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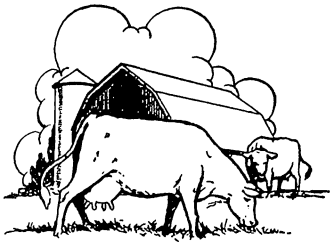
SPECIAL ISSUE—*EGGS AND POULTRY*



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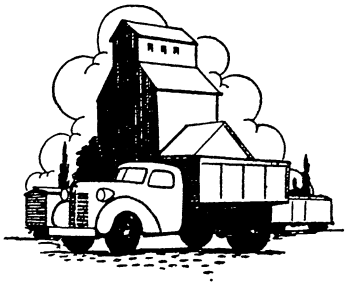

NO. 334 UNIVERSITY FARM, ST. PAUL DECEMBER 31, 1951

# Minnesota Eggs and Poultry on the March

William H. Dankers

No other Minnesota livestock industry has had rapid increases in production during the last 15-20 years like the egg and poultry industry. Typical of this fast-growing industry is egg production, which has grown 2½ times its size in just 15 years.

In 1950 Minnesota was second in the nation in egg production—the major poultry enterprise—third in turkey production, and fourth in number of chickens raised. The commercial chicken broiler business, which has been of little significance in Minnesota to date in comparison with other states and with other poultry enterprises in Minnesota, also seems to be "on the march."

Why these rapid developments and production increases? The main reason has been increased production efficiency. Egg production expanded materially when egg prices averaged only 93 per cent of parity and for certain periods even considerably less than that.

Other reasons for expansion can be found in market and marketing developments which resulted in increased marketing efficiency. The producer who possessed average or better poultry management ability found the egg and poultry industry favorable for marketing labor and feed and for increasing the total net farm family income.

### Developments in the Egg Enterprise

During the five year period of 1945-49, cash receipts from eggs in Minnesota were nearly 10 per cent of total cash farm receipts. In 1950 they were 8.5 per cent, compared with only six per cent for the United States. About 4¼ billion eggs were produced in Minnesota in the record high year of 1950 by fewer layers than in some of the earlier years. Minnesota production was seven per cent of United States egg production.

**Table 1. Egg Production in Minnesota**

| Year | Layers on farms | Index | Eggs per hen* | Index | Total eggs | Index |
|---|---|---|---|---|---|---|
| | millions | | | | | |
| 1935-39 | 16.6 | 100 | 96 | 100 | 1599 | 100 |
| 1940-44 | 24.1 | 145 | 118 | 123 | 2464 | 179 |
| 1945-49 | 28.1 | 169 | 139 | 145 | 3915 | 245 |
| 1950 | 27.8 | 168 | 153 | 159 | 4248 | 266 |

* Based on January 1 numbers

Minnesota was one of the low states in egg production per hen during 1935-39, but in 1950 it was exceeded by only the state of Washington and eight of the North Atlantic states. This increase in eggs per hen resulted from improved breeding and feeding, lower death losses, healthier flocks, and improved management.

Census figures, farm management records, and special surveys indicate that the size of farm flocks has increased too. Surveys indicate that when the poultry enterprise provides a larger share of the farmer's total cash receipts, more attention is given to flock management.

**Table 2. Consumption of Poultry Products in the United States**

| Year | Eggs | Index | Chickens* Lbs. | Index | Turkeys Lbs. | Index |
|---|---|---|---|---|---|---|
| 1935-39 | 298 | 100 | 17.9 | 100 | 2.6 | 100 |
| 1940-44 | 328 | 110 | 24.0 | 134 | 3.5 | 135 |
| 1945-49 | 384 | 129 | 25.2 | 141 | 4.2 | 162 |
| 1950 | 395 | 133 | 26.9 | 150 | 5.0 | 192 |

* Young and mature chickens

The death loss of layers was 21 per cent in Minnesota during 1940-44, but was reduced to 16 per cent by 1950. Poultry disease specialists say that when losses are comparatively low the birds left in the flock are healthier.

Egg consumption in the United States has increased considerably. This was necessary if the market was to be cleared, because a very small proportion of our total egg supply is exported. During most of the period since World War II, poultry products were sold at market prices that provided a good incentive for expanded production. During part of the period the incentive was provided by government support prices.

If average United States consumption of eggs is assumed for Minnesota and is related to total egg production, there is indication that about 65 to 70 per cent of Minnesota's eggs, or roughly ⅔ of the total supply, is sold outside the state.

**Table 3. Seasonality in Egg Production in Minnesota**

| Year | Winter Dec.-Feb. | Spring Mar.-May | Summer June-August | Fall Sept.-Nov. |
|---|---|---|---|---|
| | per cent of annual total | | | |
| 1940-44 | 23.0 | 33.7 | 26.6 | 16.7 |
| 1945-49 | 26.3 | 32.6 | 24.3 | 16.8 |
| 1950 | 27.0 | 31.5 | 22.8 | 18.7 |

Marketing and production problems are closely tied together. Extreme seasonality in production overloads the market and marketing facilities in the peak production season and requires storage in order to supply consumers during the low production season. Minnesota has partly solved this problem

**Table 4. Index of Egg Prices in Minnesota by Season***

| Year | Winter Dec.-Jan. | Spring Feb.-May | Summer June-August | Fall Sept.-Nov. |
|---|---|---|---|---|
| 1940-44 | 105 | 88 | 96 | 116 |
| 1945-49 | 100 | 92 | 99 | 110 |
| 1950 | 109 | 86 | 92 | 115 |

* Average annual egg prices = 100

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by tending to level out egg production. There has been a decrease in spring and summer egg production and an increase in fall and winter production because of higher prices then.

The large increase in Minnesota egg production required an increase in marketing facilities, but the challenge was well met. Surveys of egg assembly plants indicate that there are adequate facilities to market even a larger supply of eggs than is now being produced. Obsolete equipment is continuously being replaced with more modern labor-saving devices, and many of the plants are now geared to ship in trucklots or carlots.

### Special Forms Important

The marketing of frozen liquid eggs and dried eggs has been of interest in Minnesota. Because a large share of the Minnesota eggs are sold in distant markets, there is interest in any "special forms," because they can be handled and transported more cheaply and easily.

Egg drying was largely a World War II and post-war emergency enterprise; in fact, during the last several years only about six per cent of total United States egg production was sold as dried eggs.

The increased demand for frozen liquid eggs has resulted in expansion of egg breaking and freezing facilities in Minnesota. About six per cent of total egg production in the United States is now sold as frozen liquid eggs. About 88-90 per cent of total production is still sold as shell eggs.

### More Graded Eggs

Minnesota has greatly improved egg quality to the point that most producers now sell eggs on a graded basis. This is in sharp contrast to 15 to 20 years ago when most of the local buyers purchased only "current receipts" (flock-run eggs).

The establishment of Minnesota Uniform Purchase Grades for eggs has helped in developing uniform grades at local assembly points, for producers know that the grades used by one local buyer are supposed to be the same as those used by competing buyers. Consumers also have protection. If a retailer sells eggs on grade, the grades must comply with Minnesota Uniform Consumer Grades.

Sales of Minnesota eggs to terminal markets on the basis of federal-state grades has increased materially during the last 15 years. Over 87 million dozen eggs were sold on federal-state grade in 1950 (about 25 per cent of total production and 36 per cent of those sold outside of Minnesota).

Another development in egg marketing efficiency is the increase in the number of eggs packed in dozen cartons by local assemblers and forwarded in 30-dozen case lots to terminal markets. This arrangement reduces labor costs and handling charges because the eggs do not have to be rehandled.

Within Minnesota, distributors in the larger consuming centers are making direct contacts with producers or local handlers who can supply uniform high-quality eggs. Like the shipments to terminal markets the eggs are cartoned by the producer or local assembler and are moved directly into Minnesota retail stores without repacking or rehandling. Developments like this help to reduce egg handling margins.

### Developments in Poultry Meat Enterprises

Minnesota's chicken enterprise is supplementary to the egg enterprise. Cash receipts for chickens are from cull hens, disposal of laying flocks, and young male birds sold from flocks of non-sexed young chicks for flock replacement. In recent years the purchase of only female chicks (sexed) for flock replacement has decreased the comparative volume of poultry meat from the sale of farm flock cockerels.

Another reason for comparatively smaller sales of poultry in relation to the sale of eggs is the increase in egg production per hen. Fewer laying hens are required to produce the same supply of eggs, so proportionately fewer go to market for poultry meat.

Cash receipts from commercial broilers in Minnesota ranged from 1.0 to 1.6 million dollars up through 1949 and increased to 1.9 million in 1950. The increased interest in commercial broiler production during the last several years is also indicated by an increase in the number of chicks hatched in Minnesota after July 1.

Future increases in chicken meat supplies in Minnesota will very likely come from the production and sale of commercial broilers and not from the sale of laying hens or from male birds from flocks of young chickens raised for flock replacement.

**Turkeys.** Minnesota has stepped up turkey production to the extent that during the last 10 years it has averaged over nine per cent of total production in the United States. The income from turkeys in Minnesota is two per cent of total cash farm receipts. In both 1949 and 1950 the 25 million dollars received for turkeys exceeded the cash receipts from chickens and commercial broilers in Minnesota.

Like other states in the West North-central region, Minnesota has succeeded in reducing death losses in turkeys. Death losses in young turkeys in the West North-central region were reduced from 26 to 15 per cent since 1940. Losses in breeding stock were reduced from 11 to 7 per cent.

In spite of the large amount of discussion on the need for smaller turkeys, the average weight at which turkeys were marketed went up steadily from 1930. It reached a peak in 1949 and dropped in 1950. This downward trend can be accounted for by a decided trend toward production of Beltsville White Turkeys, which are bred for smaller weights.

The average weight of all turkeys marketed was further reduced by the large proportion of Beltsville White birds, which were sold as roasters, fryers, and broilers at 4-8 pounds dressed. Indications are that this trend will continue and that it may have a significant effect on the turkey industry and the entire poultry meat industry in Minnesota.

### Looking Forward

The extent to which the various enterprises in the poultry industry can remain on an expanded basis, or expand further, will depend on (1) prices received for poultry products and for products from competing farm enterprises; (2) costs of producing poultry products and competing farm products; (3) availability of labor and home-grown feed; (4) prices received for poultry products in Minnesota compared with other areas; (5) cost of producing poultry products in Minnesota and getting them to market compared with cost in other areas; (6) quality of poultry products from Minnesota compared with those from other areas.

The period of over-all expansion of agriculture (including poultry production) has greatly slowed down. The poultry industry in Minnesota must meet increasingly difficult competition from beef, pork, and dairy products and also from competing areas.

Farmers who take advantage of recently developed improvements in poultry practices and who are above average in poultry management may find further expansion profitable. However, the below-average or average poultryman may find increasing difficulty in making his enterprise pay satisfactory returns. This is especially true if he has alternative livestock enterprises that compete closely for his feed and labor.

On the marketing side there is indication that further efforts will be made to buy and sell poultry products on grade, to improve handling and marketing equipment and facilities, to find methods of packing, packaging, and distributing that will lead to high quality products and lower marketing margins. The Minnesota poultry industry has been "on the march" and although the march may be slowing up it may not be ended.

# LET'S IMPROVE PLANT EFFICIENCY

William H. Dankers

How efficient are Minnesota egg assembly and poultry dressing plants? A study of the situation was made in the summer of 1951 by United States Department of Agriculture and University of Minnesota Agricultural Extension specialists. It was found that efficiency is in large part determined by volume of products handled, plant layout, and the kind of equipment used.

Plant layout was an important factor. Many plant operators did not have a floor plan, which is essential for determining usable space and the best arrangement of equipment. Many operators also lacked a flow chart to show how each product moves through the plant.

Flow charts prepared by the specialists provided a picture of the following:

1. Unnecessary effort put forth in the plant to get a certain job done.
2. Bottlenecks, which slowed up workers.
3. The extent to which plant areas were used effectively.

Some plants had makeshift and obsolete equipment. Naturally, when the size of an egg assembly or poultry processing operation is increased different equipment is needed. Expenditures for new equipment—in line with the increased size of operation—would be justified in many plants because high-priced labor could be used more effectively. For instance, two-wheel hand trucks were being used in one plant, but the volume was large enough to make bigger equipment much more efficient.

In another growing business the plant was much too crowded as a result of its growth, but the plant owners were not making use of a high ceiling. Mechanical stacking equipment was suggested so that the available vertical space could be utilized.

In plants of small or intermediate size, conveyors—either the gravity or power type—were not being used enough. Conveyors help eliminate bottlenecks at elevators and cut down on labor needed to move products between floors.

### Handling Snags

Some of the common problems which slow up the operation, make the work harder, decrease efficiency, and increase the handling cost can be summarized as follows:

- **Lack of proper dock facilities.** Some plants had docks 12 to 21 inches lower than the truck bed. Such docks made loading difficult and limited the use of labor-saving equipment.
- **Improper location of loading docks.** Several plants had loading docks located along narrow public streets, even though other places were available. Trucks, particularly the trailer type, blocked traffic while loading or unloading. In some instances the truck had to be backed to the dock at a difficult angle—thus taking time and making it difficult to load or unload.
- **Ineffective flow of products and supplies.** The relationship of equipment to storage areas in some plants made a continuous flow of products and materials impossible.
- **Improper arrangement and location of candling room and benches.** Candling rooms were located so that a continuous flow of the supply of eggs through the plant was not possible. Some candling benches were arranged so that unnecessary movements were made, and the space on the benches, as well as the surrounding floor space, was not efficiently used. Some candling benches were not suited to the job, because they were too narrow, too wide, or too high.
- **Ineffective placement and use of labor.** In some plants this was due to new labor peaks arising from expansion or other changes in operation.
- **Inadequate dry storage space.** Some plants had not provided dry storage space to meet the needs for storing enough supplies, cases, boxes, and other materials needed for normal operation.
- **Inadequate cooler space.** Some plants had expanded many facilities to take care of increased volume but had not expanded the cooler space. Some coolers were not fully used because of improper stacking methods. In some cases the refrigerator doors were poorly placed and were too low for the use of certain labor-saving equipment.

### Handling Aids

Some of the labor-saving equipment and devices which increased efficiency and cut handling costs were as follows:

- **Conveyors and access doors.** Conveyors were used so that producers could unload the cases of eggs from a truck through a swinging door directly onto a conveyor from outside of the plant. This arrangement is particularly desirable in cold weather and helps prevent a bottleneck at the entrance.
- **Fork lift truck.** A specially designed fork lift truck and metal frame turkey batteries were used at one plant to transport turkeys from the truck to the dressing line. The equipment made it possible for one man alone to unload a truckload of turkeys. A dock at truckbed height is essential for carrying on this operation efficiently.
- **Basket for two-wheel hand truck.** One plant has a specially made steel basket which could be attached to a two-wheel hand truck. This made it possible to use the truck for moving cardboard egg cases as well as wooden cases with cleats. The basket could be detached very easily and with little delay.
- **Tubular metal poultry chute.** In a plant where the conveyor chain could not be designed to move vertically, a tubular metal chute (about one foot in diameter) was used to convey poultry from an upper floor to the dressing line on the lower floor.
- **Open chute.** Open chutes were used to convey supplies from upper floors to the lower floor.
- **Power conveyor.** In some plants where a loading dock was not available the loading-out operation was aided by a movable power conveyor which could be moved up to the truck. When this was used in combination with other wheel-mounted conveyors, egg cases could be moved from the plant floor to the stacking point in the truck.

# CO-OP POULTRY BUSINESS SOARS

Travis W. Manning

Minnesota cooperatives are handling five and a half times the poultry products they did 15 years ago. And at the same time co-ops are taking an increasingly large slice of the poultry and egg business in the state.

These facts were brought out in the 1950 survey of the 1,341 farmers' marketing and purchasing cooperatives in Minnesota by the Division of Agricultural Economics. Of the 36 poultry and egg associations in the state, six were highly specialized, and the rest were more or less diversified—having one or more additional major enterprises. Eighteen of the diversified associations were originally dairy associations, but their dairy business had decreased as their poultry and egg business increased.

There were 67 associations whose second most important line of business was poultry and eggs—with these sales varying from 10 to 49 per cent of total sales. Fifty-eight of these cooperatives were dairy associations and nine were general merchandise stores. Altogether, there were about 160 associations handling poultry and eggs.

### New Facilities Needed

The large number of dairy cooperatives which have changed to poultry and eggs points up a special problem. The handling of poultry and eggs usually started as a special service to the patrons, and it is still treated as a minor sideline in many associations even though it has reached major proportions. Some of these associations are seriously lacking in proper facilities and trained personnel for handling poultry and eggs, and several of them are managed by buttermakers who have relatively little knowledge of the poultry and egg business.

In several instances, poultry and eggs were handled for patrons on a commission basis. These cooperatives served only as assembly points and provided no other marketing services. It was among these associations in particular that handling of poultry and eggs was often considered more bother than it was worth.

Among these and many of the other associations an important service to the patrons could be performed by developing the poultry and egg business into a major line. They could do this by using existing facilities more efficiently, adding new ones, and adding employees experienced in poultry and egg handling.

The total value of poultry products handled by Minnesota cooperatives in 1949 was $38.2 million (see table). When business originating in other states and resales through other Minnesota associations were eliminated, net value was $32.8 million. The latter figure is the total value of poultry products marketed by Minnesota cooperatives for Minnesota farmers.

In 1936 the corresponding figures were only $5.9 million and $2.2 million. This shows a very significant increase, 545.5 per cent in total value and 1361.7 per cent in net value.

Eggs and turkeys seem to be the main factors in this big increase. The net value of eggs handled for Minnesota farmers increased almost 20 times, while the net value of turkeys increased nearly 65 times. However, the net value of chickens handled increased less than three times. (There is some discrepancy in these figures, because a complete breakdown of the 1936 value is not available.)

The 36 poultry and egg associations played an important part in the poultry and egg picture, handling $13.6 million of poultry products. When intercooperative transactions were removed, this figure was reduced to $13.1, which is 39.8 per cent of the net value of poultry and eggs handled by all Minnesota cooperatives.

### Cash Farm Receipts Up, Too

Minnesota cash farm receipts from poultry products increased from $35.1 million in 1936 to $167.1 million in 1949. In the same period there was a remarkable increase in the proportion of total poultry products handled by cooperatives—from 6.4 per cent to 22.9 per cent.

The greatest increase took place in the proportion of turkeys handled, 2.4 per cent to 32.2 per cent, followed by eggs, 5.7 per cent to 17.8 per cent. Chickens, too, increased from 8.2 per cent to 15.8 per cent. However, these figures do not represent the actual percentage of poultry products handled, since cash farm receipts are on a farm price basis while sales by cooperatives are at somewhat higher prices.

These comparisons in the proportion of poultry products handled are significant because they point out that the poultry business of Minnesota cooperatives is increasing at a more rapid rate than the total poultry production of Minnesota farmers.

**Poultry and Egg Marketing by Minnesota Farmers' Cooperatives**
**Fiscal Year Ending 1949-50**

| Product marketed | Number of associations handling | Unit | Number of units handled | Total value handled | Net value handled in Minnesota* |
|---|---|---|---|---|---|
| | | | | dollars | |
| Chickens, live | 97 | lb. | 6,580,261 | 1,430,675 | 1,126,858 |
| Chickens, dressed | 18 | lb. | 9,512,488 | 3,336,818 | 2,472,535 |
| Turkeys, live | 11 | lb. | 3,713,551 | 1,360,069 | 1,266,540 |
| Turkeys, dressed | 14 | lb. | 17,498,385 | 7,699,442 | 6,551,134 |
| Ducks & geese, live | 3 | ..... | ..... | 1,761 | 986 |
| Eggs, shell | 151 | case | 1,579,660 | 21,600,040 | 18,606,007 |
| Eggs, dried | † | lb. | 1,525,115 | 1,952,302 | 1,952,302 |
| Eggs, frozen | † | lb. | 2,401,268 | 838,997 | 838,997 |
| | 160‡ | | | 38,220,104 | 32,815,359 |

* Figures have had out-of-state business and duplications arising from intercooperative transactions removed. These figures represent the net value of poultry and eggs handled for Minnesota patrons.

† Three or less associations handled this product.

‡ This figure is not an addition of the previous figures because some associations handled two or more products.

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