Bulletin No. 381 - The Organization and Structure of Egg Marketing in Utah

Roice H. Anderson

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THE ORGANIZATION AND STRUCTURE OF EGG MARKETING IN UTAH

ROICE H. ANDERSON

AGRICULTURAL ECONOMICS DEPT. U. S. A. C.
A WESTERN REGIONAL RESEARCH PUBLICATION

WESTERN POULTRY MARKETING
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The study on which this report is based was financed in part with funds appropriated under the Agricultural Research and Marketing Act of 1946. Under the procedure of cooperative publication, this regional report becomes, in effect, an identical publication of each of the cooperating agencies and of each of the experiment stations in the Western Region, and is mailed under the frank and indicia of each. These agencies include the experiment stations of Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming, and the U. S. Department of Agriculture.
Summary and Conclusions

This study was purposely broad in scope, covering practically every phase of the egg industry from the time the egg was laid until it reached the hands of the consumer. Admittedly many phases of the industry were not studied in sufficient detail to make recommendations for improvement. Suggestions for further research, in such cases, would be the greatest contribution of this study.

From one-fourth to one-third of the producers interviewed in this study were using egg handling practices below those usually recommended for good quality control. A detailed study of variation in grade-out of eggs among various producers and costs and returns from improved egg handling practices is needed.

The high cost of individual egg candling to determine quality suggests the possibility of a study to determine the advisability of quality control through supervision of production combined with mechanical methods of sizing and removing eggs with blood and meat spots.

On an average eggs were in the marketing channel for 10.5 days, two-thirds of which elapsed from the time the eggs were candled until purchased by the consumer. More than three weeks were required for 5 percent of the eggs to get from hen to consumer. These facts suggest a course of action for egg handlers, wholesalers, and retailers.

- Hold eggs at low temperatures and high humidity.
- Replenish display cases frequently.
- Rotate stock so that the first eggs in are the first eggs out.

Eighteen percent of the eggs purchased by consumers in this study were obtained from non-refrigerated displays.

About 12 percent of the consumers made unfavorable comments about the eggs they purchased and nearly three-fourths of these comments pertained to quality factors. While most of the eggs in the intermountain market were handled with dispatch, a small percentage were gathered infrequently, held under improper conditions, and required an excessive amount of time in the marketing channel. Eggs handled improperly may be directly responsible for the unfavorable comments by consumers.

Further study is needed to measure the actual quality of eggs as purchased by consumers and to examine the quality standards in use in light of consumer preferences.

Since eggs have many uses and consumers have different demands for eggs depending on income, tastes, and other factors, it would be unwise from an industry standpoint to strive for the production and marketing of eggs of only top quality. On the other hand, the individual firm (producer, handler, wholesaler, or retailer) has the problem of weighing the additional costs of improved practices necessary to increase his quality against the
returns from following these practices. For a product like eggs the limits of quality improvement, even for the individual firm, are biologically determined.

Assembly of eggs is a relatively low cost function to perform, requiring on an average of about one cent per dozen. Some producers avoid this cost by delivering their eggs to candling plants while others pay the cost directly to a contract hauler who performs this function. Egg handlers operate pick-up routes for assembling about 35 percent of the eggs. Some make no direct charge for assembly while others charge as much as 30 cents per case. Company-operated routes have considerable variation in costs depending on concentration, size of stops, and the percent of total receipts picked up on routes. Cost of pick-up by cooperative handlers was about twice as high as for independents, largely because of differences in these factors. Assembly costs for efficient handlers were about 1 cent less than for inefficient handlers.

The margin between the price the consumer paid for eggs and the price received by producers was about 20 cents per dozen and varied only slightly among the various sizes and grades. About 40 percent of this margin went to retailers and 60 percent to egg handlers and wholesalers. Further research is needed at both of these levels in order to determine those practices which will improve the efficiency of egg marketing or result in greater consumer satisfaction.
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THE ORGANIZATION AND STRUCTURE OF EGG MARKETING IN UTAH

ROICE H. ANDERSON

Introduction

SALE of eggs is one of the major sources of farm income in Utah. In 1954 egg receipts represented 8 percent of the farm cash income. This was the lowest percentage since 1929; receipts reached a high of 13 percent in 1935.

The relative importance of egg production doubled from 1924 to 1929 when the proportion of cash farm income from eggs increased from 4 to 9 percent. Since 1929 it has fluctuated without apparent trend. The percentage of cash income from eggs was high in years when egg prices were high relative to the other agricultural products and low when egg prices were low.

Utah is unique among the Western States in that egg production exceeds consumption. Not only are eggs from Utah sold in nearby intermountain states, but they are also shipped to distant markets. Prior to World War II most of the excess production above requirements of the intermountain market was shipped to the East Coast. Since that time, with increased population on the West Coast, eggs from Utah have been marketed in California, Oregon, Washington, and many islands in the Pacific Ocean.

Purpose Of The Study

THIS study was undertaken as part of a Western Regional egg marketing study to satisfy the following objective:

To determine the general market organization and describe the operations of the various agencies competing in western egg markets in terms of sources of supply, type of eggs handled, and outlets utilized.

It is hoped that a description of the egg marketing industry will provide a more accurate picture of the methods and operations used as a basis for future planning both by the industry as a whole and by individual firms. It should also provide a means of detecting problems, the further study of which will result in improvement in egg marketing.
Sources Of Data

DATA for this study were obtained from the following sources:

- Personal interview with practically all egg handlers operating in Utah concerning their sources of supply, market outlets, egg-pickup - route operations, and information on functions performed, methods of operation, and other pertinent material. Estimates of volume and general information for those handlers not interviewed were obtained to round out the estimates of total sales for the state.

- Personal interview with 77 producers whose names and addresses were obtained from handlers. This sample of producers was stratified by egg market outlet and represented producers of large, medium, and small volume. Data were obtained concerning their practices in egg gathering, cleaning, storing, and delivery.

- A packet containing 30 consumer card questionnaires was placed in a case of eggs of each producer interviewed. The packets contained instructions for egg candlers to place the cards in consumer cartons and the cards reached consumers through purchase of these eggs at retail stores. Cards were placed in consumer cartons at four times during the year in order to measure seasonal differences.

At those plants where eggs were not candled directly into consumer cartons, cards were placed in the cartons at time of packaging. From about 12,000 cards placed in egg cartons, both at farm and plant level, 2,061 were returned by consumers. These were analyzed as the basis for measuring price margins and time lags from producer to consumer as well as other related information.

More detailed information was obtained concerning some steps in marketing than others. The detail was related to the availability of data by the methods used and does not in any way signify the relative importance of the various stages of marketing.

Location Of Egg Production In Utah

EGG production is concentrated in the irrigated areas of Utah where general farming predominates. The egg enterprise is used to increase the size of general farms through intensification, but many specialized poultry farms have also emerged.

About 35 percent of Utah’s egg income in 1952 was produced in Salt Lake County, and almost 20 percent in Utah County. The four high producing counties produced almost 70 percent and the high eight counties 85 percent of the income from eggs. The 15 counties with lowest production, about half of the counties by number, produced only about 6 percent of the state’s income from eggs.

Marketing Agencies and Channels for Utah Eggs

While the bulk of this report deals with egg marketing from the functional point of view, the marketing agencies and the channels through which eggs were marketed will be briefly described.

Egg Producers

Producers interviewed in this study had been producing eggs for an average of 16.5 years. Two producers had been in the business for more than 30 years, 31 for 21 to 30 years, 16 from 11 to 20 years, and 29 for less than 11 years. Wide distribution of producers by years in the business is an indication of stability of the egg industry in the state.

Nearly two-fifths of the producers interviewed had changed market outlets since starting in the business, while three-fifths had sold their eggs continuously to the same outlet. Of the number changing outlets 28 percent had changed within the last year, 45 percent within the last two years, 55 percent within three years, and 86 percent within four years.

Of the producers who changed outlets 41 percent gave dissatisfaction with price as the reason for changing and 31 percent gave dissatisfaction with grade-out. Seven percent changed because handlers went out of business. All other reasons accounted for only 21 percent of the reasons given. The two most important reasons, price and grade-out, accounted for 72 percent of all reasons given, and they are closely related since grade-out has a direct effect on price.

Producers in Utah with few exceptions are paid for eggs on a basis of grade delivered. The grading is done by the handler. Because of the non-price factor of grade-out, it is impossible to compare directly the paying prices of alternative buyers. Producers who lack complete confidence in their egg buyer change market outlets from time to time in hopes of increasing the price received for their eggs. Some producers interviewed were simultaneously selling eggs to two outlets to determine which gave them the highest net return.

Egg Handlers

Egg handlers in this study refer to agencies who receive eggs from producers. While their operations differ, most handlers perform the functions of assembly, candling, packaging, and wholesaling for at least a part of their volume. In Utah some of these handlers are producer's cooperative associations, others are private or independent firms. Of the 1,205,555 cases of eggs produced in Utah in 1952, 52.7 percent were marketed through cooperatives, 24.2 percent through independent handlers, and 16.4 percent were sold direct to consumers and retailers without going through a handler's plant. The other 6.7 percent were consumed in households of farms where they were produced (table 1.)

There are two egg marketing cooperatives in Utah. One is centrally organized with one large plant for receiving eggs and the other has a number of local plants throughout the state for egg pick-up and sale of feed and other farm supplies. Both
Fig. 1. Marketing channels for Utah eggs, 1952 (Figures represent percentage of total sales and area of circles represents relative importance of each agency)
Table 1. Production of eggs and importance of various outlets—Utah 1952

<table>
<thead>
<tr>
<th>Item</th>
<th>Total cases of eggs</th>
<th>Percent of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total eggs produced*</td>
<td>1,205,555</td>
<td>100.0</td>
</tr>
<tr>
<td>Consumed in farm households*</td>
<td>80,555</td>
<td>6.7</td>
</tr>
<tr>
<td>Total eggs sold*</td>
<td>1,125,000</td>
<td>93.3</td>
</tr>
<tr>
<td>Sold through cooperative associations†</td>
<td>634,799</td>
<td>52.7</td>
</tr>
<tr>
<td>Sold through independent handlers†</td>
<td>291,995</td>
<td>24.2</td>
</tr>
<tr>
<td>Sold direct to consumers and retailers‡</td>
<td>198,206</td>
<td>16.4</td>
</tr>
</tbody>
</table>

† Data obtained from interview with egg handlers.
‡ Obtained by subtracting sales through handlers from total sales.

of these organizations operate over the entire state as well as in southern Idaho.

In 1952 there were 17 independent egg handlers operating in Utah. While varying in size many were relatively small operators whose egg buying was rather locally concentrated and selling was usually confined to one or two cities. A few of these were large producers whose major source of eggs was their own production.

**Egg Wholesalers**

For purposes of this study, wholesalers were distinguished from egg handlers in that they did not purchase directly from producers. They bought eggs from handlers and sold them to retailers. Meat packers and some chain store warehouses or subsidiaries were the principal wholesalers operating in the intermountain market. Most of the wholesaling was done by egg handlers, in which case eggs were sold to retail stores as a single item. Wholesalers such as meat packers and chain store warehouses sold or delivered eggs to retail stores along with other food items.

**Marketing Channels**

In 1952 the 1,125,000 cases of eggs sold from Utah farms went to market by various routes (fig. 1). About 56 percent were handled by farmer's cooperatives who performed various functions before selling them to other agencies. Producers marketed about 30 percent of their eggs through independent handlers and almost 18 percent were sold direct to retail stores or consumers.

Independent handlers sold about four-fifths of their volume to retail stores, restaurants, and institutional users and most of the remainder to local wholesalers. Cooperatives on the other hand shipped about 70 percent of their volume, representing 40 percent of total Utah sales, to distant markets. Of the eggs handled by cooperative associations in the local market about 5 percent were sold to other handlers, about 10 percent to wholesalers, and 10 percent to retailers.

About 60 percent of Utah's eggs in 1952 were sold in the local and 40 percent to the Pacific States and overseas. Although independent handlers made some shipments to distant markets, the bulk of these sales were made by farmers' cooperatives.

This study did not trace the agencies through which distant shipments were marketed but the usual channel would be from shipper to broker to wholesaler to retailer and thence to the consumer.

Functions In The Marketing Of Eggs

Although eggs take various routes in getting from producer to consumer, similar functions are performed regardless of the agencies involved.

Care of Eggs by Producers

Quality of eggs is affected by the care which producers give them after they are laid. Of 51 cases of eggs from as many producers 8 percent graded less than 60 percent grade A or AA and 39 percent graded above 90 percent A or AA. While this sample is too small to be wholly reliable it does indicate the variation in quality of eggs delivered by various producers.

The aim of this study was to describe the practices used by producers in caring for eggs and compare them with recommended practices. By the methods used it was not possible to measure the effect of certain practices on quality of eggs.

Frequency of gathering eggs

Of the 77 producers supplying information the largest number, almost one-half, gathered their eggs three times a day (table 2). Thirty-eight percent gathered eggs only twice a day and 14 percent gathered them four or five times a day. The practice usually recommended is to gather eggs at least three times a day. Thirty-eight percent of the producers interviewed were falling short of this recommendation.

Large producers gathered eggs more frequently than small producers. About three-fourths of the producers with over 2,000 hens gathered eggs three or more times per day. Only half of those with less than 1,000 hens gather eggs three or more times per day.

Methods of cleaning eggs

Method of cleaning eggs can influence the quality. Since the egg

<table>
<thead>
<tr>
<th>Number of laying hens</th>
<th>Frequency of gathering eggs per day</th>
<th>percent of producers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Less than 1,000</td>
<td>50</td>
<td>46</td>
</tr>
<tr>
<td>1,000 - 1,999</td>
<td>38</td>
<td>38</td>
</tr>
<tr>
<td>2,000 or more</td>
<td>26</td>
<td>59</td>
</tr>
<tr>
<td>All producers</td>
<td>38</td>
<td>48</td>
</tr>
</tbody>
</table>
shell is porous, any method of cleaning which permits contamination of the interior of the egg could result in bacterial action.

No attempt was made to appraise the relative merits of the different cleaning methods but merely to determine the extent to which they were used. Fifteen producers washed all eggs while the others cleaned only the dirty eggs (table 3). Those washing clean as well as dirty eggs were all large producers; they all used washing machines.

Most of the producers with more than 2,000 laying hens used machine methods of cleaning. Sixty-three percent of these washed their eggs and 11 percent dry cleaned with machine. Only 12 percent of the producers with less than 1,000 hens used washing machines. Seventy-six percent of these producers dry cleaned their eggs by hand and 12 percent washed eggs by hand.

The best recommendation for cleaning eggs is to produce them nest clean. Beyond this it would seem desirable to separate the dirty from the clean eggs as they are gathered so that only the dirties are subjected to cleaning operations. Whether dirty eggs are dry cleaned or washed the procedures recommended by machine manufacturers should be followed for best results. Egg buyers in some states discount washed eggs especially if they are purchased for storage. This practice was not used in Utah although some handlers discouraged producers from washing eggs.

### Table 3. Method of cleaning eggs related to size of laying flock — 77 Utah egg producers, 1952

<table>
<thead>
<tr>
<th>Method of cleaning eggs</th>
<th>Number of laying hens in flock</th>
<th>Percent of producers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Less than 1,000</td>
<td>1,000-1,999</td>
</tr>
<tr>
<td>Dry cleaned by hand</td>
<td>76</td>
<td>63</td>
</tr>
<tr>
<td>Dry cleaned by machine</td>
<td>....</td>
<td>12</td>
</tr>
<tr>
<td>Washed by hand</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>Washed by machine</td>
<td>12</td>
<td>17</td>
</tr>
</tbody>
</table>

![Fig. 2. Frequency of egg pickup or delivery from Utah farms, 77 egg producers, 1952](image-url)
Frequency of egg pickup or delivery

Fifty-three percent of the producers interviewed delivered their eggs to plants or they were picked up by buyers twice a week (fig. 2). Eggs from about one-fourth of the producers were picked up or delivered once a week, 18 percent 3 times per week, and 5 percent every day. The usual recommendation is for eggs to be delivered twice a week or more frequently. Quality can be retained with less frequent delivery if eggs are held in a cool, humid place on the farm.

Frequency of delivery or pickup was not associated with size of producer with the exception that none of the small producers had daily delivery.

Holding eggs on the farm

Since pick-up or delivery varied from once per day to once per week, some eggs were held on farms for as long as one week. A room of proper temperature and humidity for holding eggs is necessary if they are to retain their quality. No attempt was made in this study to check temperature and humidity of egg holding rooms. A description of the holding room on each farm was obtained, however, and these are classified in table 4.

About two-thirds of the producers held their eggs in some sort of underground room. Many of these were in a basement room of the home while others were cellars separated from the dwelling. Twenty-four percent had egg rooms above ground, many of which were attached to the laying house. Only 6 percent of the producers used mechanically or water cooled rooms. The particular type of room is not as important as the providing of proper conditions of temperature and humidity.

Egg Assembly

Assembly is that marketing function concerned with getting eggs from the widely scattered farms of producers to plants of the handlers. Although detailed costs were not obtained, an estimate based on truck miles and labor requirements indicated that about 1 cent per dozen would cover the average cost of this function.

Agencies performing the assembly function

Forty percent of all egg receipts were delivered to plants by producers. Thirty-five percent were picked up at farms on routes operated by handlers and 25 percent were picked up by

Table 4. Type of farm egg storage rooms used by Utah producers, 1952

<table>
<thead>
<tr>
<th>Type of egg storage</th>
<th>Percent of producers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underground room (dirt, rock, cement cellar or basement)</td>
<td>68</td>
</tr>
<tr>
<td>Special egg room above ground</td>
<td></td>
</tr>
<tr>
<td>Cement or cinder block</td>
<td>12</td>
</tr>
<tr>
<td>Insulated egg room</td>
<td>6</td>
</tr>
<tr>
<td>Mechanically cooled</td>
<td>3</td>
</tr>
<tr>
<td>Water cooled</td>
<td>3</td>
</tr>
<tr>
<td>Back porch or room of home</td>
<td>5</td>
</tr>
<tr>
<td>Milk house or apple house</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>
contract haulers. Contract haulers were independent truckers engaged by egg handlers to assemble eggs from their patrons in a specific territory. Many of them transported feed and other supplies to the egg producers on the return trip.

Policy varied among the handlers on method of handling the assembly cost. As a rule the cooperative handlers made a direct deduction for assembly against the producer's receipts, while most independent handlers did not. These deductions varied even among different plants of the same handlers. In all cases where contract haulers were used a direct deduction was made against the producer's receipts. These deductions were the basis of the hauler's compensation and varied by territory depending on size of load and distance from the plant. Variations from 20 to 50 cents per case were noted among these haulers.

The large percentage of eggs delivered to plants by producers was a result of direct deductions for assembly. A producer located near the handler's plant is encouraged to deliver his eggs if he feels he can do so at a lower cost than the hauling deduction.

This action invariably left the handler with an adverse selection of small and scattered producers from which to assemble eggs on his own routes. Estimates of assembly costs were higher, in many cases twice as high, as the direct charge made for pickup.

This situation might be avoided by varying the pick-up charge by certain factors such as distance from plant and size of producer.

Comparison of contract haulers and company-operated routes

Contract haulers were used most for assembling eggs from those territories located farthest from the plants although some handlers used them exclusively for egg assembly. Routes of 24 contract haulers averaged 209 miles in length compared with 47 for the 85 company owned routes studied (table 5).

For contract routes the route was covered 1.6 times per week which would indicate a frequency of pickup from once to twice a week on the average. Company operated routes were covered 1.8 times per week indicating a more frequent pick-up than on contract routes.

Because of the larger volume on contract routes the miles traveled per case of eggs picked up was not as much greater than company routes

<table>
<thead>
<tr>
<th>Item</th>
<th>Contract haulers</th>
<th>Company operated routes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of routes</td>
<td>24</td>
<td>85</td>
</tr>
<tr>
<td>Miles traveled per route</td>
<td>209</td>
<td>47</td>
</tr>
<tr>
<td>Miles traveled per route per week</td>
<td>384</td>
<td>83</td>
</tr>
<tr>
<td>Times route mileage covered per week</td>
<td>1.6</td>
<td>1.8</td>
</tr>
<tr>
<td>Cases of eggs picked up per route per week</td>
<td>204</td>
<td>67</td>
</tr>
<tr>
<td>Miles traveled per case of eggs</td>
<td>1.73</td>
<td>1.25</td>
</tr>
<tr>
<td>Assembly cost per case at 20 cents per mile</td>
<td>.34</td>
<td>.25</td>
</tr>
</tbody>
</table>
as might be expected. An average of 1.73 miles per case of eggs was traveled on contract routes compared with 1.25 miles for company operated routes. Assuming a cost of 20 cents per mile to cover operation of a truck, including the driver, the cost of assembly by contract haulers would average 34 cents per case compared with 25 cents for company-operated routes.

It is interesting to note that 17 of 24 contract haulers loaded their trucks one day and delivered the eggs to the plant the following day. Such a practice might lead to considerable loss of quality particularly during the warm summer months. One-half of the trucks used by contract haulers had closed vans and the other half were open. The vans used on 11 of the 85 company-operated routes were open but since many of these were short routes, loss of quality in transit may not be as serious as on the longer contract routes.

Assembly costs for company-operated routes

Detailed information was obtained from 30 handlers about miles traveled and time spent in assembling eggs on 81 company-operated routes. It was not possible to get volume by route so the routes were analyzed by handler. In order to make direct comparison of costs arbitrary rates of $1.00 per hour for labor and 10 cents per truck mile were used.

Assembly costs thus estimated varied from less than 10 cents to more than 60 cents per case among the 30 handlers. Costs for about one-third of the handlers varied in the range from 20 to 29 cents per case.

Practices of these handlers were analyzed to determine their effect on assembly costs. The most efficient third of the handlers were compared with the least efficient third (table 6).

While it is obvious that the practices compared would be interrelated, it can be concluded that assembly costs for the most efficient handlers were only about a third as high as for the least efficient. Those handlers who picked up a large percentage of their volume on their routes and who had large producers concentrated in a rather small area could assemble eggs for as little as one-half cent per dozen. For those handlers with opposite conditions, the cost averaged almost 1½ cents per dozen.

**Table 6. Effect of various practices on the estimated costs of assembling eggs by 10 efficient and 10 inefficient handlers — Utah, 1952**

<table>
<thead>
<tr>
<th>Practice compared</th>
<th>Efficiency of handlers</th>
<th>Average assembly cost, per case</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of receipts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>assembled on routes</td>
<td>(10 least efficient)</td>
<td>17 35</td>
</tr>
<tr>
<td></td>
<td>(10 most efficient)</td>
<td>88 18</td>
</tr>
<tr>
<td>Cases picked up per</td>
<td></td>
<td></td>
</tr>
<tr>
<td>week per route</td>
<td>(10 least efficient)</td>
<td>19 52</td>
</tr>
<tr>
<td></td>
<td>(10 most efficient)</td>
<td>144 17</td>
</tr>
<tr>
<td>Miles traveled per</td>
<td></td>
<td></td>
</tr>
<tr>
<td>case</td>
<td>(10 least efficient)</td>
<td>2.4 47</td>
</tr>
<tr>
<td></td>
<td>(10 most efficient)</td>
<td>0.6 15</td>
</tr>
</tbody>
</table>
Comparison of cooperative and independent handlers

When cooperative and independent handlers were compared, the cooperatives had about a third more producers but the average volume of eggs per grower was smaller (table 7).

Candling and Packaging

Eggs are candled after they have been assembled at the handler's plant. With the exception of eggs purchased by one or two small handlers, the producers in Utah are paid for eggs on a basis of grade. The eggs in each grade are determined by candlers and payment is made accordingly. They are graded according to state standards and conform in general with federal specifications. Most of the eggs sold in consumer cartons in the intermountain market fall in the following size and grade categories; AA large, A large, A medium, A small, and B large. Only small numbers of eggs in other size and grade categories are found in consumer cartons.

Most of the eggs were candled either the same or the day following receipt at the plant. Ten of 34 handlers had mechanically refrigerated rooms for holding eggs before and after candling. These rooms were held at temperatures ranging from 40 to 50 degrees Fahrenheit. All of the remaining handlers had basement rooms, most of which were equipped with mechanical humidifiers or some other method for controlling the humidity. The summer temperatures in these rooms varied from about 60 to 70 degrees Fahrenheit.

Smaller handlers who were supplying trade-marked eggs to retail stores candled the eggs directly into consumer cartons. Larger handlers who sold both to wholesalers and retailers candled eggs into cases which held 30 dozen. Eggs from these plants which were sold to retailers were later placed in consumer cartons and those shipped to distant markets or sold to wholesalers were sold in the case.

No attempt was made to determine the costs of candling and cartoning eggs but the practice was almost universal among handlers to charge three cents more for cartoned than for loose eggs. Most consumer cartons cost from 2½ to 3 cents each depending on type and quality purchased.
Wholesaling Eggs

After eggs are candled and graded, they are delivered to retail stores, hotels, and restaurants. This function of wholesaling was performed by almost all of the egg handlers surveyed for at least part of the eggs handled although one or two sold almost exclusively to other wholesalers. Most of the handlers, both cooperative and independent, had their trade-marked cartons in which eggs were sold through stores in the local market. Larger handlers sold their eggs in the entire intermountain area. The small handlers sold only in one or in some cases two city markets within the state. Most of the eggs sold to hotels, restaurants, and other institutional users were sold by case lot or uncartoned and some were delivered to retail stores without being cartoned. Retailers either cartoned these eggs at the store prior to sale or sold them in paper bags.

Safeway food chain has a subsidiary for candling, cartoning, and delivering eggs to their stores in their own cartons. While they do not deal directly with egg producers for supplies, they accept direct delivery from cooperative assembly plants. Direct handling in this manner avoids the necessity of double handling and candling of eggs.

Most wholesalers delivered eggs to retail stores, hotels, and restaurants two or three times per week although some delivered as ordered by the buyer.

Balancing Supply of Eggs With Demand

Since Utah produces eggs in excess of requirements for local consumption, the balancing of supply with demand on an industry basis would not appear difficult. The intermountain market could be supplied first and the remainder shipped to distant markets. From the standpoint of the individual handler, however, the problem is not so simple. Only 2 or 3 handlers are large enough to maintain outlets for selling in distant markets. For this reason the smaller handlers have the problem of keeping their supplies in line with demand. The problem arises largely from the difference in the seasonal pattern of production and consumption. In Utah egg production is seasonally high in the spring and low in the autumn months. While consumption is made to conform to the same general pattern through changes in relative price, the variations are not as great. For the period 1947-1951 Utah egg production in the spring months was about 22 percent above the yearly average and during the autumn months it fell 20 percent below the yearly average.3

Storage of eggs is used by handlers to balance supply and demand seasonally. This is particularly true on a short time basis and for small irregular fluctuations. Although most handlers reported selling eggs within a week after they were received at the plant, there is no doubt that some short-time storage was practiced by most handlers.

Many Utah handlers reported that they did not store eggs on a long-term basis. For the year studied less than 4 percent of the yearly receipts were stored.

were placed in storage by all handlers. Two of the handlers stored 10 percent of their receipts and one 8½ percent. All others stored less than 5 percent. The in-storage period was from February to June and the out-of-storage movement from August to November. Some handlers reported that in past years they had engaged extensively in storage operations but that it was becoming less profitable. This can be accounted for by the gradual reduction in the seasonal fluctuations in production from spring to fall with passing time which is caused largely by seasonal adjustments in production.

Inter-dealer sales were also used to balance supply and demand as previously shown (fig. 1) such sales represented about 2.9 percent of total sales in 1952. The cooperative marketing organizations, which did the bulk of the exporting, sold eggs to the independent handlers when their receipts from producers were short.

Small handlers as a rule contracted with producers for a volume of eggs to supply their outlets during the flush season of production. They engaged in short time storage to balance supply and demand in the short run, and bought eggs from other dealers to meet their requirements during the period of low production. A number of producers sold eggs to two handlers simultaneously which was a means of adjusting supply to demand by varying the quantity sold to each handler.

Retailing Eggs

The last function of marketing before the consumer gets the eggs is that of retailing. As previously shown, quite a volume of eggs is sold by producers direct to the consumer without going through the retail store. Aside from data on retail margins and prices shown later, data were not obtained in this study on retailing. A study is currently in progress which is concerned with merchandising practices for marketing eggs through retail stores.

Price Margins In Egg Marketing

The total margin between prices Utah farmers received for eggs and prices the consumer paid varied considerably. For the greatest number of purchases representing 36 percent of the total, the marketing margin was between 17.5 and 22.4 cents per dozen, and almost 90 percent fell in the range 12.5 to 27.4 cents per dozen (fig. 3).

Average price by size and grade at various levels of marketing and the margins between these levels are shown in table 8. The sizes and grades shown account for a large percentage of the graded eggs sold through retail stores in the intermountain market. For the four seasons covered in this study consumers paid 3.2 cents more for large grade AA eggs than for large A eggs and 3.7 cents premium for large A over medium A eggs. They paid a similar price for large grade B eggs as for medium grade A and 9.6 cents less for small eggs than medium eggs both of A grade. These same differences were largely reflected in the prices paid to producers.
Fig. 3. Frequency distribution of consumer egg purchases according to price spread from producer to consumer

There was a striking similarity in absolute marketing margin for the various grades and sizes of eggs, varying only from 19.2 to 20.4 cents. The variation was slightly greater when the margins at various stages of marketing were compared. The absolute margin from producer to handler varied from 10.2 to 12.8 and from handler to consumer it varied from 7.6 to 9.2 cents per dozen among the various sizes and grades.

With the absolute margin fairly constant the margin in percent of con-
Table 8. Prices and marketing margins at different stages of distribution for various sizes and grades of eggs, 2,061 consumer egg purchases 1953-1954

<table>
<thead>
<tr>
<th></th>
<th>AA large</th>
<th>A large</th>
<th>A med.</th>
<th>A small</th>
<th>B large</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price (cents per dozen)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Received by producer</td>
<td>47.8</td>
<td>44.9</td>
<td>40.2</td>
<td>31.8</td>
<td>40.1</td>
</tr>
<tr>
<td>Received by handler</td>
<td>59.2</td>
<td>55.1</td>
<td>53.0</td>
<td>42.9</td>
<td>51.7</td>
</tr>
<tr>
<td>Paid by consumer</td>
<td>67.5</td>
<td>64.3</td>
<td>60.6</td>
<td>51.0</td>
<td>60.1</td>
</tr>
<tr>
<td>Margin (cents per dozen)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Producer to handler</td>
<td>11.4</td>
<td>10.2</td>
<td>12.8</td>
<td>11.1</td>
<td>11.6</td>
</tr>
<tr>
<td>Handler to consumer</td>
<td>8.3</td>
<td>9.2</td>
<td>7.6</td>
<td>8.1</td>
<td>8.4</td>
</tr>
<tr>
<td>Producer to consumer</td>
<td>19.7</td>
<td>19.4</td>
<td>20.4</td>
<td>19.2</td>
<td>20.0</td>
</tr>
<tr>
<td>Margin (percent of consumer price)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Producer to handler</td>
<td>16.9</td>
<td>15.9</td>
<td>21.1</td>
<td>21.8</td>
<td>19.3</td>
</tr>
<tr>
<td>Handler to consumer</td>
<td>12.3</td>
<td>14.3</td>
<td>12.5</td>
<td>15.9</td>
<td>14.0</td>
</tr>
<tr>
<td>Producer to consumer</td>
<td>29.2</td>
<td>30.2</td>
<td>33.7</td>
<td>37.7</td>
<td>33.3</td>
</tr>
</tbody>
</table>

Table 9. Month of the year related to marketing margin from producer to consumer for various sizes and grades of eggs.

<table>
<thead>
<tr>
<th>Month</th>
<th>AA large</th>
<th>A large</th>
<th>A medium</th>
<th>A small</th>
<th>B large</th>
<th>All Sizes and Grades</th>
</tr>
</thead>
<tbody>
<tr>
<td>February</td>
<td>20</td>
<td>21</td>
<td>19</td>
<td>20</td>
<td>19</td>
<td>20</td>
</tr>
<tr>
<td>May</td>
<td>18</td>
<td>17</td>
<td>19</td>
<td>21</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>August</td>
<td>20</td>
<td>19</td>
<td>19</td>
<td>21</td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td>November</td>
<td>24</td>
<td>21</td>
<td>22</td>
<td>20</td>
<td>23</td>
<td>22</td>
</tr>
</tbody>
</table>

The consumer price varied inversely with the level of price. The margin for large AA eggs was 29.2 percent of the consumer's price but represented 37.7 percent of the price of small grade A eggs.

The absolute marketing margin for various sizes and grades of eggs varied somewhat among the four months studied. For all grades and sizes combined the margin was lowest in May and highest in November; the difference was four cents per dozen (table 9). Similar variation existed for the different grades and sizes compared.

Although the tendency was for the margin to be directly related to the price of eggs, the relation was not entirely consistent. August was the month of highest prices of the four months studied but the greatest margin was found in November.

The margin for retailing eggs was consistently one to two cents less for eggs purchased from super markets than for those purchased from neighborhood stores. This lower margin was owing to a slightly lower consumer price for eggs purchased at super markets.

Although there were variations in total marketing margins among the various egg handlers, these variations were not consistent for the different sizes and grades of eggs.
Because eggs are a perishable product the problem of time lag from producer to consumer and methods of handling eggs are of paramount importance. Data were obtained on time required to get 1247 dozen eggs from producer to consumer.

Variation in Time Required

Twenty-five percent of the eggs required less than one week to get through the marketing channel, 79 percent required less than 2 weeks, 95 percent less than three weeks. Four percent were in the marketing channel three to four weeks and one percent more than four weeks (fig. 4). While the percentage of eggs requiring a long time to get through the marketing channel was small, the effect on consumer satisfaction could be great if these eggs were not held under proper conditions. It should be pointed out that if proper conditions of temperature and humidity are maintained that eggs can be held for a considerable length of time without excessive loss of quality.

On the average 10.5 days were required to get eggs from hen to consumer. About two-thirds of the total time elapsed from the time the eggs were candled until they were purchased by consumers (fig. 5). By methods used in this study the relative proportions of this time spent in retail stores and in handlers plants could not be ascertained but most of it would be in retail stores. The eggs were held approximately equal amounts of time on the farm prior to pick-up or delivery and in handlers' plants prior to candling. At each of these stages the average amount of time was just under two days.

Factors Associated With Time Required to Market Eggs

Season

On an average about 4 days or 45 percent more time was required to get eggs from producer to consumer in February than in November (fig. 6). This difference was probably a result of the seasonal supply pattern. In the spring months when in heavy supply there is a tendency for eggs to accumulate in the handlers' plants and perhaps even in retail stores. The reverse is true when eggs are in short supply in the fall of the year. The time eggs were held on the farm was similar for the different months.

Type of Outlet

Eggs purchased by consumers from super markets required an aver-
Fig. 5. About ten days are required to market eggs from hen to consumer, seven of which are between candling and purchase by the consumer.

There were significant differences in time required to get eggs from the hen to the consumer by the various egg handlers. Two handlers in particular were careful to pick up eggs from the farm daily and service retail stores more frequently in order to move the eggs through the store in a shorter time.

Egg handler

There were significant differences in time required to get eggs from the hen to the consumer by the various egg handlers. Two handlers in particular were careful to pick up eggs from the farm daily and service retail stores more frequently in order
to insure egg freshness. Time required for these two was about 5 days from nest to consumer or about half as long as the average of all eggs. Seven handlers were near the average in time required and five required from two to six days longer than average. Eggs from one handler took an average of 31 days from nest to consumer but the number of returns from this plant was not large.

**Consumer Satisfaction With Eggs**

An attempt was made to get an indication of consumer satisfaction with the eggs they purchased. A couple of lines labeled remarks were provided on the questionnaire. It was thought that unsolicited response of this kind would be more spontaneous than if specific questions were asked concerning quality or other factors. These remarks were classified and are presented in table 10.

The remarks space was left blank by 57.5 percent of the respondents. It was assumed that these consumers were at least passively satisfied with the eggs purchased since they did not care to register either a complaint or a commendation. Comments made by the other 42.5 percent of the consumers were classified as to whether they were favorable or unfavorable and also according to the specific characteristic about which the comment was made.

Of the total returns 26.4 percent made favorable comments and 11.8 percent made unfavorable comments. Freshness was most frequently referred to by the consumers. Six percent of all consumers made favorable comment with respect to freshness and 2.9 percent unfavorable. Of the factors relating to size and quality 7.9 percent of the consumers made favorable remarks and a slightly larger percentage made unfavorable comment.

Comments on price and brand were the principal ones dealing with characteristics other than size or quality. Almost 6 percent of the consumers made favorable comments about the brand they purchased. As would be expected few unfavorable
Table 10. Spontaneous remarks concerning eggs purchased by consumers classified by various factors — 2,061 Utah consumers 1953-1954

<table>
<thead>
<tr>
<th>Factor</th>
<th>No remarks</th>
<th>Favorable remarks</th>
<th>Unfavorable remarks</th>
<th>Other and combination</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>percent of total response</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>57.5</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Freshness</td>
<td>...</td>
<td>6.0</td>
<td>2.9</td>
<td>0.5</td>
</tr>
<tr>
<td>Size</td>
<td>...</td>
<td>1.0</td>
<td>2.1</td>
<td>0.5</td>
</tr>
<tr>
<td>Shell</td>
<td>...</td>
<td>0.5</td>
<td>1.7</td>
<td>0.1</td>
</tr>
<tr>
<td>Yolk color</td>
<td>...</td>
<td>0.3</td>
<td>0.4</td>
<td>0.1</td>
</tr>
<tr>
<td>Blood and meat spots</td>
<td>...</td>
<td>0.1</td>
<td>1.5</td>
<td>0.1</td>
</tr>
<tr>
<td>Total size and quality factors</td>
<td>...</td>
<td>7.9</td>
<td>8.6</td>
<td>0.8</td>
</tr>
<tr>
<td>Price of eggs</td>
<td>...</td>
<td>0.9</td>
<td>2.6</td>
<td>0.4</td>
</tr>
<tr>
<td>Brand</td>
<td>...</td>
<td>5.7</td>
<td>0.2</td>
<td>...</td>
</tr>
<tr>
<td>Other and combinations</td>
<td>...</td>
<td>11.9</td>
<td>0.4</td>
<td>2.9</td>
</tr>
<tr>
<td>Total</td>
<td>57.5</td>
<td>26.4</td>
<td>11.8</td>
<td>4.1</td>
</tr>
</tbody>
</table>

comments were made against any brand. Complaints about price of eggs were registered by 2.6 percent of the consumers.

Eggs from various handlers were compared as to percentage of favorable and unfavorable comments and considerable variation was found.

Refrigeration Of Eggs In The Store

One practice which leads to loss of egg quality in retail stores is display in a non-refrigerated place. Consumers were asked whether or not the eggs purchased were displayed in refrigerated cases. Of total purchases 82 percent were displayed under refrigeration and 18 percent were not (table 11). Twenty-five percent of the eggs were not refrigerated in neighborhood stores as compared with 12 percent of those purchased

Table 11. Egg purchases by Utah consumers related to place of purchase and refrigeration of consumer display

<table>
<thead>
<tr>
<th>Place of purchase</th>
<th>Percent of eggs purchased</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From refrigerated display</td>
</tr>
<tr>
<td>Neighborhood store</td>
<td>75</td>
</tr>
<tr>
<td>Super market</td>
<td>88</td>
</tr>
<tr>
<td>Total</td>
<td>82</td>
</tr>
</tbody>
</table>

23
from supermarkets. Holding eggs in retail stores without refrigeration for periods of a week or more could result in considerable loss in quality. It should be emphasized that refrigeration of eggs in retail stores as measured in this study pertained to consumer display only and not to bulk storage. Information concerning bulk storage in retail stores would have to be obtained from other sources.