

Chart 2. Comparison of Seasonal and Cyclical Fluctuations.

year that building fell off by a certain percentage, our business decreased by the same percentage. We did not infer from this that building was the cause of Walworth demand, but rather that the same cause which determined an advance for Walworth, determined an advance for building. It was a case of the mathematical proposition that things equal to the same thing are equal to each other, so that the forecasts for building were very serviceable as a forecast for Walworth activity. Thus we had selected one outside barometer to indicate the length of time our curve might continue in its present direction before turning, and a second to suggest the degree of its elevation. As an illustration of how valuable such forecasting has been to us, it may be here mentioned that our estimates of sales for 1922 were figured at about 42 per cent increase over 1921. As a matter of fact, building in 1922 advanced over

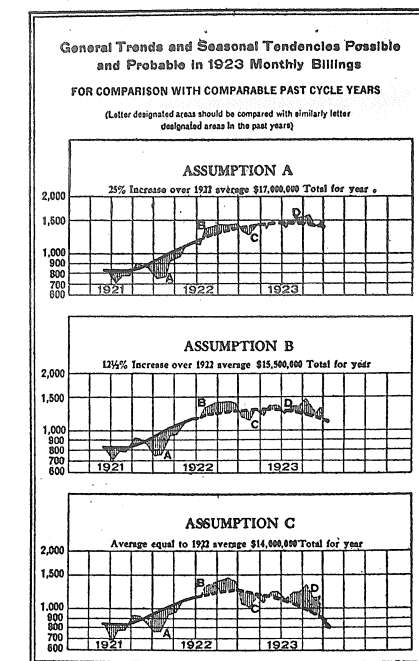


Chart 3. General Trends and Seasonal Tendencies Compared—Three Assumptions.

1921, 43 per cent and our sales were within .5 per cent of the forecast amount.

It was mentioned earlier that our business went ahead within a calendar year by the same percentage that general building activity advanced in the same calendar year. It is perhaps well to explain that in our business we must consider calendar years only. Our demand is so seasonal that in estimating the amount of business to be expected during any given set of months we cannot ignore the fact of the influence of seasonality within those months. For instance, the drop of January sales from December sales is 35 per cent, averaged over a series of ten years. This means that in some the drop is as high as 50 per cent and in an exceptional case, 60 per cent. This is our seasonal variation at its worst, to be sure. However, from January there is a gradual rise to March with some falling off in April. May and

June resume the stride set by March with again a decline in summer. But September tends to reach the March figure with the October figure normally much higher than March. November and December vary somewhat, but the average is for November to be slightly lower than October, and December the best month of the year. It is unusual if the business cycle increase or decrease from one year to another is greater than 20 or 25 per cent. Therefore, the seasonal influence is the greater, and to obtain a clear picture of the Walworth cycle we correct the year for seasonal trends and leave the seasonal problem to be taken care of after the cyclical trend has been found.

As a matter of fact it is not a difficult task to correct the seasonal variation in order to find the cyclical trend. The second chart illustrates our method of showing both seasonal and cyclical variations, and is the chart we used to compare similar periods in the past with a view to arriving at our estimates for the year 1923. Two points are brought out clearly in this chart: First, that although the seasonal variation of one year is not exactly like that of another year, yet there is a marked similarity; and second, that in no instance can we find an exact parallel to 1923, for in none of these years did the trend line stay up high so long as we have reason to expect it to do in the present year.

It will be noted that the chart displays a surprising similarity in the last half of the years 1892, 1902, and so on, which were found comparable to 1922, particularly in their seasonal tendencies. In every case a sharp recovery has taken place, the last months being far in excess of the January and February volume. In the same way we find the year following showing a decided downward trend, in one instance the November and December figures showing quite as low as January and February.

For a number of reasons we were able to draw forward our sales index line with some confidence. The number of months we might expect the line to remain at high levels was very definitely forecast by outside agencies. Again, the amount of increase beyond 1922 was fairly well suggested by reliable figures. Finally there was a good background for plotting our seasonal areas to the trend line as we had extended it through 1923. This background was supplied by plotting out three "assumptions" and then by process of elimination using the most likely one.

The third chart shows these three assumptions, any one of which might seem at first to fulfill the conditions. But after superimposing on the cyclical trend the sea-

sonal variations, it was evident that the second curve called "Assumption B" was much the most logical. Any volume of sales greater than that amount must be secured by greater efficiency in supplying the market through salesmanship, backed up by unusual cooperation of the works, and by complete utilization of the improved market facilities which have been provided for some of our merchandising units.

It was on the basis of Assumption B, therefore, that we laid out our preliminary production program for 1923. Naturally the sales estimate had to be broken down into class requirements and these compared with production facilities before even the preliminary control instructions could be issued. But having arrived at these class requirements we had a definite basis for setting up material and labor requirements, and for estimating financial demands.

It is not to be thought that this initial program for the year is adopted once and for all without current revision. So far as the production policy is concerned, there is established each quarter an estimate of actual sales requirements upon the two works as it appears at the time of making such a quarterly estimate. This quarterly estimate goes from the Sales Department through the Planning and Statistics Section to the Vice-President in Charge of Production, who uses it as a basis for formulating his quarterly production and purchasing programs, and for allocating the production between the two works. Nor is this the final step in the control. Each month before the existing production orders are completed or new ones are received, each works manager sends to the Planning and Statistics Section a statement of his proposed production by each of the classes for the coming month. These reports are coordinated and sent for review to the general office executives primarily interested, particularly to the Vice-president in Charge of Production, for final review. Although at this time some of the work may be in process, it is yet possible to revise the production downward and to curtail purchases to some extent if desirable, or otherwise to revise the actual policies for the current month.

V. Budgetary Control of Sales, Purchases, Receipts, and Expenditures

In addition to control of production, there are naturally many valuable adjustments that can be accomplished by advance information of the type we have discussed. The most valuable is provided by the monthly budget of sales, purchases, payroll, and cash which is our business thermostat. This budget serves