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Dairy Accounting*

By JOHN B. BALLINGALL

The average consumer gives little thought to the various processes through which milk, cream and butter pass before becoming finished products fit for the family table, and one of the subjects that appears to have been neglected by accountants is the accounting system used in a modern dairy.

The dairy business is a highly technical one, because of the numerous tests and processes employed and the care and caution necessarily exercised in the successful manufacture of the various products.

Usually the large city dairy operates receiving stations or creameries at a reasonable distance from the city, and it is to these stations, scattered throughout the farming districts, that the farmers send their milk. The milk upon being received at the stations is weighed and a sample taken from each farmer's daily shipment for the purpose of making a composite test for butter-fat content twice monthly. It is this average test of butter-fat content for the month that regulates the price paid to the farmer. The milk as received from the farmer is known in the trade as whole milk. In order that farmers will not ship more milk than the contract quantity (which changes according to the seasons of the year), shipments in addition to the contract quantity are paid for at a reduced rate. This is done to equalize production and demand.

Before the milk starts through any of the processes in the dairy, a chart is made which shows the commercial requirements of the various grades and specialties for the day. The dairy is a twenty-four-hour business and surplus milk must be converted, and this of course is an added expense. The milk upon arrival at the dairy is put through a clarifying process, which is an extra precaution taken by the modern dairy to insure clean milk. The proportion of the whole milk which is to be manufactured into the ordinary pasteurized grade is put into a tank and a test is then made to ascertain the butter-fat content. This test should compare favorably with the average test made at the receiving station. Cream or skimmed milk is then added to bring the

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butter-fat content of the whole milk to the prescribed statutory requirement. The milk, graded to requirement, is automatically bottled and capped. In these operations there is an invisible loss, in addition to evaporation, through spillage and breakage and because the bottles are filled to a trifle more than the legal measure.

In view of the nature of the business it can be seen that it is necessary to account for the quantities on a unit basis. The basis used is the butter-fat content, as it is not possible owing to the various conversions necessary in the manufacture to account for quantities on a basis of liquid measure.

In addition to the general production of pasteurized milk, for which of course there is a greater demand than for any other grade, specialties have to be manufactured, such as cream of various grades and butter-fat content, skimmed milk, condensed milk and butter. The poundage of whole milk or partly manufactured milk is obtained before the manufacture of each specialty is commenced, and from the poundage is ascertained the butter-fat content, which, as already stated, is the basis of computation in determining the daily overages and shortages in manufacture. As an illustration of the method of computing say the loss in production during the day of regular pasteurized milk, the following procedure is followed: The bottled milk and milk in vats, both reduced to a common poundage basis of the regular pasteurized grade at close of business the previous day, is obtained by test and the butter-fat content is known. To the inventory is added the poundage of milk received from the several creameries, of which a composite test for butter-fat content is made. The milk is brought to butter-fat requirement by the adding or deducting of higher butter-fat content milk or skimmed milk. Therefore the total butter-fat content of all milk on hand the previous night and of milk manufactured during the day is known. The milk sold during the day is ascertained and the quartage is reduced to total butter-fat pound content. It will therefore be seen that tests being accurate, the loss in butter-fat on the day's manufacture is readily ascertained. The cost per pound of butter-fat paid to the farmer is known, and the shortage in manufacture during the day can readily be converted to the basis of dollars and cents. The loss in the production of other grades of milk and commodities is computed in practically a similar manner.

Not only do dairies purchase whole milk, which with other grades is manufactured into pasteurized milk and specialties and, as already mentioned, is purchased on a butter-fat content basis, but certified milk is also bought by the dairies from farmers who produce this particular grade. This milk is bottled by the farmer (dairy bottles and caps being supplied to him for this purpose) and shipped to the dairy ready for delivery to customers. Certified milk which does not contain a high percentage of butter-fat is mostly sold for nursery purposes. It is paid for on a quartage basis, but for the purpose of accounting on a unit basis this quartage is converted into butter-fat content.

Sales of manufactured products are made through retail sales routes, where the milk or cream is sold in bottles of legal measures; through wholesale routes, where sales are made by cans or bottles; or from a store attached to the dairy, where retail prices govern. The drivers on retail routes, whose department constitutes by far the largest section of the selling end of the business, are charged daily with the selling price of all milk, cream and other commodities taken out by them for delivery on the routes. Upon return to the plant these men are credited with returns and any collections in cash made by them during the day. The daily sales and collection sheets show the sales by grade and quantity of commodity, with money value, made by each driver, and are summarized at the end of the month. Similar schedules of sales are prepared for the wholesale department and the store; and the total shown on the summary of these statements, with a record of milk donated, consumed by employees, sewerage, etc., is then reconciled on the unit basis of accounting, namely, butter-fat content, with the inventories and manufactured products.

Retail drivers' books, on which are entered the daily sales to customers and cash payments made by customers, are checked weekly. The open balances are listed and must agree with the amount shown as due on the retail sales summary previously mentioned. Any shortage in a driver's book is noted and the amount of the shortage is deducted from his next pay envelope.

Unlike the retail sales prices, which are usually agreed upon by the dairy operators, wholesale prices vary according to the customer and to the surplus of milk and cream that may be on hand. In addition to the general sale of milk and cream to restaurants and other wholesale customers, one of the important

items of sale is condensed milk—purchased by ice-cream manufacturers. These condensed milk sales of course vary according to the season of the year, and the quantities are sold on a test basis rather than a quartage basis. The wholesale driver is paid a straight salary and therefore is not obliged to keep a record of sales, etc., as this together with the billing is done at the head office of the dairy.

The general accounting records used in the modern dairy are not different from those used in any manufacturing company. One of the main records is a voucher register which is divided into the following sections:

- Manufacturing account.
- Creamery expenses.
- Selling and delivery expenses.
- Administrative and general expenses.

The monthly total of each of the above accounts is posted to a controlling account in the general ledger. It is therefore seen that the operating expenses of the dairy and creameries are included in four general ledger accounts. The footings in the voucher register are cumulative so that it is quite a simple operation to prepare a profit-and-loss statement for any number of months.

The above sections of the voucher register are divided into as many accounts as desired. As an example, the manufacturing account might consist of the following:

Manufacturing account.

- Milk and cream purchased
 - Transferred from creameries
 - Individual shippers
- Receiving department
 - Wages
 - Expenses
- Pasteurizing department
 - Wages
 - Expenses
- Bottle filling department
 - Wages
 - Expenses
- Bottle washing department
 - Wages
 - Expenses

Manufacturing account (continued)

Specialty department

Wages

Expenses

Materials

Laboratory and testing department

Wages

Expenses

Power-house and refrigerating

Wages

Expenses

Cold room

These accounts are again subdivided for purposes of cost and statistical information.

As the creameries are merely convenient centralized agencies for the collection of milk, which loses its identity upon arrival at the city dairy, no attempt is made to construct profit-and-loss accounts to determine the approximate loss or gain in the operation of each creamery. However, records are kept which show the cost per hundred pounds of milk handled at each creamery, and from these monthly comparative statements any increase or decrease in the costs is readily noted.

One of the advantages of an accounting system is the ability to determine the profit or loss on the operations of the wholesale and retail departments, as only upon correct determination of these facts can the successful dairy operate. The method by which such profits or losses are ascertained is as follows:

The purchase price of the milk on a butter-fat content basis sold through each department is determined, and the ratio of material cost to selling price is established. This same ratio is applied in computing the manufacturing and creamery expenses applicable to each department. The voucher register is so constructed that the actual charges applicable to selling and delivery wholesale and retail are readily ascertainable, and, finally, general and administrative expenses, together with depreciation charges, are applied on a predetermined equitable basis.

Among the general ledger accounts are certain important items peculiar to the business and deserving special attention. Retail drivers are usually responsible for the collection of their customers' accounts, and as their salaries and commissions are based

on a percentage of their cash collections, it is evident that these men will make an effort to keep their outstanding accounts as low as possible. Although the general practice is to collect bills weekly, bad debts are not unknown in the milk business, and these, when retail, are charged against the driver, with the exception, however, of one week's supply to any customer. This amount is charged by the firm to bad debts in accordance with the general practice of the business. The drivers are bonded and it is customary to have them deposit with the firm a sum of money, say one hundred dollars, for the faithful performance of their duties. This money is returned at termination of employment, and upon presentation of a clearance sheet from the office. While it is admitted that an element of fraud is possible in the drivers' accounts, particularly in the percentage of bad debts chargeable to the company, the cost of employing special collectors would be greater than the average loss sustained through this factor.

In every large dairy the item of bottles, boxes and cans forms an important part of the inventory. This account might be subject to criticism as it is not feasible for the dairy to make a physical count of bottles, boxes and cans on hand and out on routes at the end of each month. Past experience, however, can usually establish a basis for crediting this account monthly with an amount representing the approximate loss due to breakage, loss and depreciation. The amount expended for repairs to boxes and cans is charged to operation in addition to the above-mentioned estimate. Although a physical inventory is not made of bottles, boxes and cans, the book account should be found to be substantially correct. The number of customers is known daily, and it is estimated that a set of seven bottles is in use for each customer. The composition of a set usually is as follows: Two bottles at each customer's house, one on the driver's wagon, one in the bottle-washing department, one in filling room and two in storage. The breakage is checked daily, and therefore a fairly accurate bottle inventory is possible, which would give an indication of the adequacy of the monthly charge. Boxes, of course, are in the hands of the drivers or in the dairy and can be counted. Cans are at the creamery, in transit, in the dairy or with wholesale customers and can usually be inventoried. No depreciation is provided on

bottles and boxes, but the monthly credit to this account includes an item of depreciation of cans.

It is interesting to note that the latest method of transporting milk from the creamery to the dairy is in a glass-lined motor tank truck, which in addition to keeping the contents of fifteen hundred gallons of whole milk at the same temperature during the journey, reduces the cost of handling the milk and eliminates to a large extent the use of cans.

As may be gathered from the foregoing, the dairy business, because of the risks involved (such as the possibility of milk shipments becoming sour in the summer months), is one that demands the closest attention both by the management and the accounting staff. The accounting system that does not record in minute detail the operation of the business is not of much benefit to the management.