



Chart I. Walworth Sales Index and Harvard "B" Curve.

of a few years, and this sequence seemed to repeat itself continuously. It is true that there was no definite clock-like action in the length of time consumed by our business cycles, but there was a very definite cycle movement. The theory of the economists seemed to be working itself out in practice.

There had been for some time many advice letters coming in from business forecasting agencies, which had been read with the usual casual interest by most of the executives. The Planning and Statistics Section requested that all these letters, after they had been read, be forwarded to its files so that at leisure they might be reviewed and made further use of. Instead of going into the waste-baskets of the executives, these letters became the text-books of our investigators. As the staff became better acquainted with the good advice available, it seemed unprofitable not to make some tangible use of it. A very short study, in fact, made it apparent that our effort would be successful.

In every instance we found some similarity between the Walworth business curve and that of the barometers under investigation. The variation was greater in some instances than others, but there were in each some comparable elements. We did not, at the time, hope

to find any curve which exactly paralleled our own. But we felt that if we could discover one which in the past had preceded or followed our own by a definite period, we could then accept the advice which that agency might give and adjust our plans forward or backward the exact number of months suggested by past experience. It was essential, however, that the number of months be very definite in order to provide a sound basis for policy planning and control purposes.

It was with great satisfaction, therefore, that we began our study of the Harvard Economic Service issued by the Harvard University Committee on Economic Research. Their method of presenting business cycles seemed at first a little technical, but a short study proved it easy to comprehend, and their charts indicating current status of business were much more definite in their forecasts than any others we had found. It was but a simple matter to change our cycle curve to a form which would enable a comparison with the Harvard B Curve. The accompanying chart illustrates how this was accomplished. Figures for the same 12 pre-war years covered by the Harvard B Curve were available. The war threw all barometers so far out of line that we did not attempt

comparison during that period, but picked up the thread in 1919. It is generally conceded that more is to be learned with reference to normal business cycles from the pre-war years than from any later ones, and fortunately our records, though meager, supplied sufficient data to plot our line back to 1903.

There are three index lines on the Harvard chart and it would have been possible to attempt to compare our curve with any one of these. Had our business been speculative in nature, it would have been better to attempt correlation with the Harvard line representing speculation; or had it been primarily financial, we would have turned to the banking index for our comparison. But our industry is one of the bread and butter type of average business, so that it was evident from the first that the composite of the factors that control general business, the Harvard B line, was the one we should follow. The chart will show that our study was rewarded by finding an astonishing similarity between this B Curve and the Walworth line.

It is probably a matter of coincidence that our high point comes in almost exactly the same month every time as the B line high point; and our low point is reached in almost the same month as the low point of the Harvard B line. The only exception to this seems to be that in the years 1903-1905 we had two low points, with the "half high" point in the middle of 1904. We did not trouble ourselves to explain why we acted differently in this case from general business. Possibly in the middle of 1904 the company cut prices too low and got in some extra business, but if some exceptional reason like this had been eliminated so that the sales were evenly distributed over 1903, 1904, and 1905, the low point would have accurately tallied with the B curve. The important fact which we observed was that this condition held true after as well as before the war. So again we found greater confidence in the Harvard curve than in the other barometers, because no other that came to our attention showed a clear-cut cycle action in general business resumed in 1919, while the Harvard curve made evident the fact that the normal cycle was resuming its activity in that year.

A close study of the chart will bring out one essential difference between the pre-war and post-war curves—particularly in 1921 and 1922. There is now a faster rise in the Walworth than in the Harvard curve. We are beginning to think that this is due to our more effective planning and consequent prompter shipment of our merchandise after receipt of orders. In those earlier days there was hardly a choice but to accept the orders as they were offered and then to arrange to produce the

goods as soon as physically possible. Since we are now able to forecast demand we can manufacture to meet known requirements, and have speeded up to a marked degree the shipment of orders as they are received. This means that our index line, which is based on billings, will probably move ahead of the B line instead of with it. Of course time is necessary to determine this to be a fact.

So we discovered that the second suggestion of the economists also found application in our practice. We had not only a business cycle of our own, but our cycle had a definite measurable relation to that of general business. And we were, therefore, in position to use in a very tangible way the forecasts which constantly passed through the Planning and Statistics Section. For instance, very definite predictions are given for a full calendar year in advance as to the action that may be expected for this Harvard B line. And their forecasts in turn are fairly well substantiated, at least as to general probabilities, by the other forecasting services.

#### IV. Application of Cycle Theory and Data to Walworth Planning

In the summer of 1921 we had our first opportunity to make use of our discovery. The Harvard B line gave definite assurance that general business was scheduled for an advance. Even when we were not prepared for it, our records showed that we had followed closely the general business trend. What could we accomplish if we prepared for the increase in advance? Industry had just been through a bitter experience that made executives unusually cautious. But we had become firmly convinced by our studies, and such doubt as remained was finally brushed aside by further unquestioned evidence. At about this time the Planning and Statistics Section solicited from the F. W. Dodge Company full information on building contracts awarded. It was thought that the statistical barometers of that activity should prove very enlightening to a business such as ours, because of the nature of our product, which is so largely used in building construction. Again our business cycle curve was lined up with the cycle activity shown by the building figures, and there seemed to be in this case not only a direct relation between our curve and the building curve so far as time of cycle changes was concerned, but also there was a very definite suggestion as to the extent of our business variation. Each year that building was ahead a given percentage over the previous year, our business seemed to go ahead by the same amount in the same year; and each