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WHO SHALL HOLD THE SURPLUS?

A large New York drygoods house recently made a calculation as to what effect it would have on their year's trade should every one of their customers purchase, for the year 1880, only $100 worth more of goods than he had bought in 1879; they afterward enlarged the scope of their inquiry and estimated the increased volume of trade should every retail dealer in the country buy $100 worth more than he had bought last year. It is hardly necessary to say that the aggregate amount reached by the figures made on this basis was something which at first appeared to them almost fabulous, representing, as it did, sufficient increase in the demand for goods to make it certain that, with only this seemingly moderate enlargement of trade, every loom and spindle in the country would be pushed to the utmost to supply what would be wanted.

It is very common for men everywhere to base their calculations as to the probable increase in the demand for manufactured goods this year entirely upon the greater ability of consumers to purchase. This enlarged purchasing power of the final customers has been very conspicuously manifested in the agricultural sections, on account of the bounteous crops, coming at a time when there was urgent need and a ready market for them; and in manufacturing communities the increased demand follows because the agriculturists are better off, even more than from the fact that we are now liberal exporters of manufactured articles. But, although these are the true causes of a comparatively permanent improvement in trade, he who would look to them solely for an explanation of the great activity which we have seen in most branches of business during the past six months, and which it now appears more than probable will continue for some time to come, would leave out one of the most important of the factors necessary to a correct judgment. This factor is to be found in the one word, "confidence," which is now general, as against fear and distrust, which everywhere prevailed from the early fall of 1873 to the summer of 1879. How much this means it requires but little to show, so as to bring home the truth to every man's comprehension, although it would be impossible to fully measure the extent of the change wrought

From 1873 up to last summer, no matter how cheaply a dealer or an investor might have bought goods, or how great a "bargain" was obtained, each subsequent purchaser could buy at even lower figures. Prices were on an inclined scale throughout; it seemed as though they would never touch bottom. The natural effect of this was that the jobbers and retailers, the army of middlemen who stand between the producer and the consumer, were compelled, as a matter of self-protection, to hold steadily diminishing stocks of goods. They bought only as they actually needed supplies, and then purchased as sparingly as possible, forcing back upon the manufacturer, or into "first hands," all the surplus in the country which the then limited requirements of consumers did not seem to be making an immediate demand for.

Now all this is changed, and, over and above the quantities of goods which every dealer feels sure he will be able to find ready sale for, all are desirous of having something in stock, or, in other words, to help the manufacturers and the first owners "hold the surplus." The reason is obvious; whereas, heretofore, prices steadily declined, and the demand was always sluggish, the tendency now seems to be invariably upward, the call always active, and most kinds of merchandise, with the present comparatively low rates of interest, offer exceeding desirable channels for the investment of surplus means.

This confidence of dealers, based on the guarantees they have in hand of the ability of consumers to purchase liberally, may, without anything like enthusiasm, be relied upon to maintain the energy and give lengthened vitality to the period of business enterprise upon which we seem to have so auspiciously entered. And in no one of the general divisions of business activity does this renewed life seem to run so high or hold forth such large promise as in those connected with metal working. Iron and steel especially, in all the various forms through which they are made to serve the purposes of man, are now so eagerly sought for, notwithstanding prices have advanced 100 per cent, that our furnaces and foundries and machine shops can hardly begin to satisfy the demand. Railroad building is being pushed with great energy, calling not only for vast quantities of rails, but the locomotives and cars for equipment; factories of all kinds are enlarging their production, and need new machinery; agricultural implements are in greater demand than ever before; the thousands of ingenious devices which the modern residence calls for from the dealer in builders' hardware cannot be supplied fast enough to meet the wants of those who now find themselves able to build; and, above all this, the middleman now seeks to hold an ample supply of each kind of goods as much as he dreaded having a "surplus" before.

REGULATION OF SHIFTING RIVER CHANNELS.

The shifting character of the channels of the Missouri and other Western rivers is well known. With strong currents flowing through beds of light alluvium, the erosion of the banks is constant and frequently very rapid. Under this action, where the circumstances are favorable, bends are formed, not unfrequently taking the shape of loops, with narrow strips of land separating two portions of the river that are several miles apart when measured along the channel. When these narrow strips are washed through, cut-offs take place, which shorten the course of the river, change its slope, increase its velocity, and otherwise disturb its regimen for many miles both above and below. Increased erosion takes place, navigation is impaired, interests along the banks are jeopardized, a different course is given to the river, new bends are formed, and the foundation laid for a repetition of the same series of events at some future day.

The most destructive erosions take place during the falling stages of the water. The foot of the bank is first attacked, and when the material, usually sand, is washed away, the upper portion, being unsupported, tumbles into the water. This eroded material is carried down either in suspension or rolled along the bed of the river. As the current from time to time is checked either by a diminution of the slope or by meeting some obstacle in its course, the material *in transitu* is deposited and for a time at least brought to rest.

These depositions, in their turn, change the course of the river, and cause its current to impinge against the bank in some new locality further down. Thus the operation goes on day after day and year after year.

As the commerce of these rivers increases in magnitude and value, and the lands along their valleys are converted into valuable farms or the sites of towns and cities, it becomes a matter of great importance to prevent such erratic washings of the shores and changes of the channels. To keep the rivers within regular bounds the yielding banks have to be protected, the velocity of the current diminished in certain places, and the channel held in place by building up or solidifying its sides.

The different means employed in this sort of work are described by Captain Hanbury, of the Engineer Corps, in a recent report on the condition of the Missouri river near Omaha. For causing deposits to take place, and for deflecting the current in localities that are to be built out, floating brush obstructions have been applied with marked success. The most successful of these is the floating brush dike, made by taking saplings from 20 to 30 feet long and from 4 to 6 or 8 inches in diameter, and nailing, or fastening to them with wire, scraggy brush of any kind obtainable in the locality. This forms what is known as the "weed." Instead of the saplings rope may be used to hold the brush. To one end of this "weed" is attached an anchor of sufficient weight to hold it in position against the current; to the other a buoy to hold up the downstream end and prevent it from going to the bottom under the pressure of the current against it. These "weeds" are placed from 10 to 20 feet apart, thus forming the floating dike.

Their action is to check the current gradually without producing that scouring effect to which the solid dike gives rise. This done, a portion of the material that is rolling along the bottom or being carried down in suspension is deposited, and causes a rise in the bed of the river, which changes its channel to the direction desired. The rapidity with which these deposits take place is truly wonderful. One season is often sufficient to raise the river bed up to the limits of ordinary high water.

Another form of obstruction that has been tried with success is the willow curtain. This, as its name indicates, is made of willows about an inch in diameter or larger, fastened parallel with each other, and from 6 to 8 inches apart, by means of wire. The curtains can be made of any desired length and width. They are anchored in position by weights attached at intervals along the lower edge and held in an upright or inclined position in the water by floats made fast to the upper edge. Their action is similar to that of the "weeds."

Another form that has been experimented with and which bids fair to give good results, is a screen made totally of wire something after the fashion of a seine. It is anchored and buoyed like the willow curtain. The rootlets and small vegetable fibers that float in large quantities in the water accumulate upon the wires, and form obstructions sufficient to check the velocity of the current.

For resisting the impact of the current and preventing the erosion of the banks, a variety of devices have been tried with more or less success. Among the most satisfactory of these are the woven brush revetment, the continuous mat, or brush blanket, made of brush, sewed together with wire, and the willow screen, made as above described, for the willow curtain, excepting that the willows, instead of being placed some inches apart, are as nearly as possible in juxtaposition. The manner of using all of these devices is the same. The bank to be protected should first be graded to a slope of about 2 upon 3 or less, an operation that can be very cheaply performed by the use of hydraulic force pumps, after which the revetting should be put on so as to extend from the ordinary high water limit down the bank and out along the river bed sufficiently far to protect the slope should any unusual scour take place. The total width is usually in the neighborhood of 100 feet. To sink that portion which is under the water, a small quantity of rock is sometimes necessary, but usually the current itself and the sediment that collects on the brush will suffice for this. The effect of this revetment is to thoroughly protect the bank over which it is placed, and to cause a deposit of sediment over itself that crowds the current away from the bank toward the middle of the stream.

In proportion to the results obtained on the Missouri, these devices are the cheapest that have yet been tried for the improvement of sediment-bearing rivers. The brush dikes cost about $1 a running foot; the revetment of the banks from $2.25 to $2.50 a foot.