



Charts A and B

was not cyclically depressed at all but which was merely having its regular seasonal slack. Fourth: some of the girls might have been offered training for the needle trades or some other occupation which perhaps is itself irregular. And in the meanwhile public effort would have provided no stimulus to the Hills Brothers Company to heal itself.

Fortunately, within this firm there is stimulus enough in its ideal of sound business progress and the maximum comfort for its workers. Its president, Mr. L. R. Eastman, and other officers have not been unmindful of the possibilities of regularization. To their surprise, this proved not nearly so hard as they at first thought it might be. They had recognized the seriousness of the problem and for nearly ten years it had been considered from various angles. A good deal of effort had been exerted in the direction of stimulating a more even demand. Selling and advertising had been adjusted to this purpose. Other expedients, including the analysis of various production methods had been studied. None of these efforts had proved completely effective and it was not until 1921 that the real solution was discovered—a solution which had often suggested itself but which it took time and experimentation to develop. Mr. Ernest G. Draper, Comptroller of the company, recently wrote to the author:

The discovery of our refrigeration process was quite simple. When we asked ourselves the question how best to regularize our package date business, the first answer that came to our mind was the one which we ultimately adopted. Practically all that we had to do was to determine by chemical test the

temperature in which dates kept the best and longest. Having found the answer to that question, the rest of the problem was merely to so arrange our working schedules as to conform to the newer and steadier methods of packing after, of course, we had erected the cold storage plant. . . . The results in case and better quality of manufacture are already apparent. . . . A feasible and comparatively simple answer to the problem was found when we determined to give the matter some thought. It had never occurred to us to do so in the past and the chances are that if we had not done so we would today be working along the old wasteful and inefficient lines.

The progress achieved can be seen in Chart B. As a result of a policy inaugurated in March, 1922, instead of manufacturing for the peak at one time, the company now manufacture practically an even amount regularly, basing the production schedule on the anticipated sales of the whole year. The production curve will therefore either be steady or rising gradually, and the peaks and hollows in employment will be practically eliminated.

I do not pretend that the problem is equally simple in all industries. In the Dennison Manufacturing Company, for example, the synthesis of regularization was achieved only after years of pretty detailed experiment and endeavor.¹³ The need of versatile management will lead us most directly to fundamental progress in regularizing industry. When efficient management has done all that should be expected of it, the disease of unemployment will be so moderated that a complete cure through the aid of the other and less important remedies discussed should not be difficult.

¹³ See foot note 11.

DESCRIPTION OF A DEPARTMENT FOR MAKING ROUGH BOXES¹

By H. V. S. TINGLEY²

IT IS the purpose of this article to describe fully a department for the manufacture of rough paper boxes. The description deals with the department as it now exists and does not touch upon the improvements which might be made. Although the department is by no means perfect, it has many good features which are of interest.

The boxes produced in the department are used for packing and shipping paper products and receive very rough treatment. They are, therefore, of the cheaper grade. The total production per day averages about eighteen thousand complete boxes, this production being obtained in one room 214 feet long by 57 feet wide.

Description of Box

In order to understand clearly the method of manufacture and the reasons for the floor layout which will be discussed later, we must first get some idea of the type of box made.

The principal raw material is an unfinished pasteboard. This board is scored and cut into shapes known as blanks as shown in the first sketch in Figure 1. The score marks are cuts about two-thirds way through the board and are made along the lines which are to be the edges of the box. The blanks are bent 90° at the score marks, the latter being on the outside of the bend, which brings the sides and flanges to their proper positions. The ends are glued on to the flanges, and the box assumes its correct form. The corners

¹ This study was not made for the purpose of publication; it is simply a by-product of the educational methods of the Dennison Manufacturing Company. First one man and then another spent time on the study; it was completed by Mr. Tingley. It has, therefore, a double interest for the reader; as a study of the organization, layout, processes and results of a department, and as a method of training through such investigations. Of it the firm writes: "The labor involved in getting this information together was well worth the cost in the education it has given; the information it contains will probably be superseded in a few years' time by improved methods of manufacture and control. It is most certainly tremendously different today from what it was five years ago; but any study of details such as this is a sure means of convincing an investigator that a lot more improvements are possible, and should be worked out." (Editor.)

² Dennison Manufacturing Company, Framingham, Mass.

and edges must now be strengthened by applying strips of gummed paper to all joints. When this is done the box is finished. The three stages in the making of a box are shown in Figure 1 while typical boxes appear in Figure 2.

Materials Used for Box

The materials used for boxes are the pasteboard for the blanks, the stay paper, the stripping paper, and the glue for fastening the parts together.

Four different grades of pasteboard are used, the grade depending on the finish desired on the complete box. No. 2 newsboard is used most extensively and comprises about three-quarters of the board used. It is of a grey color, being made from old newspapers which have been de-inked, and has a rather rough finish. It is reasonably strong and costs a little over a dollar per fifty-pound bundle.

A somewhat inferior grade of board is chipped strawboard. This material, which is used for about one-fifth of the boxes, is made from scrap newsboard and gets its name from its brownish-yellow color. It costs about 12 per cent less than the No. 2 newsboard.

For the few boxes requiring a better finish than No. 2 newsboard affords, No. 4 newsboard is used. This board is made from over-issues of newspapers and is given a comparatively smooth finish at the mill. It costs about 35 per cent more than the No. 2 newsboard.

The best board which the department uses is a T. Manila-lined newsboard which, as its name implies, is made by pasting a sheet of slate colored T. Manila paper on one side of a sheet of smooth newsboard. Its cost is about three times that of No. 2 newsboard.

All of the boards listed above may be procured in thicknesses varying from about .02" to .07" as indicated by a gauge number distinct from the quality number. The gauge number is the quantity of sheets of the same thickness and of basis size (26"x38") which make up a bundle of 50 lbs. The approximate thickness in inches may be determined by dividing 2 by the board number. No. 50 and No. 60 board are