar a pound profit, on all the silk of this lot, into the period just closing, and to make a corresponding loss appear in the period just beginning, whereas, if taken at its purchase price, it would neither inflate the one or diminish the other.

Again, a mill may be only partially supplied with silk for the season, and it will have to estimate how much it may have to pay for the additional supplies required, and so it arrives at an estimated general average for the cost of the season's silk. It may then scale the silk on hand up or down to correspond with such average, as it is on this that it will base the costs of its goods.

In other cases, the prices ruling for goods may be far lower than the parity of the raw-silk, and there may be no prospect of any advance in the goods price. A manufacturer may then argue that he had better take his silk in stock at a low enough price to let him out whole, when it is worked up into goods at the market price, and to let the loss on the raw-silk go into the previous year's account.

Many other factors will complicate the views that can be taken, but enough has been said to indicate what great differences in the valuation of stock may be caused by these differing points of view.

The manner in which the increase or decrease in values of the current stock of silk carried by a mill, if figured at market rates, will affect the apparent profits of a season, is a very baffling one.

Difficulty of Recommending a Course to Pursue.

The writer has much hesitancy in recommending any specific method of stock taking as being applicable to all cases. Bearing in mind that the most important function of the periodic accountings

is to show the loss or gain during the intervening periods, there are some general propositions that may be considered reasonably sound.

General Propositions that are Sound.

If, for instance, actual loss or profit has been made, that loss or gain should appear in the records of the period during which it occurred. Thus, if there are undelivered contracts on which the market has fallen or has advanced, this loss or profit should be made apparent in the records, though not necessarily included in the balance sheet. Again, if, as in the instance previously cited, the market has advanced sharply and the silk bought at \$4.00, and sold in the form of goods on that basis, has advanced to \$5.00, such portion as is needed to fill the orders should be figured at only \$4.00, though any overplus, not contracted against, may be put down at the higher value.

The use to which materials are to be put, and which of course controls what will be received for them in the shape of goods, should be kept well in mind. Thus, if better quality raw-silks, which cannot readily be re-sold, are likely to be used up in goods in which lower qualities would answer equally well, a potential loss is at once apparent, and they should be figured on the basis of the lower cost silks.

Odd lots of stuff on hand should be carefully judged on their merits. All mills have more or less dyed and undyed material side-tracked, and many other small, and often large, lots accumulate. Such lots eat up interest, cause expense for handling, storing, and sampling, become passé in color and shop worn, and often deteriorate in strength. In many cases, if they were worked up into the best fabric they would make, the price they would fetch would hardly pay for the labor put on them. According to the conditions prevailing in each mill, such lots may be made into rough classifications, governed by their quantity, character, and condition, and certain specified percentages marked off them.

Apart from such silks as are needed to fill orders on the books, it is safe to say that silk should be taken in stock at its fair cost of replacement, unless, at the time of the stock-taking, there should be some fictitious rise of the raw material market.

Fluctuating Stock Values Confuse Matters.

Another thing of importance to consider is, how the apparent annual profit or loss is affected by the rise or fall, in quotable value, of the underlying stock of silk that a mill must always have on hand when running. While this stock, of course, is constantly being replaced, it has much the character of a dead stock, as the mill has to be making constant purchases on the top of it to take care of its current requirements, and at the end of the year this underlying stock is then just as large as ever.

A mill using 100,000 lbs. of silk a year, may be carrying a stock,

on the average, of from 25,000 to 50,000 lbs., on a raw basis. If this stock should one year be up \$1.00 a pound and the next year be down \$1.00, there would be no loss or gain, but the balance sheets of the period would be greatly affected. When the stock is taken each year, it is very desirable to figure out the raw pounds represented by each class of stock and, by comparing the stock of one year with the other, it will show, in great measure, how much the apparent profit or loss has been affected by this.

How Shall Goods be Priced?

At the selling end, just as nice judgment and just as well thought out methods are needed.

Shall goods be taken at mill cost, or at selling price less commission and discount? How shall slow sale goods be priced compared with quick sale goods of the same cost? What allowance shall be made to provide for the cleaning up losses that are generally to be looked for? Shall unsold goods on hand be priced at the same figures as those sold and awaiting time of delivery? If not, what principle shall be applied in pricing them? There are lots of questions.

Decide on a Policy and Stick to it.

To sum up the situation, it is very necessary for the responsible heads of a concern to go carefully over all the details of these matters, and then to decide on a standard policy to pursue in the pricing of each class of stock. This decision should be put in writing so that it will act as a guide from year to year, and so insure continuity of policy. Each year's record of the basic prices used for the different classes of silk should also be preserved.

If this is done with care, good judgment, and without bias, the results of the business, as set forth by the annual balance sheet, should be fairly correct.

XXXV

WHAT TO FIGURE FOR DEPRECIATION OF PLANT .

There is no question regarding the fact that machinery and other things in a mill do wear out and do depreciate in value, and that a time must come when renewals will have to be made. Whatever this depreciation may be on the individual units in a plant, the aggregate amount is always considerable, and a proper sum should annually be set aside for a replacement fund.

As this expense is not one that forces itself on the attention, it is often overlooked, or underestimated, and not infrequently disregarded altogether.

Depreciation a Matter of First-rate Importance.

This matter, however, is one of first-rate importance, so much so that it visibly affects the cost of goods.

Thus, if the machinery and power plant in a mill of 500 looms represented a cost of \$150,000, and if 10% was considered a proper amount to write off annually for depreciation, the amount so set aside would be \$15,000. If, now, the product of this mill was 2,000,000 yards a year, the expense, on this account, would be $\frac{3}{4}$ cents per yard, not a negligible matter, by any means.

Keeping Machinery at Highest Efficiency.

Any mill, intelligently run, will have every machine kept in the most perfect condition, and in a state of the highest efficiency. This is a necessity if a proper product is to be looked for. All expenses for new castings, repair parts, and general up-keep are properly covered into the ordinary general expense of the mill.

Improvements Compel Replacements.

Allowing that all the machinery is kept in fine condition, the time

comes, nevertheless, when its usefulness is at an end, and it has to be discarded. The consequent replacement is forced on the manufacturer by the numerous small improvements that have been brought out as the years passed, making the later types of machines more productive, or less costly to operate, than the older types. It may also happen that some machine of a revolutionary character, such as the Northrop loom, comes on the market, and, for certain lines of goods, puts everything else into the background.

Again, the price of machinery may have changed, and the cost of replacing may be other than had to be paid originally, and thus the ratio of depreciation is altered.

The various classes of machinery do not deteriorate in the same proportion, and in some sorts of machinery improvements are few and far between.

How Speeds Affect Rate of Depreciation.

The speeds at which they are run materially affects the question. Thus, spinning frames running at 12,000 R. P. M., night and day, will have a much shorter life than the same frames running 8,000 R. P. M. on day run only.

It is frequently good practice to drive machinery to the very limit of its endurance, regardless of how much it may shorten its life, if by that means a material amount of labor can be saved without lowering the quality of the product, as this saving would amply justify the renewal of the machinery at comparatively short periods. This policy is much pursued in the metal working trades where tools, that with easy duty would do good work for a lifetime, are so driven that, in three or four years, they have developed so much lost motion that very accurate work can no more be had from them, and they are then sold to less particular people and new ones are bought.

Wide Divergence of Views Regarding Renewals.

Taking, however, textile mills as they are ordinarily operated, we come now to the question as to what we should figure for replacement account, and on this subject hardly any two people agree, and the views of most manufacturers are hazy in the extreme.

The first question that arises is what it is intended to do with the discarded machinery.

Some very intelligent managers make it a point to break up into scrap everything that they displace, arguing that the selling of such machinery only puts it, at a low figure, on the market, where it will sooner or later be bought by some one starting in business as a competitor, and who, if he could not buy such low-priced machinery, would not have money enough to start at all.

I have heard of a manufacturer who, when replacing a section of looms and desiring to scrap the old ones, had them put on the elevators and run up to the top story of the mill, from whence they

were hurled to the ground below, thus saving most of the labor needed to break them up. His neighbors thought he had gone mad, but in this madness there was much method.

Few people think that they can afford to take this far-sighted view, and so they sell their old looms or frames for the best price they can get for them, which, if they have been well kept up, may be perhaps from 25 to 40% of their new cost. Let us, therefore, assume 25% as a safe figure.

Methods of Figuring Depreciation.

Here are some different methods of figuring depreciation that have come to the writer's notice: A. Nothing at all. B. 5, 7½, or 10% of the original amount per year till all is written off. C. 10% a year on the diminishing amount. By this method about 75% is marked off in thirteen years. D. 10 to 15% on first cost till one-third is written off, and 5% thereafter. E. 5, 7½, or 10% till reduced to 25%, and then kept at that figure. F. The same as "E," but brought to a stationary level at only 40%. In this case the assumption was that 40% could be realized from the sale of the old machinery. G. Marking off 50% of the value of the machinery on installation, and 5% per annum thereafter. H. Marking off 25% on installation and 10% per annum thereafter. I. Writing off varying percentages, from 5 to 15% per annum, on the different classes of machinery according to their estimated wear and tear. J. Writing off from nothing to 20% a year, on the original cost, according to whether the earnings of the year had been large or small. This method is pursued in order that dividends may be paid with regularity, which the writing off of depreciation in lean years might otherwise interfere with.

No doubt there are many other methods in use, but the foregoing list well illustrates how widely divergent is the practice in this important matter.

Let us now see which would appear to be the fairest way.

Difference in Wear-and-tear of Machines.

It is evident that the wear and tear of all machinery is not the same, but to make nice distinctions between the various sorts would lead to much complication and invite many errors, so it may be best to take a figure that will represent the average. We will omit, also, the somewhat remote chance of machinery being made obsolete by the invention of radically different types, or the chance that the renewal cost of it may fall, or advance, heavily.

Life of Machinery.

As the machines will be constantly kept in first-class effective shape, undergoing as it were a continuous process of rebuilding (the repairs of course being charged to expenses), it is evident that they might last interminably.

In twenty years' time they would still be running as well as ever, but they would then probably be considerably outclassed by the latest types. When but fifteen years old they might still be able to compete effectively or they might even then be out of date. They should certainly, however, be able to produce on an economical basis for at least ten years, and we will therefore assume that provision should be made for replacement within that period, and, if they are good for a longer period, so much the better.

What to Write Off on Machinery.

Having regard to the customary practice of selling the old machinery, and estimating its value as 25%, we have remaining 75% to be written off in ten years, or 7½% annually on the new cost. This will be a safe and conservative method for use in most cases.

If the old machinery is to be broken up instead of sold, then, of course, the whole of the value has to be provided for in ten years and 10% per annum of the original cost will be the figure.

The annual additions to, and extensions of, the plant must have their own depreciations figured out and included in the general total.

The shafting, pulleys, and other power transmission appliances, if properly installed, should depreciate very little, and on this part of the plant 5% annual allowance should be enough.

Power-plant Depreciation.

The power plant presents somewhat different features from ordinary machinery. Engines, kept in good repair, are hardly ever worn out in service, and they do not usually become obsolete as soon as producing machinery. Boilers wear out in time, but, with re-tubing a couple of times, a boiler should be good for twenty years or more. The setting of the boiler should also be figured on, as well as the boiler itself, as a new boiler requires a new setting.

Mills, however, seldom remain stationary as to their manufacturing equipment. If they are unsuccessful and fail, it matters little what depreciation may have been figured on. If, on the other hand, they do well, their plant is generally increased as the demand for their goods increases, and this means more motive power. An increase in this direction often takes the form of the entire discarding of the older and smaller units and their replacement by larger ones.

It would be only fair to assume that such periodic enlargements in a flourishing mill might have to be made at intervals of about ten years and, as very little is realized from the sale of old engines and boilers, it will be proper to figure an annual charge of a full 10% of the entire new installation cost of the power outfit, exclusive of the building and stack.

Depreciation on Buildings.

The depreciation on buildings is a thing seldom allowed for, but it goes on just the same. Good brick buildings, kept in proper repair, will endure for a great period. In time, however, buildings have to be demolished, as, owing to the changing needs of business, and increasing size of machines, they become inconvenient and uncommercial. A fair allowance for the useful life of such a building might be forty years, so an annual depreciation of $2\frac{1}{2}\%$ on the cost of replacement should be provided for.

Increasing Land Values.

Some people argue that the land on which the buildings stand increases in value faster than the buildings depreciate, and therefore that nothing should be written off on this account. Such is by no means always the case, but, even were it so, it does not alter the situation. The mill buildings must, in time, be replaced, but the land cannot be sold unless the whole business be moved, a thing that is rarely done save under very exceptional circumstances.

Increased price for the land may look well on the financial statement, but instead of its being a help in manufacturing, it is the reverse, and makes the goods cost more, as the increased valuation means heavier taxes.

Diminished Value of Special Equipment.

There is a class of equipment, such as Jacquard machines, dobbies, battons for swivel looms, battons for ribbon looms, etc., of which a mill may have a great amount on hand, in reserve, in addition to what is actually in use on the looms and other machines.

It does not take many years to accumulate a good deal of such stuff; much of it is seldom used; much of it, too, gets obsolete very fast owing to its being provided for special work, which, with the change of fashion, may no longer be required.

Each manufacturer will be best able to judge for himself how likely to be useful such parts of his equipment are, and large sums of money are often locked up in it. Considering its nature, it would not seem unreasonable to write off 20% of the cost of such apparatus annually.

Such items in the outfit as clocks, scales, furniture, shelving, etc., are so moderate in total value and so enduring in character that their depreciation need hardly be considered, though, if desired to do so, an annual allowance of 5% should suffice.

The annual loss in the small equipment, bobbins, shuttles, swifts, quills and what not is made good by the annual purchases, which are charged to the expense account.

Effect Entailed by Changing Fashions.

One thing that may greatly affect the value of machinery in a plant is such a change in fashion as will compel a mill that has been equipped to make one class of goods to turn onto some other class, for which its looms may be quite unsuitable, and thus entail heavy expenses for new looms long before the old ones would ordinarily have outlived their usefulness.

Such an event is somewhat unusual, and is one of those things that need hardly be allowed for when estimating the amount of annual depreciation.

When Machinery Should be Discarded.

When the cost of, say, a loom has been written off until it stands at 25% of its replacement value, the question arises as to when it should be discarded in favor of a new loom.

This can be answered by figuring out whether the increased productivity of the new loom would pay for the expense of the change.

Thus, if the replacement cost was \$160, and if the old loom would sell for \$40, there would be a net expense of \$120, chargeable with 6% interest and 7½% depreciation annually, or \$16.20 a year.

If, now, on the goods being produced, the charge for general expense was 7 cents a yard, and if a profit of 3 cents a yard was obtainable, a total of 10 cents a yard, an increased production on the part of the new loom of 162 yards a year, or about 3 yards a week, would even this up.

There would be no use in making the change, and locking up more capital in looms, unless some substantial amount in excess of this should be obtainable. With an increase of 4 yards a week, it should be worth while.

If, with the increased output, the weaving rate could be lowered to correspond—not by any means such an easy matter—then a smaller increase in production would warrant the substitution.

The same reasoning can be applied to other kinds of machinery.

Standard Percentages of Depreciation.

Reviewing what has already been stated, it would appear that, in American silk mills, it would not be far from the truth to allow for annual depreciation such sums as follows: on the regular machinery plant, 7½% of the new cost till it stands at 25%, and none thereafter; on the transmission machinery, 5% of the new cost of installation; on the power plant, 10%, and on Jacquards and other special equipment held in reserve, 20% till the whole amounts are written off; then, on the buildings, 2½% of the cost of the replacement of an equal area of floor space.

How the Books Should be Kept.

Having now considered what amount it is proper to set aside, the next thing is how it should be expressed on the books of account.

Some owners, in taking their inventory, mark the individual machines at a less and less cost each year. Others deduct from the total of the inventory the total amount to be taken off. Others again simply enter the amount on the debit side of their machinery, and other accounts, in the ledger.

A proper plan is to have a special "renewal account" in the ledger, to which is annually added the amounts written off, thus leaving the machinery and other accounts, and the inventory value, undisturbed.

Apart from its showing clearly just what has been set aside, this method has certain advantages. Thus, if the other policy of deducting these sums from the machinery account has been followed, and if the value of the plant had been written down till it stood at only 25% of replacement cost, then, in case the mill were destroyed by fire, the owner would have the time of his life convincing the insurance companies that they should pay him for his machinery four times the value at which he carried it on his books.

Again, should he be applying for bank accommodation, and be called on to make a statement of his condition, if he had written off 75% of the value of his plant and stated its then book value to be \$50,000, a bank official would estimate that item as worth about \$17,000—or a third of the book value. If he used a separate account in which to enter the writings-off for renewals, he would then be able to give the book value of his machinery as the full \$200,000, and this the bank official would consider as worth \$67,000.

What the Inventory Should Include.

The inventory value of machinery should include the entire cost of setting up the plant in running order. In addition to what was paid for the machines themselves, it should cover the freight, cartage, handling, setting up, and tuning up, all of which expenses would have to be incurred in the replacing of the plant. When a fire loss occurs you are not then put at a disadvantage, and your inventory figures display then the proper and real replacement cost.

Whichever method is adopted, it should be consistently followed on the same lines, from year to year, so that the results of the business, as shown by the books, will not be affected by arbitrary changes in the handling of this account.

Jacquard Cards and Fire Insurance.

In connection with depreciation, attention should be called to the Jacquard cards, of which most fancy goods mills have a great accumulation. Some of these sets of cards are of patterns so old that they are unlikely to be wanted again; others are used but infre-

quently; others again are in more or less constant use; and the stock also is being continually added to.

When putting a value on them, no one ever thinks of inventorying them at what it cost to provide them, any more than they would be likely to put a value, in the same manner, on the designs from which they had been cut.

A somewhat customary way is to put down a lump sum, generally a small one, such as \$1,000, to cover the stock of cards, the designs, etc.

Now, when a fire loss occurs, the insurance companies are quite within their technical rights in claiming that, in the total insurable value, the *replacement cost* of such cards and designs is properly to be included. If a mill has on hand a good stock of such cards, etc., this addition may reduce the insurance that has been carried below the 80% limit, and the mill may be held as a co-insurer, and so receive from the companies a much less sum than the loss incurred.

I knew of an instance where a metal working concern had a lot of old dies that were treated in this fashion, and when the factory was burned the owners were held to be co-insurers, and only received \$60,000 against an \$80,000 loss.

Mills carrying stock of this character, and all sorts of dead and semi-dead stock—old bobbins, rollers, castings, etc., etc.—which are considered as having little value, (though their new cost might have been heavy), should consult their fire insurance brokers and see that such things are specifically excluded from the stock covered by their regular policies. If it is desired to insure them for something, they can be covered by separate policies.

Withdraw Renewal Money from the Business.

When depreciation has been earned and written off, it is a very useful plan to have the amount withdrawn in cash from the active uses of the business, and invested in some interest-bearing security of a safe and easily convertible character. By so doing, when renewals should be made the funds are on hand for the purpose and are not melted in, in the form of goods and materials, with the general assets of the mill, as is usually the case where the amounts set aside simply appear as entries in the books.

As the managers are then aware that a certain sum of cash must be provided for depreciation by a certain date, just as provision has to be made for dividend payments or interest charges, they will start in time to run down their stock of materials, so as to get the assets in a sufficiently liquid shape to enable them to squeeze out the amounts required.

Some English Experience.

The following table, compiled from the general practice and experience of a large number of textile manufacturers in England and

Scotland, and which was prepared by Mr. G. P. Norton, of Huddersfield, England, may be of interest here:

"Rates of Depreciation on Diminishing Values.

Warehouses, Offices and Cottages.....	2½ to 4%
Mills, including both Buildings and Motive Power.....	3½ to 6%
Mill buildings, exclusive of motive power.....	2½ to 5%
Motive plant, i.e., Engines, Boilers, Gearing, etc.	5 to 7½%
Plant and machinery, viz.:	
Carding, scribbling and condensing.....	About 5%
Combing and spinning.....	About 7½%
Weaving	About 10%
Dyeing and finishing	About 5%
Miscellaneous	5 to 10%
Furniture and fixtures	7½ to 10%

These figures are based upon the probable working life and the residual value, if any, when worn out."

Mill policies and methods in America are so different from those that are pursued in Europe that probably the above figures would not properly represent the depreciation to be figured on here.

A point that must not be lost sight of is that the sums set aside for depreciation, whether used in the business or invested in outside securities, should be credited with interest. Such funds should earn at least 4%, and, as this interest will be compounding as the years go by, it will add very substantially to the amount available for replacements.

XXXVI

CAPITAL REQUIRED IN SILK MANUFACTURING

The question of capital requirements for a mill is of the greatest importance, and one which should receive the most careful consideration before a new concern is started, or before an increase of producing machinery is determined upon by an old one.

Unfortunately, new concerns do not realize how much money is actually required to finance a business, and so they get started with hopelessly inadequate funds, and, once started, they have to sink or swim.

Precarious Condition of Undercapitalized Firms.

A firm with insufficient funds to enable it to pursue a safe and sane policy, may at any moment find itself in a most precarious condition. If a slump in business occurs, so that goods made or making cannot be delivered, such a mill cannot stop its looms as its capital is all tied up in equities in the goods on hand, and it must be run in order to get advances on new goods coming forward, so that its bills can be met. Stoppage means liquidation, and liquidation would be financial death. It must run or perish; and so, just when every dictate of prudence and experience would point to a sharp reduction in product, this financial necessity may compel it to run full, to the serious damage of its own interests and of those of the whole market.

These conditions are ever present and have much to do with the unsatisfactory position of the industry.

Money Requirements of Manufacturers.

Let us now consider the money requirements of a mill engaged in the manufacture of broad-silks.

At the top of the scale we may find a concern with most ample funds, which owns a fine plant, unmortgaged, and which may also

possess the auxiliary facilities for throwing, dyeing, printing and finishing. It may pay cash for all its raw-silk, yarns and supplies, and may keep an ample stock of them. A considerable stock of finished merchandise may also be carried, and no money be borrowed from banks or other sources; no advances on merchandise be taken, and it may carry all its own credits and not have any one cash its sales.

The Employment of Surplus Money.

It is very easy for a concern, placed in such an enviable situation, to have far too much capital locked up in its business for its own good. In the operations cited above much of its capital is being employed in earning a simple 6% per annum.

Money invested in manufacturing should bring in more return than that; and it is frequently better to borrow for a respectable part of one's requirements (if the proportion be not unduly large), and so leave more of the funds free for the active prosecution of the manufacturing side of the business.

Of course, when any concern finds itself with an undue amount of cash on hand, which may not be needed for a while, it can employ this surplus at a return of perhaps 5 per cent. in the purchase of high-class short-time commercial paper.

Too ample a supply of funds is apt to lead to carelessness in their use, and it is wonderful how money will get locked up in silk at the mill and in goods at the store under such conditions, while, if necessity had compelled a stricter policy, probably not more than one-half the amount need have been melted into the stock in this manner.

Limits of Capital for Mill Departments.

As a matter of fact, silk mills should take a lesson from the department stores, in which a definite and limited amount of capital is allowed for each department, and the buyers are compelled to keep within it. Now, if each department of a mill were so treated, with proper allowance for the number of looms that were running, it would compel the mill management to exercise special care to see that undue amounts of money did not get locked up here and there in the stock, and which in the aggregate would often amount to a huge sum.

It does not do to starve any department of a mill; but, beyond the absolutely needed provision, there should not be tied up an unnecessary dollar. The constant aim must be to keep the capital in the largest degree liquid.

Desirability of Keeping Capital Liquid.

For this reason many prudent manufacturers, when building their mills, will procure the largest possible mortgages upon the realty, or will arrange to have buildings suitable for their requirements erected on the basis of an annual rental charge. When favorable terms can be had, mills, not under commission-house roofs, may also arrange to

have their sales cashed by one or other of the banking concerns undertaking such work, and so release substantial sums, and some reasonable period of credit will also be taken on bills for raw materials.

Working With Insufficient Funds.

Considering next those mills at the bottom of the scale, we may find them with mortgaged plants, or located in rented premises, and sometimes with chattel mortgages on their machinery, or with looms bought on credit and only partially paid for. They buy their raw materials on the longest possible time; let their other bills drag as long as they prudently can; get such bank or other loans as they can procure; take full advances on their goods, and have their sales cashed. These are the mills that cannot stop.

Such conditions do not make a very sound basis for raw-silk credits, but by a judicious arrangement and padding of their statements, credit is often obtained that otherwise would be withheld.

Figuring the Annual Mill Production.

Let us now get down to figures and consider a broad silk mill with 200 looms, running full and steadily on 36-inch goods at 72½ cents a yard. Let the weekly run be 55 hours, and the looms be speeded to 134 picks a minute, with 90 picks per inch in the cloth. A production of 70% of the theoretical would yield us 95½ yards a week, which, at the price above stated, would give a gross output of \$69.25 per week per loom. Deducting 15 per cent. from this for the selling expense, leaves \$58.86, and, if we allow the profit in it to be about 5 per cent., we get a figure of \$56.00 as the net mill cost of the cloth produced weekly on each loom.

Multiplying this figure by 51, for the number of working weeks in the year, and by 200 for the number of looms, we get an annual output, on a cost basis, of \$571,200. or \$47,600. per month.

Details of the Monthly Expenditure.

Now, let us assume that, in the cost of the fabric produced, 50% is represented by raw-silk, costing \$23,800. a month; 25% is wages, amounting to \$11,900. a month; 15% goes outside for throwing, dyeing and finishing, and totals up \$7,140. a month; 6% is applied to general expenses and salaries, with a figure of \$2,856. a month; while the remaining 4% covers interest and depreciation, amounting to \$1,904. a month.

Investment in Plant.

We will suppose that \$200. a loom is invested in land and buildings, and \$300. a loom in machinery and equipment, so we must figure \$40,000. for the one and \$60,000. for the other, a total investment in the plant of \$100,000. or \$500. a loom.

Amount and Value of Materials in Process.

Taking the minimum amount of materials on which a going concern could economically conduct its work, we may presume that there should be at the throwster's, under throwing order, a supply of raw-silk sufficient for three weeks. This would have a value of \$18,000.

Then, at the dyer's, there should be another three weeks' supply of thrown silk, raised in value by the throwing to a total of \$21,000.; and, in various processes at the mill, a stock of silk equivalent to a four weeks' supply, which with the throwing and dyeing costs, and with the labor and other charges expended on it, would have a value of, say, \$38,000., making a total mill stock of \$77,000.

It nearly always happens that odd lots of materials accumulate at a mill to a serious extent, and in practice much money is generally locked up in such forms, and should be figured on; but to make our figures clear we will take no account of this here.

Merchandise Stock and Open Accounts.

At the salesrooms, it will usually be considered necessary to have a reasonable amount of manufactured goods on hand as a basis on which to transact business, and this underlying stock may be estimated at one month's output, having a net mill cost of \$47,600.

In addition to this there may be, on the average, a quantity of goods in stock, sold, but which are being held for the time of delivery to arrive; and this may be put at two months' output, amounting to \$95,200., making a total manufactured stock on hand at the salesrooms of \$142,800. net mill cost.

If the terms of sale to the trade are on the usual basis of 6% off for payment in 10 days, and with 60 days' dating, then it would follow that there might usually be on the books open accounts to the extent of two months' output, or \$95,200. net mill cost.

Capital Actually Employed.

Recapitulating these figures, we have in the plant \$100,000.; in mill stock, \$77,000.; in merchandise stock, \$142,800. and in accounts on the books, \$95,200.—a total of \$415,000. or \$2,075. per loom of capital actually employed, and that, too, on a most conservative lay out.

For a concern that pays cash for everything, never borrows, and which carries its own credits, it is evident that a capital of \$2,000. a loom is none too much; and, if it has its own facilities for throwing, dyeing, printing and finishing, it would probably need to employ \$500. a loom additional.

Overtrading, Carried to Absurd Lengths.

Next, let us see with how little capital the same business might be conducted.

We will figure that a mortgage for \$50,000. has been effected on

the mill realty and machinery, and that the net investment there is brought down to \$50,000., so the sum needed will now stand at \$365,000.

The liabilities might be as follows: For 6 months' supply of raw-silk, bought on notes of 6 months', an amount equal to \$142,500. It would doubtless be difficult to secure such a large supply of silk on credit, on such a limited amount of net capital, but excessive credit is by no means unknown in the trade.

Then, there would be an average of one week's wages due at the mills, \$3,000.; one month's expenses due for supplies, salaries, etc., \$3,000., and one month's bills for throwing, dyeing and finishing, aggregating \$7,000., making a total floating debt at the mills of \$155,500.

In addition, there would be commission house advances on the unsold three months' stock of goods, amounting to \$176,600. gross selling value, and advances of 60 per cent. on this would be \$106,000.

The two months' sales of goods, sold on 60 days' credit, and amounting to \$117,700. gross, could also be cashed, yielding about \$99,500.; but advances of 60% on the gross amount would have been taken, amounting to \$70,600., so that there would only be \$28,900. of equity remaining if everything brought full price.

The total floating liabilities then will be: \$155,500. of mill accounts, \$106,000. advances on unsold goods, and \$70,600. advances on sold goods, making a sum of \$332,100.

Subtracting from our figure of \$365,000. this \$332,100., and adding in \$5,000. profit on the goods sold, we have remaining only \$37,900 as the entire capital of this 200 loom mill, or but \$190. a loom; so that instead of having some reasonable amount of cash working capital, in addition to the investment in the mill properties, it has no working capital at all, and in addition there are debts amounting to about three-fifths of the value of the plant—a pitiable exhibition.

When it is considered that the three months' output of goods, on hand at the salesrooms, represents a net mill cost of \$47,600. $\times 3 =$ \$142,800., on which commission house advances of \$106,000. have been taken, leaving an equity in the stock of \$36,800., it will be seen that practically the entire mill capital is tied up in this form; and, if there should be a falling goods market, all of this equity might be easily wiped out, and the concern left without a dollar of its own.

On the \$2,000. a loom basis, this \$37,900. capital would properly operate about 19 looms, instead of 200, and this deplorable state of affairs would only be possible by the unduly long terms on which raw-silk is sold, and the too great freedom with which credit is granted, together with the pawn broking facilities, in the shape of advances on goods, incident to the commission house system.

Mills Should be Able to Shut Down.

The most important fact to bear in mind in considering the capital

question is that the business should always be kept in such a shape that, if the exigencies of the times demanded the shutting down of 20 looms, or of 200, the maturing obligations could be taken care of without depending upon a fresh output of the looms for that purpose.

When one is tempted to increase his plant, he should do some sober figuring along these lines, and, if he finds any kind of doubt existing as to how he would be fixed in this respect, he should defer his expansion until he has accumulated a proper sum of money for financing it.

Requirements of Mills Differ.

The above figures are only based upon the operations of a small mill running on plain goods; and, of course, every mill, large or small, plain or fancy, will have its own special conditions to meet, and in which the capital required may differ widely from the foregoing. Fancy goods mills, in particular, will lock up much more money in machinery and materials at the mills, and much more money in stock at the salesrooms.

The underlying principles, however, are just the same, and they deserve the closest scrutiny and the most careful study and consideration.

Weak Concerns Are the Bane of the Industry.

Under capitalized concerns are the bane of the industry, and their weakness is the cause of serious hardships not only to themselves, but to the entire trade. New concerns starting are very rarely anything like so well supplied with money as they should be, to have a proper chance of success; but, unfortunately, they only become aware of this after they are started, and the mischief is then done.

It is a pity that none of our silk organizations is in a position to furnish free expert advice, along these and other lines, to all persons who might contemplate embarking in the manufacture of silk. It might help to keep many of them out of the trade.

XXXVII

THE CURTAILMENT OF MILL CREDITS

NOTE.—*This paper was originally published in October, 1911, during a period of severe depression in the silk industry.*

In rewriting the article, the outline of the conditions then prevailing has been allowed to stand, for the causes of the trade evils here set forth are always with us, be the local circumstances what they may.
J. C.

In times of severe trade depression there is always much talk in a general way of how this, that, and the other thing should be done to improve conditions in the industry, and to correct admitted evils.

I think it was Artemus Ward, who, in speaking upon the unwillingness of the public to make the least personal effort looking toward the reform of any prevailing evils, made a remark, in substance, as follows: "Now, for instance, take the matter of the weather; people talk, and talk, and yet nothing is done."

In the silk trade, too, there is talk and talk, and yet little or nothing is done, largely because very many people believe that the evils before us can no more be corrected than can the weather.

Where so many potent outside causes are apparent as having a disastrous effect upon the industry, there is doubtless a tendency also to overlook certain very serious underlying influences, influences that are present with us all the time, helping to diminish the prosperity of good times, and making doubly severe the disasters of bad times.

The Evil of Chronic Overproduction.

The principal evil which is apparent is a chronic state of overproduction at all times, with accentuated volume during periods of depression, periods when a sharply restricted output is imperatively demanded. It is this overproduction that has been going on in the face

of the great under-consumption of silk merchandise, due to the prevailing fashions in women's dress, that has largely assisted in creating the present demoralization in the trade.

Current Adverse Conditions.

Let us admit all of the many adverse conditions that prevail; the restricted yardage needed for costumes; the unsettled conditions in financial circles, largely due to the attitude of the government toward big corporate enterprises; the proposed downward revision of the tariff; the change of party control in Congress and the approaching Presidential election; the high cost of living; the unrest of labor both here and abroad; the threat of war in Europe, due to the dispute over Morocco; the rebellion in Mexico; the disturbed political situation in England, Portugal, Spain, Cuba, and elsewhere; the uprising in China; the changed conditions in costume requirements brought about by the enormous use of automobiles; the huge amount of wealth withdrawn from other channels and sunk in the purchase and upkeep of motor cars; the increasing national, state, and city expenditures, including the Panama Canal, the New York State barge canal, and other extraordinary expenses; the excessive losses from fire and the destructive forest fires; the demolition of endless city buildings to make room for public improvements, railway stations, bridges and their approaches, hotels, and huge loft and office buildings, etc., in which great sums of money are locked up, changed in this way from liquid capital to fixed capital; the endless investigating, and consequent unsettling, of all sorts of business and political affairs, that is being undertaken by state and nation; the injurious domination of great monopolies in many branches of industry; the competition of the cotton mills; the restrictions put on buyers by the "merchandise men," and the hand-to-mouth policy of purchasing that seems now to have become the fashion; the after-effects of the panic that are still felt; and many other contributing causes than can doubtless be marshalled up, and which fully account for the caution and conservatism everywhere apparent.

Favorable Factors in the Situation.

Admitting, I say, all these, yet considering as an offset the large totals of our crop yields, year by year, and the handsome prices that they have commanded, which means that the nation, as a whole, has a real purchasing power; that silks are highly favored by fashion, and that the prices at which they can be produced and sold, owing to cheap raw-silk and to manufacturing skill and specialization, are so low as to give them a wider field than ever before; that labor throughout the country has been very fairly employed, and at good wages; and many other favorable factors, it would have been impossible for the trade to have sunk into the pitiable condition that it has were it not for an

unwarranted and blind manufacture of goods in excess of visible requirements.

Overstocked Market Entailing Heavy Losses.

No more goods, if as many, are taken than would have been the case with a market bare of stock, while with few goods on the shelves, and fewer in work, some profit could have been exacted on sales. As it is, we entered a season certain to be poor with a heavily overstocked market, and thus enabled the buyers to absolutely dominate and trample upon the producers.

The business done could not have been a full one in any event, but some money might have been made on what was done. Now, less business than ever is done, and the losses both on stock and order goods are killing.

Might we not, therefore, have been spared much of this agony, if some rational measures looking to curtailments had been worked out in the past, and may not some steps be now taken that may prove of service in the future?

Inability of Weak Concerns to Stop.

One of the most potent causes in bringing about an overproduction during periods of slack trade, or depression, is the inability of weak concerns to stop.

Firms which are overtrading usually have much or all of their quick capital locked up in equities in goods, which have been advanced on by their commission agents. When a stoppage of buying occurs, there is no stoppage of the times at which liabilities must be met.

Money to take care of maturing obligations must be had at any cost. It cannot be got from the release of the equities in the stock goods, for, if forced to a sale at a time when goods were not wanted they would seldom bring more than enough to cover the advances, if as much. The commission merchants will not and cannot go beyond certain limits in their advances. Bank loans could rarely be secured on such statements as these concerns would have to present. The only means remaining to stave off a collapse is to make stock goods for advances, and as the advances on them, when made, are less than the money put into them, it follows that the new obligations are of an increasing character, and the further stock to be made to take care of these in turn must be of an increased amount also. This process continues till the market improves or the mill fails.

Booking Order Business at a Loss.

Some manufacturers, knowing full well the cruel losses that stock goods entail, and possibly influenced also by the knowledge that their factors would be unwilling to advance as liberally on stock goods on a weak market as on order goods, take the bull by the horns and boldly bid for order business at a loss, and in so doing they are adopt-

ing a far safer plan, though dreadfully expensive, than those who are banking up merchandise.

Production Increases When it Should Contract.

To talk to these gentlemen about the desirability or necessity of curtailing production at such times is to talk to the wind. They know it as well as any one, and they would be overjoyed to be in a position to do so, but they cannot. Plunge ahead they must, sink or swim.

We therefore see that at the very time that restriction of output is needed, it is thus largely increased, and at the same time prices are broken in every direction by these weak interests. Those strong and sane manufacturers who keep their output within proper bounds, while they need not be loaded with stock, yet see the prices broken on such goods as they have on their shelves, and market figures established that make the getting of a proper profit on order goods almost an impossibility. In spite of their own strength and ability they suffer in common with the rest.

Temporary Depressions Become Continuing Ones.

In every trade there are temporary or slight depressions, or cessation of active purchasing, as distinguished from those severe and far-reaching collapses that take place at longer intervals. These moderate reactions would have but a very short duration if the supply of goods was kept in reasonable harmony with the demand. Owing to the conditions that exist in the silk trade, each of these minor depressions is accentuated into a long continued period of bad business, and the control of the market is thus ever surrendered to the buyers.

Cycles of Good and Bad Years.

The writer has observed elsewhere that there seems to occur in this industry cycles of about five years, in which one year is good, one indifferent, two bad, and one very bad. It certainly appears to be so.

Where the Blame Lies.

The principal causes that enable concerns without sufficient funds to start, and to continue in business, appear to be the long time credit that is often afforded by machinery builders, the extended terms given on raw-silk, and the pawn-broking facilities afforded by the commission houses in their cash advances upon merchandise sent them for sale, together with their discounting of all sales made.

Without this commission house assistance, these concerns could never do business, but, as the commission house system seems to have arisen from the inability of the banking system of the country to supply the textile producers with sufficient funds for their needs, we shall doubtless have it with us for a long time to come. It has notable conveniences and advantages in certain ways, though the mills have to pay roundly for them, but unfortunately it affords too great facilities, and

thus keeps alive a lot of very weak mills which make little or no profit for themselves, and it constantly assists in bringing into being mills which never should start on the scale that they do.

How a Mushroom Concern Starts.

A concern with five or six thousand dollars, by taking rented premises, buying much of its machinery on extended time, and the rest from second-hand dealers, getting six months' credit for its silk, and getting full advances on its goods, with sales cashed, will start with, say, fifty looms, while that capital, even if the mill had reasonable commission house assistance, should not properly be counted upon to finance more than about ten looms.

There should be no criticism about the mere size of any concern. The man with four looms is as much entitled to proportionate credit for his four as the man with four hundred is for his. The great thing is that, be the mill large or be it small, there should be proper capital behind each loom operated.

Extended Time of Machinery Sales.

Taking the builders of machinery, we find that it is not unusual for loom builders and others to install plants on the basis, say, of 10% cash, and 10% per month thereafter, the title to the machinery not to pass until the payments are completed. The builder is quite safe in doing this, for it is practically certain that at least the first three or four payments will be met, and if he then has to take back his machinery he can repaint and resell it as new, and the money he has already received will recoup him for his expenses and profit.

If, on the other hand, the buyer completes his payments, and subsequently requires more machinery, he will generally buy the same types for the sake of uniformity, and he will have a very friendly feeling for the seller on account of the liberal terms originally accorded him.

This policy naturally locks up a lot of the builder's capital, but he finds it a valuable help toward inducing the manufacturer to start with his machinery, and, once started, he is pretty sure to continue using it.

Long Credit Given on Asiatic Silks.

In the raw-silk trade, all Asiatic silks are sold on a basis of 6 months' terms, and Europeans usually on a credit of 60 or 90 days. Notes may, or may not, be given in settlement of accounts.

The longer time accorded to buyers of Asiatic silks gives these silks a great advantage over Europeans in the favor of those houses with limited capital.

Carrying of Silk and Forward Selling.

In addition to the terms of credit, the raw-silk houses customarily carry silk after the due date of delivery until such time as the buyer

chooses to call it in, which may not be for several months. For this carrying, a charge is made on the bill at the rate of 6% per annum on the value of the silk for the time it has been carried. One per cent. of this practically covers the storage and insurance, while 5% represents the real interest charge.

If a raw-silk house should sell silk for forward delivery, to be delivered, say, in two, three, four, and five months' time from date of contract, and if the last delivery were carried for four months, and the terms were six months from that date, it would then be fifteen months, on the last delivery, from the time that the raw-silk sellers obligated themselves till they saw the color of their money. This makes an unduly extended obligation.

Were it not, however, for this selling for forward delivery, and for the carrying privilege, the buyers could not begin to operate with the same freedom that they now do, and as such buying is of great advantage to the sellers the custom seems to be mutually beneficial, though the load on the raw silk dealers at times must be very heavy, and it invites speculation in silk on the part of manufacturers.

Commission House Facilities.

The commission houses advance, usually, from 60% to 75% on the gross value of the goods sent them for sale; perhaps 70% would be the average rate. They will also discount all sales as soon as they are charged on the books. They feel under some compulsion to do fully as much as they safely can in the matter of advances so as not to discourage business from coming to them, knowing that if others can do materially better in this respect they will be favored by the manufacturers.

Where Reforms Should Begin.

Now, as in these three directions, undue facilities are furnished to very weak concerns, and by this assistance they are brought into being and kept alive, though generally in a very unsound condition, and as it is the weakness of these houses that is responsible to a considerable degree, as shown, for the continuous demoralization of the market, the question arises whether steps could not be taken by each of these interests to curtail the manufacturer's credit facilities, and thus compel him either to put more capital into his business or to conduct his operations on a smaller and safer scale.

This pressure must be put on the producers from the outside; there can be no reform from within in a case like this, for obvious reasons.

Curtailing Raw-silk Credits.

Taking raw-silk credits, what should be the maximum time allowed? After silk is received, say for use in skein-dyed fabrics, it may be a month at the throwster's, two to four weeks at the dyer's, and three to six weeks in process at the mill. From the time it has

been charged up it should, barring undue delays, come forward as finished merchandise, upon which advances can be got, in about three months.

This time, therefore, might be decided on as the maximum time on which any raw-silk should be sold.

If a manufacturer used 250 pounds of silk a year per loom, valued at \$4. a pound, equal to \$1,000., and bought on six months' terms, the restricting of the credit by three months, or one-quarter of a year, would cut him out of \$250. a loom of credit, which would have to be replaced with cash from somewhere. Weak mills would then have to strengthen themselves or greatly curtail their operations.

A step of this kind would have to be brought about by the fairly collective action of the raw-silk houses, and it should not be very difficult to reach such an agreement as they are very severe sufferers from bad debts, aggravated by the present too extended credits. Pressure from banking interests would assist.

This contraction would have to be enforced gradually so as to allow reasonable time for re-adjustment. For instance, notice could be given that, on a stated date six months distant, the time would be reduced to 5 months, six months thereafter to 4 months, and again, after another half year, to 3 months.

The sanity of such a step would be obvious to the whole manufacturing interest, and would be welcomed by the major part of it.

Quotations on Asiatics would then be on the basis of 3 months, less $1\frac{1}{2}\%$.

Discriminating Against Commission-house Mills.

The raw-silk houses should, logically, make a great difference in the amount of the credit they grant, and the length of time for payment, between those houses which finance themselves and those which pawn their goods for advances to the commission houses.

If a self financed concern fails, the raw-silk people get an equitable share of the assets, but, if a mill under a commission house roof comes to grief, the pawnbroker's lien of the factors, and the liens of throwster, dyer and finisher, upon the goods in their hands, absorb almost all of the assets and leave but a sorry dividend for those houses which have provided the silk that is in the goods under pledge.

The raw-silk merchants, therefore, should sharply discriminate between the two, as their risk is infinitely greater in the latter case than in the former.

Pawning Goods Should Restrict Raw-silk Credits.

Should such a course prevail, the manufacturers, who would be operating more looms than their finances warranted, would find that for every thousand dollars of advances they accepted on their merchandise they would be cutting off a thousand dollars of raw-silk

credit, and they might thus (under pressure) see the wisdom of running fewer looms but on a much sounder basis.

Putting Pressure on Machine Builders.

The machinery builders, in their turn, could be approached by committees representing their important customers, or through the medium of the trade associations, and strong representations could be made to them as to the pernicious effects of such methods as have been referred to.

As, in the long run, the abolishing of this deferred payment practice would probably have little or no effect on the average annual sales of machinery, the builders would probably bow to the opinion of the trade if reasonable pressure were applied.

What the Commission Houses Could Do.

We must now inquire what could be done by the commission house interests towards getting weak mills into a safe and sane condition, the crux of the situation being that they should be got into a position where they would always be able to curtail production, and perhaps stop producing entirely, when a receding market demanded it.

So long as the present unsatisfactory conditions are stimulated and continued by undue commission house assistance, it would certainly be only reasonable to expect these interests to concern themselves in the matter.

It is not to be expected that any branch of the trade can be led into taking action which would appear to be seriously prejudicial to its own interests. The curtailing of financial assistance to mills may, however, have a beneficial effect, rather than the reverse, on those interests.

Sources of Commission House Profits.

A commission house looks for its principal income to commissions on sales of merchandise, and the largest possible sales are consequently desired, and whether the mills make a profit, no profit, or a loss on the turnover (so long as they remain solvent), is a matter of only secondary interest to the factors.

For the same reason that large sales are wanted, a large loomage is desired, for if the looms run the goods must eventually be sold, and commissions will be earned on them in due course.

The interest account is a material source of profit also, and therefore a desire generally exists to lend as much as possible in advances, so long as the margin of safety in the collateral is unquestionable. The volume of sales made, and the character of the collateral behind the loans are the matters of primary interest to the factors, who rarely concern themselves much regarding the financial affairs of their consignors, and in fact might feel that it would be regarded as an impertinence were they to do so.

They, also, are bidders for the business of the mills, and they have no desire to antagonize them in any way, as it might result in driving business into the hands of their competitors.

Good Intentions but Bad System.

In every way, their intentions are the best, and they desire by all means to avert trouble and promote prosperity, but, unfortunately, the system, to a great extent, works the other way, and, incidentally, during times of poor business puts much financial worry on their shoulders, as weak mills unceasingly plead for more money.

Compensations for Refusing Weak Accounts.

Wherein, now, can a commission house find an advantage that will compensate it for discouraging the bringing into existence of new but weak mills, the preventing the extension of old ones, and the reduction of loomage in others, for this policy would appear to mean diminished sales?

The answer is to be found in the fact that, with a normal relation between production and consumption, the numerous periods of great depression would be minimized in number and extent, and that all the looms properly capitalized would then have a much greater prospect of continuous profitable employment than could now be the case.

If the yardage actually woven by each mill were to be tabulated over a series of years, and compared with what could have been produced on the same looms by continuous operation, the difference will be found to be enormous, so that the same yardage could have been produced by a much smaller number of looms, running steadily.

The amount of merchandise consumed by the country, and the consequent sales, and commissions earned thereon, would not be widely different if made by fewer looms running full, or more looms running intermittently, but it means everything to the well-being of the industry. In the former case a profit would be obtainable, in the latter it generally would not.

In fact, if the average mill was compelled to stop one-third of its machinery, even if its distributing and mill expenses remained the same, it would be much more likely to make a profit than it ordinarily would be, besides being in better credit and in far safer financial condition.

Not only this, but the houses that are relatively strong, yet under commission house roofs, suffer seriously in sales during these unnecessarily prolonged depressions, and the commission on their lost sales is a direct loss to the factor's pocket.

Again, conditions that tend towards constant depression keep the average of prices lower, and thus lower the commissions earned on a given yardage sold.

These considerations should have weight as a visible offset against the apparent loss in sales that reduced loomage should mean.

Collective Action Necessary.

Action, to be effective, would have to be taken collectively, by the dozen or more large commission houses which clear for the silk trade, and as the managers of these concerns are all gentlemen of large experience and much intelligence, it should not be difficult to secure uniformity of action along such lines as might be considered workable; at any rate it would be well worth an effort.

Ascertaining Proper Minimum of Capital.

The important basic fact to ascertain is, for each line of business or class of trade catered to, what would be the smallest amount of quick assets per loom that a concern, clearing through a commission house and entitled to certain advances, and which had its sales cashed, should possess, and the having of which would enable it to conduct its affairs on a sound basis, and to curtail production when such a course was advisable.

How Such Figures Could be Arrived At.

In determining such figures there would be no intention of arriving at anything but the cold facts, and conferences between the factors and experienced manufacturers, both those selling direct and those selling otherwise, should enable decisions of fair accuracy to be arrived at.

Under present conditions, a concern carrying its own credits cannot well get along with less than \$1,000. quick capital per loom, and even then it may have to borrow considerably. In fact \$1,250. would be nearer right.

How much of this is now supplied by the commission houses when a concern is doing a full and steady business?

Suppose that a loom turns off goods to the value of \$200., gross, per month, and that the stock at the selling office averages three months' output, being made up of one month's production as an underlying stock, and two months' product held for delivery against orders, and that another two months' product is charged on the books. This would mean a merchandise stock of \$600. per loom, and open accounts of a further \$400.

Advances of 70% on the \$600. would yield \$420., and cashing the sales, less 15% would give \$340. more, a total of \$760. per loom, under normal business conditions, supplied by the factors. To bring this up to the \$1,250. mark would require about \$500. more.

Suppose, now, that the result of the conferences was a decision that the sum of active capital required for each loom operated, say, on skein-dyed dress silk fabrics, should not be less than \$500., and that the collective body of commission agents agreed not to finance on any other basis. How would this be put into effect?

Putting Reforms Into Effect.

In the first place, new concerns, without proper capital, would be

absolutely shut off from embarking in business on too large a scale, and so the crop of mushroom manufacturers that always springs into being after any period of activity in the trade, would be effectively restricted.

Next, the factors would decline to finance any additions to the existing loomage under their roofs, unless each new loom started was backed by its proper quota of money. This would prevent too fast expansion by growing concerns.

Then, those undercapitalized concerns, which had started too weak, or which had lost money, or which had been expanding too fast, would be invited to cut down their loomage to within the limits of their quick capital, so soon as their contracts expired.

Thus, a mill of 500 looms, whose statement showed, in addition to the plant, assets of \$150,000. would be asked to put \$100,000. more into its business, or reduce its output to a 300 loom basis, ample time and every facility, of course, being given to assist in the consequent liquidation and re-adjustment.

Different Requirements for Different Trades.

Figures as to capital needed could be worked out for each branch of the trade, dress silks, linings, tie silks, goods made for sale in the grey, etc., with a proper distinction between wide and narrow, and plain and fancy looms, as the money requirements for the different lines may vary considerably.

Manufacturers Would Approve.

I believe that most manufacturers could be brought to see that this would make for their welfare in the long run, and would acquiesce in it, but those who did not could not get financed elsewhere by the other parties to the agreement, and would either have to try and clear through some obscure or weak houses, or get sufficient money into their business to enable them to sell direct, a very difficult matter.

The restricting of raw-silk credits would assist in this compulsory adjustment between loomage and capital, so that the whole brunt of the re-adjustment would not fall upon the commission houses.

Reforms That Would Really Reform.

I believe that well considered, conservative, and concerted action, along lines similar to what are here set forth, should be feasible, and I am thoroughly convinced that reforms, instituted along these lines, would go far towards making the great silk industry a business in which proper returns would be possible for the capital invested and for the skill, knowledge, and ability that is required in it.

XXXVIII

PLAN FOR THE CREATION OF A GREAT SILK CORPORATION.

The question of uniting a number of mills, representing a large broad-silk loomage, into one great company is one that has received careful thought from many experienced men during the last decade.

Plans have been made in the past for accomplishing this result, but, whether from the times or circumstances not being propitious, or from the plans being faulty or incomplete, the project has never taken shape.

Lack of Interest During Good Times.

When business is fairly good, little interest seems to be displayed in the subject, but, in the times of extreme depression into which the industry is periodically plunged, many manufacturers of standing will state their belief that the organization of a great combination would be of inestimable value to the whole trade.

It is my desire here to discuss the various phases of such a proposition, to the end that the different points that must be considered in connection with it may be made clear.

Businesses, Successful and Unsuccessful.

As is the case in all businesses, the concerns engaged in silk manufacturing have met with widely varying degrees of prosperity. A few have made notable successes; quite a number have done very satisfactorily; some have lost money; but by far the largest number have made but little, in very many cases merely getting a new dollar for an old one, while all the time their plants and their own lives have been steadily wearing out.

In discussing such a proposition, it is not unusual to hear some successful manufacturer decry the project, and, in declining to in-

terest himself in it; ask why he should be expected to pull the other fellow's chestnuts out of the fire; that he can see no reason for his bothering about it; and that, if the other fellow cannot make goods at a profit, he should stew in his own juice.

This is a not uncommon point of view, but it is none the less the case that it is greatly to the interest of every manufacturer, large or small, successful or unsuccessful, to have such an enterprise carried through, on a thoroughly sound basis, whether he himself elects to enter it or not. Every concern in the trade would benefit by it, but, properly managed, the insiders would fare the best.

Ends to be Attained.

The ends to be attained would be the supplying of adequate capital to such looms as lack it, to effect enormous savings in the manufacture and distribution of goods, to make material savings in the purchase of raw materials and supplies, to cut down the interest charges, and to steady the market prices for staple merchandise, thereby assuring a better average profit, not only to themselves, but to the whole trade.

Broad-silk Loomage of the Country.

The broad-silk looms in the United States to-day number, approximately, 75,000. Of these a considerable number—let us say 10,000—are chronically idle except when business is unusually active. Others, again, work on fabrics rather outside of the regular lines, whether upholstery goods, shoe tops, hat linings, or what not.

The remainder, 60,000 or upwards, are engaged in producing a wide range of goods from dress silks to linings, or from casket-cloths to neckwear.

Reasons for a Large Combination.

In order to accomplish the ends aimed at, the company would have to be so large that practically every one would have to trade with it to a greater or lesser degree. It must be a force to be reckoned with, and whose prices on staple goods, when fixed as they would be on the basis of a close working profit, would practically become the standard prices for the market for the season. Outside competitors would be interested in trying to get the same prices, not in underselling them, and the prices would be publicly quoted just as are those of other great corporations.

An aggregation of so few as, say, 5,000 looms would be powerless to accomplish this purpose. Looms to that number could be wiped out of existence and would never be missed.

In the writer's opinion, about 15,000 looms would be necessary, a very moderate number, when it is considered that it would represent only one-fifth of the present loomage of the country.

Difficult to Make Profit on Staples.

The main difficulty which confronts the industry all the time, is the impossibility of making any proper profit on plain or standard fabrics, owing to the fierce competition and the manner in which the buyers dominate the market. Every one is afraid of letting business—even when unprofitable—get past him, for fear that if he does not take it his looms may stand idle while their heavy expenses go on. In dull or bad seasons it is too often a case of “who will take the biggest loss?” not of “who will take the least profit?”

The price cutting is further intensified by the fact that numerous mills do not know with any accuracy what their costs are (and correct costs are not easily arrived at), and they sometimes sell at a loss when they think they are making a profit.

Temporary Prosperity Often Due to Chance.

Many mills, too, that have done quite handsomely, are indebted largely to chance for their good fortune in getting onto profitable fabrics, and, with the changing conditions of the market, they may any time find themselves in as difficult a position as their less fortunate brethren.

Compelled to Run When Business is Bad.

It is a notorious fact that much of the evil of price cutting is due to the inability of many mills to stop running when business is bad, owing to lack of a proper amount of working capital. To stop means liquidation, and it is impossible for them to liquidate, spread out as they are. They must run either for stock or for order, and orders taken at a small loss are less of a calamity than the accumulation of heavy stocks to eat up interest and then to be forced on an unwilling market at a heavy sacrifice.

Let us now see how such a proposition might be worked out.

Providing Undercapitalized Mills With Funds.

In the first place, it should be noted that it is of more importance to bring together the undercapitalized mills, and provide them with proper funds, than the rich mills.

It is the former who are forced by stress of necessity to pursue courses injurious to the market, and it is for the benefit of all that they be put on a better basis.

The fact that they have not made money should not weigh too heavily, for we see, every day, mills that have been losers being taken over by powerful concerns and put forthwith upon a profitable basis.

The great thing is that, so far as their plants, equipment, and locations are concerned, they should be properly fitted for producing goods economically.

Company Must be Organized From Within.

Then, the concern must be organized from within and not from without, that is, it must be the uniting of manufacturers for their common welfare on a basis equitable to all, and not the selling out of their businesses to some outside promoter.

Corporation Should Acquire the Mills Absolutely.

This can best be done by the formation of a corporation which would take over absolutely the entire assets of the combined mills, issuing its own shares to them in exchange.

In thus uniting, and surrendering their individual businesses and authority, whatever securities they receive in exchange must be securities in the truest sense of that much abused word.

Assets Which Must be Acquired.

What are the things which a manufacturer is thus called on to surrender?

First, there is his plant, covering land, buildings, machinery and equipment; then, his quick assets, including cash and receivables, book accounts, equities in goods advanced on, goods manufactured and in process, raw-silk, and materials of all kinds; then, any trade-marks or patents of value; then, the employment it gives him for his own services; and, lastly, the demonstrated profit-earning capacity of his business—averaged over the preceding five or ten years—and which includes the name and the good will of the concern.

The owner may also feel a natural pride in the reputation that he has built up for his products and for his name, and may have sons whom he wishes to succeed him in the business.

What Owners Will Require in Exchange.

To warrant him in giving up possessions of such a valuable kind in exchange for the shares of the company, certain things are essential.

Shares Issued Against Liquid Assets.

If shares, say, first-preferred cumulative shares—bearing 6% or 7% interest—are to be issued to him for his quick assets, no one should get a single share on better terms, and subscribers of new cash required to properly capitalize the company would have to pay the same. This stock would have first claim on the assets in the event of dissolution.

Shares Issued Against Mill Properties.

Against the mill assets—properly inventoried—6% non-cumulative, second-preferred stock could be issued, and of this stock also no shares should be issued except for the same values, and to the associated manufacturers only. This stock would have second claim on the assets.

How Earning Power is Provided For.

Then, the demonstrated earning power could be capitalized on a 6% basis, and a common stock issued against this, and the value of trademarks could be included also.

As this common stock would be only intended to provide a dividend equal to the former earning capacity, and not to enjoy a larger return from the savings to be effected, the shares, so issued, might be limited to the 6% dividend.

Issue of Additional Common Stock.

Additional common stock would be issued to the mills, proportionate to their loomage, for which the large savings to be effected would provide the dividend.

Avoidance of Bond Obligations.

While any bonds or mortgages lying against any of the properties might be taken over, no new bonds should be issued. Bonds are obligations of a kind to be kept clear of, and, by not having any, the credit of the Company would be much higher, and its borrowing capacity greater.

Inventorizing the Mill Properties.

A joint committee of the manufacturers would assess the values of the various mill assets, from the standpoint of their worth as productive going concerns, and not from the standpoint of the actual cost of replacement.

In this way, obsolete or worn out machinery, or unsuitable buildings, would not be over-valued.

Retaining the Personnel of the Mills.

No business should be taken over without practically its entire personnel, managers and subordinates, and the important people should be made to agree to stay with the concern for a term of years. The identity of the various mills need not be sunk, and the names, when of value, should always be retained.

Buildings and machinery alone have but a very limited value, for a business is nothing without its people, and these, when possible, should always be retained, so that affairs would run along smoothly and without any interregnum.

New Capital to be Provided by Bankers.

A quick capital of not less than \$1,000., and perhaps up to \$1,500., a loom, over and above the values invested in plant and equipment, is essential if the Company is to be in the position that it should, and new cash would have to be provided by bankers underwriting the enterprise to an extent that would bring up the quick capital from the figures actually possessed by the mills to the above level. This would doubtless be a huge sum of money, probably \$10,000,000 or

more, and the providing of it would have to be paid for in the usual way.

Advantages to be Realized.

With proper capitalization, the Company could conduct all of its affairs, without outside assistance, except reasonable banking accommodation at certain seasons, carry its own credits, do all its own auxiliary work, throwing, dyeing, finishing, printing, etc., and transact its business on a sound and sane basis.

It is safe to say that the usual cost of selling goods through commission-house channels is not far from $7\frac{1}{2}\%$; only a modest portion of this is actually profit to the commission-house, the rest being absorbed in expenses, and it is a heavy drain.

Here are scores of mills, of smaller or larger size, each trying to cover the country with its own salesmen; each sampling along similar lines to an absurd extent; each largely in the dark as to what can be got for the goods it is making, and very few of them making money.

Working as one concern, all this endless duplicating of expense would be avoided, and the present selling cost would be more than cut in half—a large profit in itself.

Similarly, at the mills, we see to-day endless complication entailed by the wide variety of goods that each mill makes, and the interminable sampling that goes on. Consider the saving if one mill was put solely on black skein-dyed goods, another on tie-silks, another on cotton-back satins, and so on. The general expense there might likewise be nearly cut in half.

Owing to the new cash subscribed, the interest usually paid out on loans would be correspondingly eliminated; the ability to purchase silk direct in Asia and Europe would have advantages; the large volume of the general purchases for the mills would insure lower prices; and the conducting of the auxiliary branches would also yield substantial profits.

Another advantage would be that, as each mill has found by experience how to make one or other fabric better or cheaper than most of its competitors, this combined experience of all the mills would be at the service of the Corporation.

Thus, if thirty mills united, and each of them made five qualities of peau de cygne—one hundred and fifty in all, the best eight or ten of them might be selected as the line to be shown by the new concern.

The benefits to be derived from this joint trading are fully apparent.

Benefits Accruing to the Manufacturer.

The manufacturer would, therefore, enjoy much larger and steadier profits than would otherwise be possible, and he would not lose either his identity, his occupation, or his salary, but would get rid of a great

deal of the worry that now oppresses him, or, one might almost say, that often overwhelms him.

Shares Could be Sold on the Stock Exchange.

As the shares would be listed and dealt in on the New York Stock Exchange, and would consequently have a quoted market value, any one desiring to dispose of his holdings, in whole or in part, could at any time do so and at their full value, though it would probably be wise to put some restriction on the sale of the shares issued to the mills, perhaps requiring that the major portion of them be held for a couple of years or so.

At present, any one wanting to get out of the trade must make heavy sacrifices to do so.

Some will say that any business showing a good balance sheet can be readily sold, but every one knows that it is the individuality of the men in the management that has made the success, and with them out the business might be worthless, and any prospective buyer would know this.

Selecting a Head for the Enterprise.

Much has been said about the difficulty of getting a suitable man to head such an enterprise. That, however, is an unwarranted fear. Every new business of large size is directed by some man who never had just that same previous experience. Any really good man, assisted as he would be by the advice of so many of the best mill and market experts in the trade, could be trusted to lead it successfully.

Comprehensive Plans Worked Out by the Writer.

There are a great many other points, of more or less importance, that will occur to any one giving consideration to the project, but one and all of them are susceptible of practical and equitable adjustment.

The writer has worked out in full detail a complete plan for the organization and management of such an enterprise, and every moot point has been thoroughly considered and a suitable and practicable method of dealing with it has been found.

Laws Relating to Combinations.

While the laws prohibit the forming of so-called trusts, or dominating combinations, there can never be any restriction on one concern actually buying out another and the proposed method of uniting is free from any such objections, besides which is the fact of the very modest percentage of the looms in the industry that would be included in it.

Taking in the Ribbon Departments.

The ribbon departments, of such of the united mills as had them, could also be included, and other ribbon mills could be drawn into the combination.

Causes of Disaster in Other Instances.

It has been urged against such a project that numerous large combinations, in various branches of industry, have ended in lamentable disaster. The slightest inquiry will show, however, that nearly all of these businesses were organized, not from the inside by the manufacturers themselves, but by outside promoters who stripped the businesses of their assets, to their own enrichment, and then left the organizations to shift for themselves as they might.

This plundering process is usually accompanied by the loading of heavy bond obligations upon the unfortunate concerns, and the free issue of large amounts of preferential shares which, in great part, represent anything but assets.

In addition to this, the vital necessity of ample cash working capital is generally brushed aside, for these promoters are bent upon getting cash out of the enterprise, not upon putting it in.

Such concerns could not succeed, but amalgamations, such as the one here proposed, organized and directed from the inside, have scored notable successes.

Acquiring Other Mills.

Provision should also be made looking towards the taking in from time to time of additional mills as occasion might offer, for there is no reason why good plants should not be admitted whenever it can be arranged.

Reforms and Economies to be Effected.

Such a company would be a great factor in helping to minimize and combat the unjust cancellations, returns, and claims that have grown to be such a serious evil, sapping the vitality of every house in the market.

It should be strongly borne in mind that only by such a union of interests can there be made possible the enormous economies to be derived from the joint manufacturing and merchandising of their products, and which forms the surest foundation for the continuous earning of dividends. Trade may improve, or appear to, but any one who thinks that the silk manufacturing business can enjoy steady prosperity under existing conditions is simply shutting his eyes to the facts.

Nothing Stable in the Present Situation.

A turn in the wheel of fashion may change any present prosperity that a firm may enjoy into a condition the reverse of happy, and that, too, in a very short time. A comparison of the present earnings of many mills with what they were a few years ago would be most illuminating.

Benefit to the Trade of Such a Corporation.

With good business conditions, there will probably be a tendency

to forget, in a measure, the evils that the trade has suffered from, and to take less interest in proposals for relief. None the less, it should be the policy of every mill to help forward the realization of such a project, if based upon sound and comprehensive foundations, and that, too, without regard to whether they desire to get into it or stay out of it.

Just so long as there is wanting the steadying influence of a great corporation will the silk trade remain in the very unsatisfactory state which has come to be its normal condition.

XXXIX

THE DENIER SYSTEM OF SILK MEASURE AND ITS ORIGIN.

(Originally published in the Scientific American Supplement,
June 8th, 1912.)

To explain the origin of this system of counts, it is necessary to turn back to the weights and measures used by the people of France in the times preceding the French Revolution.

Difficulty of Introducing New Standards.

It is a singular and significant illustration of the difficulty of changing the weights and measures which a nation has been accustomed to use, and of the tenacity with which people will persist in using their old standards, that, after the lapse of about a century and a quarter, and after many vigorous and persistent efforts, backed by severe laws on the part of succeeding French governments, to compel the exclusive use of the metric system, it has been found impossible to get those engaged in the silk industry to consent to number their yarns by the standard metric method of so many metres per gramme.

After repeated conferences and congresses held to consider this subject, for the purpose of trying to induce the silk men to depart from their ancient standards, the best that could be accomplished has been to secure their acquiescence in some slight modifications of the lengths and weights used, so as to make the standard more adapted to decimal figuring.

As the alterations thus arranged for were slight, and as the changes in the values for length and for weight were fairly relative to one another, and therefore made little commercial difference in the yardage per pound, or the metres per kilogramme, of any given number,

and as silk could still be bought and sold on the same denier sizes as in the past, the silk trading community agreed to accept the modifications.

The Denier-Aune System.

The denier system, or denier-aune system, as it is often called, for numbering silk yarns, has always been that of a fixed length and a variable count, and for this reason it lends itself well to the showing of the degree of variation and irregularity incident to this class of material.

The Denier, Its Value and Weight.

The denier (from the Latin "denarius," meaning "containing ten") was a small French copper coin, of which twelve made a sol, or sou. There were two sorts of deniers, the one Tournois (of Tours) and the other Parisis (of Paris), the latter being worth one-quarter more than the former.

The sol was made of copper, mixed with a little silver, and was worth the twenty-third part of an English shilling. It was also called "douzain" from its being divided into twelve deniers Tournois.

The weight of this denier was 24 Paris grains.

Weight of the Paris Grain.

The French, or Paris, table of weights of the period was known as the "Poids de marc" table, and in this the grain was the unit, this Paris grain being the equivalent of 0.8197 English troy grains, of which there are 7,000 in a pound avoirdupois.

Italian Weights Formerly Used.

At the same period, there were in use in Italy (Genoa), two weights: one, the Peso Grosso, or heavy weight, employed in the weighing of ordinary commodities; the other, the Peso Sottile, or light weight, used for gold and silver, and for the finer and more valuable commodities, including silk.

The pound weight of the Peso Sottile was the equivalent of the Paris weight of 1 marc, 2 once, 2½ gros, and 30 grains, the total being equal to 4,899.22 Paris grains. This pound was divided into 8 ounces, each ounce into 24 deniers, and each denier into 24 grains. The weight of this Genoa denier will be seen, when figured out, to be equal to 25.51 Paris grains.

French and Italian Deniers.

Here, therefore, we have these two silk producing countries, both having a denier in use, one using it as a coin and the other as a weight, and both dividing it into 24 grains of very similar gravity. Hence, a system of counts, based upon the weight of the denier, would readily find acceptance in both countries.

So much, at the moment, for the basic weight. Let us now proceed to consider the length.

The Aune, or Ell, and Its Meaning.

This is based on the "Aune," or "Ell."

The name is derived from the Latin "Ulna," meaning the elbow. It had, for instance, as one meaning, the length of what a man could clasp in his two arms. This measure was in general use in many countries, and districts, and varied greatly from place to place, and in France it varied from the Paris aune of about $42\frac{3}{4}$ English inches, to the Calais ell of about 68.4 English inches.

The length of the aune, that was formerly in the most general use throughout France, is stated to have measured 3 Paris feet (pieds), 7 Paris inches (pouces), and 8 Paris lines (lignes), this being equal to 46.53 English inches. This was the old aune; the French "aune usuelle," or "nouvelle," measured then, it is stated, about $47\frac{1}{4}$ English inches.

Difficulty of Determining Equivalents.

I may here point out that it is a matter of the most extreme difficulty, or even a practical impossibility, to ascertain the exact equivalent of measures that are based upon different standards, even when we know precisely what those standards are, and no two investigators are likely to arrive at exactly the same conclusion.

Length of the Metre.

This is evidenced by the fact that different eminent authorities disagree as to the exact length of the metre in English inches. For this measure the writer accepts the length of 39.370432 inches per metre, which is a very widely used constant, and which is said to have been worked out by Captain Clark.

Length of the Aune.

The exact length of the aune was similarly open to question. The Lyons Conditioning House informs me that the length of the aune which was used in these measurements was 1.1884 metres, which is equivalent to 46.79 English inches. The Encyclopedia Britannica, eleventh edition, 1911, gives the value of the aune of France as 1.1885 metres (A. D. 1812). M. Paul Lamotier gives the length as 3 pieds, 7 pouces, 10 lignes, 10 points, which works out as 1.188447 metres.

The old table was, 12 points = 1 ligne (line): 12 lignes = 1 pouce (inch): 12 pouces = 1 pied (foot). The pied was equal to .324839 metres.

Having disposed of these preliminaries as to standards we will continue.

How Silk was Formerly Sized.

The old method of determining the size of the silk, or sizing it as it is called, was to measure off 80 skeins of 120 aunes each, making a total length of 9,600 aunes, and, using as weights the copper coins

known as deniers, weighing 24 Paris grains each, seeing how many of these coins it took to exactly balance the skein, and then the size was stated as that many deniers.

Thus, if 14 of the coins just balanced it, it was a 14 denier silk; if it was lighter than 14 but heavier than 13 it was a 13/14 denier size, and so on.

Improved Method of M. Matley.

Toward the end of the eighteenth century, an observant silk merchant, who is said to have been a certain M. Matley, realizing the inconvenience and expense of making such long reelings for sizing tests, and seeing that both the 24 grains of the denier and the 9,600 aunes of the silk, could be exactly divided by 24, and that they would still bear the same relationship to each other, conceived the idea of taking for the weight 1/24 of the weight of the denier, or 1 Paris grain, and for the length of the test skeins 1/24 of the 9,600 aunes, or 400 aunes, instead, and he is said to have devised a suitable apparatus for measuring these 400 aune skeins with precision.

The trade willingly accepted the change, and, as the relationship of length to weight was just the same, the old method of expressing the size in deniers continued, although the weighings were then being made in grains.

Metric System Did Not Dislodge the Denier.

When, following the French Revolution, the metric system was adopted by the government of France, the silk people went on sizing their silk in deniers as of old, the only modification being that they converted their former standards of length and weight into their metric equivalents, and used them as before.

Metric Equivalent of the Aune.

The length of the 400 aunes, at 1.1884 metres per aune, was 475.36 metres, and so a length of 476 metres was taken as the standard for measurement, this, on account of its easier divisibility, being a more convenient number than 475.

Taking, as the length of the metre, the very usually accepted equivalent of 39.370432 inches, we come to a length of 520.565 English yards as the equivalent of the 476 metres.

Metric Equivalent of the Denier.

The equivalent of the weight of the 1/24 denier, or 1 Paris grain, is 0.0531 grammes, this in turn being equal to 0.8197 English troy grains, of which there are 7,000 in the pound avoirdupois. The more exact equivalent of the Paris grain is 0.053117 grammes.

Old Length Per Pound of a 1 Denier Silk.

Under this system, the yardage per pound of a 1 denier silk

would be the number of times that 0.8197 would go into 7000, multiplied by 520.565. Thus, $7000 \div 0.8197 \times 520.565 = 4,445,474$ yards per pound for silk sizing 1 denier. This is a length of 2525.84 miles.

Of course, there is no 1 denier silk, as the thickness of the ordinary single cocoon filament would generally be two or three, or more times that size, and, even then, single ends are too delicate to work alone, so it is necessary that several cocoon threads should be joined together in the reeling to make a thread of suitable size for manufacturing.

In practice, an 8-10 denier silk is about the finest reeled, and it is very rare that as fine a size as this is handled in the United States.

The Paris Congress of 1900.

In the year 1900, there was held in Paris one of the congresses before alluded to, at which some modifications of the existing standard were agreed upon, the changes effected being brought about by reducing both the standard length and weight in a somewhat similar degree.

Modifications Proposed and Accepted.

The length to be measured was brought down from 476 metres to 450 metres, or about 5.46 per cent., while the weight used was reduced from 0.0531 grammes to 0.05 grammes, a reduction of about 5.84 per cent.

Since then, this modification has received general acceptance and the count of all raw silk is now based upon this revised standard, which is the number of half decigrammes that a skein of 450 metres weighs, the size being still expressed in deniers.

Weight of the Gramme.

The weight of a metric gramme is equal to 15.43236 troy grains, which would make the kilogramme 15,432.36 grains, and this, divided by 7,000 grains per pound, gives 2.204626 (usually expressed as 2.2046) pounds, as the weight of the kilogramme.

The decigramme, or 1/10 of the gramme, is therefore equal to 1.543236 grains, and the half-decigramme weighs 0.771618 grains. The 450 metres equal 492.1304 yards.

New Length Per Pound of a 1 Denier Silk.

Dividing 7,000 grains per pound by 0.771618 and multiplying the number found by 492.1304 yards, we get 4,464,531 yards as the length of a pound of 1 denier silk, the same being 2,536.67 miles.

The book, "The Value of Conditioning," published by the United States Conditioning and Testing Company, gives a length of 4,464,528 yards, a difference in figuring of only 3 yards.

In expressing the size in deniers, an 8-10 denier silk should run between 8 and 10 deniers; a 13-15 silk, from 13 to 15 deniers. A silk

of this sizing must not be finer than 13.50 deniers, or coarser than 14.50.

By dividing the yardage per pound of a 1 denier silk by the denierage of any given size, the result will be the yardage per pound of that silk.

Difference Between Old and New Standards.

The difference between the revised standard and the old one amounts to less than 0.0043 per cent., or about one two-hundred-and-thirty-third, and this is a most trifling difference. A silk that formerly sized as 14 deniers would now be 14.06 deniers.

Testing Silk for Size.

As one test only of the size of a silk would be wholly insufficient to properly show the yardage per pound of such a variable material, the accepted method is to draw ten skeins from different parts of the bale, and make three reelings from each, or thirty in all. The average size of these is stated as the denierage of the silk, while the sizes of the individual reelings show fairly well the degree of irregularity of the material. This variation, or "spring," is called by the French "écart."

The Valuable Compound Sizing Test.

The Conditioning House in New York makes a further excellent test of 20 reelings of 4,500 metres each, for showing more surely the average size, as these long reelings over-run the varying inequalities in size, and this new test (the Compound Sizing Test) is much more dependable where length per pound is wanted.

The old test shows the variability of the size much better, so the use of both of them is valuable.

Modified Denier System Accepted Generally.

In view of the fact that the new system is now firmly established in all the silk-producing countries, it may properly be regarded as permanent.

XL

EFFICIENCY STANDARDS IN MANUFACTURING

(Originally published in the American Silk Journal, April, 1911.)

During the last few years the public attention has been strongly directed toward efficiency in manufacture. The remarkable work that has been done by Harrington Emerson, Frederick W. Taylor, H. L. Gantt, Frank B. Gilbreth, and others, in standardizing mechanical operations and, by minute analysis and careful experiment, enormously raising the efficiency of the worker, is at last beginning to receive the attention that it deserves.

Wastefulness of Present Methods.

In perusing the writings of these investigators one is profoundly impressed with the facts set forth. They show that, of the labor expended in most trades, probably from one-third upwards is absolutely wasted, and that losses in production, from the lack of a proper provision of standardized materials and appliances, are appalling.

Each of us is apt to think that such things might occur in the other fellow's business, but not in ours, but the conclusion cannot be escaped from that all lines of trade have been following the rule-of-thumb methods in which they have grown up, and with an annual waste that is colossal.

Extraordinary Results of Scientific Methods.

Two illustrations will show what can be done.

Bricks, for instance, have been laid much in the same way for thousands of years. Bricklayers are supposed to be highly skilled craftsmen, and, of course, would scoff at the idea of anyone teaching them anything about their trade, particularly some one who was not a working mason.

Mr. Gilbreth, who had read of Mr. Taylor's work in the steel industry, attacked the problem, and by a careful analysis of the bricklayer's motions, and some rearrangement of the methods of supplying the materials to the workman, he was able to cut down the necessary motions from 18 to $4\frac{1}{2}$.

By exact and scientifically correct methods, he was able also to increase the daily work done per bricklayer, on a given job, from 1,000 to 3,500 bricks laid, and that, too, with less fatigue to the workman. Needless to say that the bricklayers earned materially more money and the job cost the employers vastly less.

The other instance deals with the loading of 92-pound pigs of iron onto freight cars—work done by a low class of day laborers, and which would seem to be about as unpromising a direction for the application of scientific principles as could be imagined. This was one of Mr. Taylor's investigations, and the observations made and records kept, over a period of months, led to the framing of a standard practice for handling the work which raised the daily weight of pig iron loaded by each man from $12\frac{1}{2}$ tons to $47\frac{1}{2}$ tons.

Such improved methods could never have been devised by any workman, or set of workmen, for themselves. They would have had neither the opportunity, the time, the knowledge, nor the scientific training necessary for the task.

Every Manufacturer Should Investigate.

Therefore, let not the old and experienced silk-mill manager put on a superior smile when it is suggested that proper inquiry into our present methods may result in a similar revolution. If he feels like sneering, let him read what the gentlemen above quoted have written, and unless he be an imbecile he will promptly sit up and take notice.

Basic Principles of Scientific Efficiency.

The fundamental principles of such methods are that the efforts of the workman must be so put forth as to incur a minimum of both bodily and mental fatigue, so that at the end of the day he will be anything but exhausted, and that there be no suggestion of "speeding him up" in the proceedings; that every unnecessary motion or part of a motion be avoided; that any work which could be done by low-priced labor should not be done by high-priced labor; that the arrangement of machines, materials, or appliances be so planned as to avoid giving the worker an unnecessary pound to lift or an unnecessary inch to stretch; in having all machinery and accessories of the most perfect kind and in the very best condition; in having all materials and their preparation kept at a high standard; in having exact and comprehensive standards worked out for every operation and for every material thing used; and, finally, the seeing that the workpeople shall share liberally in the economies so effected.

Time and Patience Required.

Everything cannot be done in a week or a month, and in such a complicated business as silk manufacturing a long period of patient tabulating, investigating, and experimenting, by trained observers, would have to be gone through with before a comprehensive body of standard practice could be evolved.

None the less, a beginning can be made and each in his own way can observe and accurately record the details of the operations passing daily before his eyes. A stop watch to time each movement is a necessity, and the observer will at first find the making of records to be anything but easy.

Besides this, the natural hostility of the workers to any new departure must be reckoned with, but when they understand that the ultimate aim is one which will bring them increased earnings their objections will probably melt away.

Beginning With the Weaving.

As the most important work of the mill is the weaving, and as upon the full output of that department depends greatly the prosperity of the mill, it would be well to make the first attack there.

In every mill there are a few workmen whose output is always far in excess of the average, just as there are some whose production is always at the bottom of the list. These men who get out so many yards do not seem to be working harder than the others but yet they get more yards off.

The fact is they are not working harder, nor as hard, but they are making fewer unnecessary motions, and those that they do make are more effective. They have unconsciously travelled part of the way along the road to "efficiency."

Suppose that we select one of these men and for the time being consider him as our standard, or as 100 per cent., those that get off less goods being of correspondingly lower percentage of efficiency.

Analysing Motions, and Causes of Stoppages.

Every one of the necessary movements that this man makes in the course of his work must be accurately timed and tabulated, and the average time of each worked out.

Such motions will be the changing of shuttles, putting quills in shuttles and threading them, finding the pick, stopping and starting the loom, loosening and tightening the warp, picking back for defects, finding broken warp ends, piecing up and passing end through heddle and reed, cutting off piece and unrolling it, etc.

Then the causes that require the movements must be recorded, the breakage of warp ends, filling picks, and so forth, as well as any other factors that would have a bearing on the case, whether belt troubles, irregularity of engine speed, temperature of room, or what not.

Unnecessary motions or parts of motions, whether with hands or feet, are likewise to be observed.

In this way a body of facts regarding the methods of this first-class weaver is accumulated, which, for the time being, is to be regarded as the best practice.

We now begin an analysis of the work done by the ordinary weavers, and by the poor weavers, on the same goods and under the same conditions, and we soon find by comparison with our standard wherein their methods are inferior, and so can instruct them how to improve.

The good weaver, in turn, should be shown the tabulations of his movements, and which of them appeared to be unnecessary and therefore a waste of effort, and he should be collaborated with in the direction of their elimination.

By giving the weavers under observation some extra pay while experiments were being tried out, and tabulations were being made, their co-operation could, no doubt, be readily enlisted.

Increased Pay a Great Stimulant.

Some manufacturer will say, "That is all very fine, but you could never get the hands in our mill to agree to be regulated in that way."

This would usually be the case, at first, but there could be got one, or two, or half a dozen to try it, and when the others saw that, week by week, these men were earning 25% to 50% more than the rest, it would not be long till the majority of the help would be anxious to fall in line also.

Investigating the Mechanical Equipment.

In considering the time, and the amount of effort required to make each necessary motion, great attention must be given to the question as to whether any changes in the arrangement of the machinery or appliances would facilitate the work.

Is the machine too high for convenience? Has the weaver an undue distance to stretch at any time? Can the distance he has to walk to get back of his loom be reduced? Does the belt interfere with him? Could the harness be simplified? Has he undue work to do in adjusting the weights on his warp, or would some mechanical device enable him to do it quicker and with less effort? Has his shuttle the best tension and threading devices? Is his belt in good shape and does it slip? Is the power steady? Etc.

The question of such things as the character and preparation of the warp and filling, the temperature and moisture of the room, etc., belongs in another category.

High-Priced Labor on Low-Priced Work.

Then, there is no use in a \$12. weaver doing things that can be attended to by a \$4. boy. If he wants filling he should not leave his

loom to go after it; it should be brought to him. When he takes off a cut, a boy should take it to the rack for him. Toilet rooms should be centrally located, and everything should be so arranged that the weaver would not need to be away from his loom an unnecessary moment.

Furnishing Appliances to the Workers.

If, by having the use of a stool, the fatigue of the worker would be less, and allowing that the use of it would not interfere with his work, then he should have a stool.

If it be found that the tools used by the workers, and commonly provided by themselves, are frequently far from what they should be for the best work, then it will be economy on the part of the management to supply all workers with the highest grade of tools free of charge.

How Belting Matters Should be Handled.

The belts in a mill should all be in charge of one man who should be held responsible for their condition and for any belt failures. No weaver or other machine operative should ever touch a belt, and it would generally be well if the ordinary fixer were also forbidden to do so.

The very best grade of belting should be adopted as the standard, and nothing below that should be either ordered or accepted. Then, this belt man should be required to see that all belts were constantly kept in first-class order, neither too tight nor too loose, and properly dressed when they required it, any changes being made after hours.

There would then be no loss of product from belt failures, or from stopping of looms to tighten up belts; no waste of power from unduly tight belts, and no diminished speed of looms from belt slippage, a factor which few people take proper account of.

Standardizing Mill Supplies.

The highest standards should also be adopted for all supplies, harnesses, twines, reeds, shuttles, paper, bobbins, quills and everything that could possibly be a factor in production. The best should not only be bought but everything in use should be kept in prime condition.

Individuality of the Loom.

The peculiarities of the individual looms must not be overlooked. The work got off by each weaver is carefully recorded, but little or no attention seems to be paid to the machine itself, unless it is working so badly as to attract notice.

Nevertheless, each loom has its own individuality and it should be studied. Certain weavers, kept on the same grade of goods, may be shifted around at intervals to a succession of other looms, and their

loom to go after it; it should be brought to him. When he takes off a cut, a boy should take it to the rack for him. Toilet rooms should be centrally located, and everything should be so arranged that the weaver would not need to be away from his loom an unnecessary moment.

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relative output compared. In this way some approximate data might be collected and those looms on which the weavers had the poorest results could be investigated and got into better trim.

Character, Widths, and Speeds of Looms.

In considering makes or types of looms, also, those ones which impose the least effort or fatigue upon the operatives should, all other things being equal, be accorded the preference.

The width of looms is of more importance than many people imagine. They should be sufficiently wide for the goods they are to be regularly used for and not an inch wider. Each additional inch makes a higher initial cost, uses more power, occupies more space, makes a greater call upon the weaver's strength, lessens the speed of running, and gives the operative farther to go in passing round his loom. The cumulative effect of these drawbacks in a year is far from being negligible.

Speeds of looms are largely governed by what the warps will stand. For this reason the best silk is the cheapest, and if the highest and best quality is adopted as the standard, and if the best of work is secured in the throwing, dyeing, warping, beaming, drawing-in, and mounting, it will follow that loom stoppages for broken ends, even when running at high speeds, will be greatly reduced, and cost of weaving and expense will be correspondingly low.

Evolving Tables for Maximum Weaving Speeds.

Again, the maximum speed that would be practicable will depend not only on the silk, but on the width of the goods, the character of the weave, number of harnesses, count of the reed, number of shuttles, picks per inch, etc.

Just the same, if a certain standard of silk be adhered to, and if the loom be all that it should, it ought to be possible eventually to work out tables in which maximum speeds would be noted for given fabrics, of given widths, counts, etc., just as in machine-shop work, in which tables have been evolved giving the speeds, depths of cuts, etc., which can best be employed for different metals and for different tools.

These constants would be based upon the use of silks of the highest market qualities regularly procurable, and persons using lower qualities would then understand that slower speeds would probably be necessary.

Usual Loom Output.

In the manufacture of plain, or simply constructed, broad silks, an output of 65% to 70% of the theoretical production is considered good practice, the theoretical production being the number of picks that the loom could beat in a given time if running without stop.

Let us see now how much of this 30% to 35% loss is absolutely unavoidable.

Details of Loom Output, and Necessary Stoppages.

We will assume the warps to be 300 yards long, for while longer ones can often be profitably run, yet they are then much less responsive to the changing needs of the market, lock up an undue amount of capital, and are inconvenient in other ways.

The loom must stop for each change of shuttle, for each time a cut is taken off, and, when the warp is woven down, while a new one is being mounted.

Now, let us suppose that our cloth is 36 inches in the reed, with 100 picks per inch, and pieces cut at 60 yards. Then, we run our loom at 150 picks per minute, and our quills give us 1,500 yards of filling each.

Next, allow 10 seconds for each change of shuttle (which is two or three times what would probably be necessary), 10 minutes for making each cut, unrolling piece, and starting up again, and 1 hour for removing the woven out warp and starting up a fresh one, all of which should be quite practicable with the proper arrangements.

Three hundred yards is 10,800 inches, and, with the picks and speed stated, $1\frac{1}{2}$ inches will be woven per minute, taking 7,200 minutes to weave out the warp.

Each quill will weave 10 inches, so there will be 1,080 shuttle changes in addition to 10 extra ones for the 10 headings, or 1,090 in all, which, at 10 seconds each, would require 182 minutes for the warp. Five cuts at 10 minutes each, and the change of warp, at 60 minutes, add 110 to this, making a total time required for weaving out the warp of 7,492 minutes, and the 7,200 minutes that the loom is actually beating in 96.10% of this.

This per cent. is what is theoretically obtainable, and in whatever degree we fall short of this our efficiency is diminished.

Determining the Causes of Lost Production.

Having worked out the ultimate possibility on lines similar to the above we must then find out with absolute precision what are the factors which make up this additional loss of product amounting to 25% or 30%.

If each one of them is determined, its cause ascertained, and a standard practice adopted which will eliminate the drawbacks in whole or in part, we will begin at last to make a near approach to the possible maximum.

Of course, irregularity of orders, changes of styles, and many other things, exercise a profound effect upon the production, but they would do so in any event, whether such methods in the direction of scientific efficiency were employed or not.

Result of General Application of Principles.

So far, we have only been discussing the weaving, but if similar methods were to be employed in each branch of the work, and in each department of the mill, the cumulative effect would be extraordinary, and it goes without saying that by such methods not only would labor unit costs be greatly reduced but far less waste would be made than is now the case.

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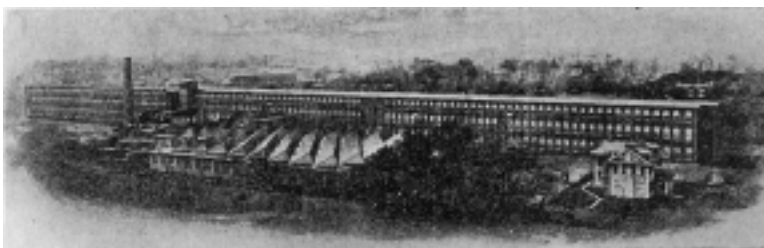
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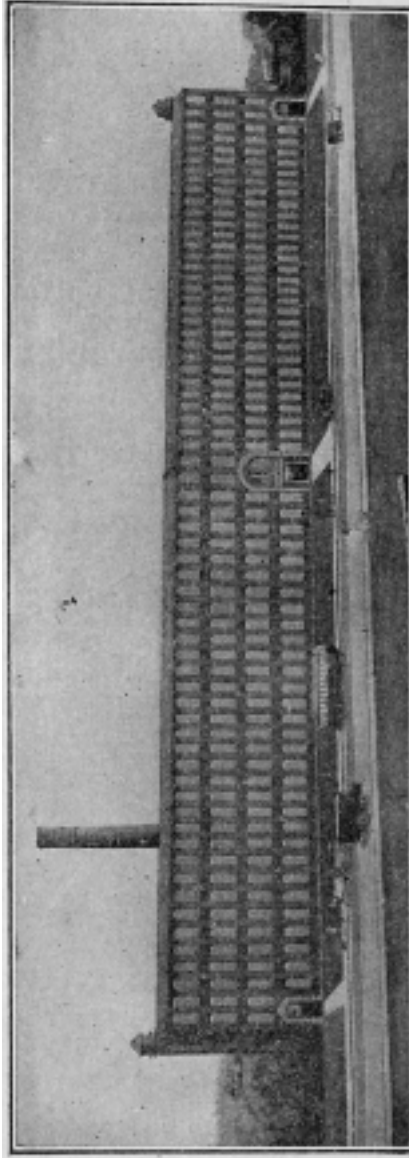
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