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The relationship of local egg marketing programs to the demand for eggs

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The Relationship of

Local Egg Marketing Programs

to the

Demand For Eggs



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The authors are also very appreciative of assistance given by home demonstration agents, merchants, and homemakers in the counties surveyed.

ON THE COVER: Government inspector at work in an egg grading plant.

THE RELATIONSHIP OF LOCAL EGG MARKETING PROGRAMS TO THE DEMAND FOR EGGS

BY DOROTHY DICKINS AND ALVIRDA F. JOHNSTON

Receipts from the sale of eggs is an important source of income for Mississippi farmers. Production of eggs is increasing in Mississippi, but per capita consumption in the United States is falling. High consumption of this nutritious food is important to the family as well as to the farmer. Better market facilities and better eggs offer possibilities for increasing egg consumption.

With the purpose of raising the quality of the eggs sold in Mississippi, of instructing producers and distributors in methods of keeping the quality high, and of increasing egg production in the state, laws were passed in 1956 setting standards and providing for inspectors with regulatory and educational duties. Inspection service began in 1957.

According to an egg survey made by the Mississippi Department of Agriculture and Commerce in April-June, 1961, at the time this study was started, there were 257 independent producers or agencies with 523 additional contract growers involved with a total of 3,165,823 hens and pullets of laying age on hand. There were one or more commercial egg producers in every county of the State.

It is the purpose of this study to determine (1) **from representative families:** (a) sources of purchase of eggs; (b) grades, prices, amounts, and uses of purchased eggs; (c) beliefs and attitudes regarding eggs and increased use; (d) sources and kinds of information used in purchasing eggs; and (2) **from representative merchants:** (a) prices and volume of different types of eggs handled; (b) method of handling; and (c) changes noticed since inspection service has been in operation.

An analysis of data from these interviews with homemakers and merchants would serve as a basis for evaluation of local egg marketing programs such as are now in operation. It would likewise serve as a basis for planning programs with farmers and consumers.

Scope and Methods

Data were obtained during the winter of 1961-62 and the spring of 1962¹ by personal interview with a representative sample of approximately 125 families in each of ten towns (Marks, Batesville, Picayune, Ellisville, Waynesboro, Lexington, Belzoni, New Albany, Booneville, and Bay St. Louis²; and of approximately 125 families in each of four villages (Eupora, Ackerman, Calhoun City, and Bruce). Since town and village maps were not available, samples in each town and village were taken by random selection of household users of electricity, except in Booneville. Here the sample was taken from a list of families with water meters.

Only families whose members usually had one meal per day in the home together were included. Families who usually ate one meal at home together but who happened to be away from home the week preceding the interview were revisited later to get a record for a typical period. Institutional families (those with 5 or more boarders) and families of one person eating at home alone were not included. These families are relatively unimportant from the consumer market viewpoint.

¹A few families were interviewed in November 1961 and in June 1962.

²From 2500 to 7800 population.

There were 2033 families in the sample. One hundred and sixty-five of these were ineligible and 88 could not be contacted or were unable to participate. Only 24 refused to cooperate. Of the 1756 families with whom schedules were completed, 1284 were white families, 471 Negro families and one a Chinese family. Twelve hundred and fifty-four of the families lived in towns and 502 lived in villages. Seven hundred and fifty families were interviewed in winter and 1006 in spring.

Originally it was planned to select for the study towns where USDA inspectors' records showed a relatively high as well as a relatively low percentage of eggs from local egg marketing programs. However, after careful consideration it was decided to limit the study to small towns and villages where more change had perhaps taken place.

The inspectors' records on violations of producers could not be used as a measure of rejected eggs since education had to precede strict enforcement. Often violations by local or state producers are handled by advising or reprimanding the producers rather than by stopping sales. For example, if the inspector found dirty eggs labeled as grade A, he would ask the producer to pick up the eggs. According to present policy, eighty percent of the inspector's time is allotted to public relations (i.e. education with producers and merchants). A larger percentage of time was so used when the program began.

The Families

Homemakers were asked to check the income group (before deduction) which most nearly fitted that of their family during the past year. Income was defined as the sum of gross amounts in wages, salaries, bonuses, and commissions of all family members, receipts from farm or business operation minus farm or business expenses, and other income such as pensions, veterans payments, unem-

ployment insurance, net from rental property, interest from bonds, etc. About one half the families had incomes of less than \$4,000; about one half, \$4,000 and over, as is shown.

| Income past year | Percentage of families |
|-------------------|------------------------|
| Less than \$2,000 | 27 |
| \$2,000 — \$3,999 | 23 |
| \$4,000 — \$5,999 | 26 |
| \$6,000 and over | 19 |

Three percent of the families had lived less than one year in the town or village in which they resided. Thirty-one percent had lived there 1 — 9 years; 38 percent, 10 — 24 years; 28 percent, 25 years and over. This means that the majority of families had resided in the town or village before egg marketing programs were in operation.

Family size was estimated on the basis of the number of meals served from the home supply during the past week, 21 meals being counted as one member. Figured on this basis, 8 percent of the families had less than 2 members; 57 percent, 2 — 3.99 members; 26 percent 4 — 5.99 members; and 9 percent, 6 members or more.

During the week preceding the interview families had spent the following amounts for food per person per meal to be used at home and for packing lunches.

| Amount spent for food per person per meal | Percent of families |
|---|---------------------|
| Less than 10¢ | 6 |
| 10¢ - 19¢ | 26 |
| 20¢ - 29¢ | 33 |
| 30¢ - 39¢ | 20 |
| 40¢ - 49¢ | 10 |
| 50¢ - 59¢ | 3 |
| 60¢ or more | 2 |

There was a highly significant relationship between expenditures for food and family income. Eighty percent of the families spending less than 10c per person per meal had incomes of less than \$2,000.³ Fifty-four percent of the families spending 60c or more per person per meal had incomes of \$6,000 and over.

³Included families getting practically all foods as gifts.

The most typical type of family was one of adults only (36 percent). Next in importance was a family with adults and all children 13 years and under (35 percent). In 12 percent of the families all children were from 6 — 19 years; in 12 percent all were 14 years and over. In 5 percent of the families the ages of children ranged from pre-school through 19 years.

Sixty-five percent of the homemakers spent no time away from home each week because of work. Twenty-one percent spent 40 hours or more at work including travel time and 14 percent spent 39 hours or less. Ages of homemakers were fairly evenly distributed among all age groups, as is shown:

| Age Group | Percentage |
|------------------|------------|
| 29 years & under | 17 |
| 30 - 39 years | 23 |
| 40 - 49 years | 24 |
| 50 - 59 years | 18 |
| 60 years & over | 18 |

Fifty-one percent of the homemakers had completed high school or had one or more years in college; thirty percent had finished high school; and 21 percent had one or more years of college training. Twenty-one percent had finished from 5 — 8 grades and the same percentage 9 — 11 grades. Only 6 percent had less than 5 grades of schooling. One percent had attended ungraded schools, or gave no report on schooling.

Grocery Stores

Data concerning eggs were obtained by interviews with owners or managers of 171 grocery stores, from 41 in 4 villages and from 130 in the 10 towns.

Sixty-two percent of the village merchants and 52 percent of the town merchants said they sold more eggs in the fall and winter than in the spring and summer. Only 5 percent of the village merchants and 9 percent of the town merchants stated spring and summer as the season most eggs were sold. Some of these were mentioned in connection with

summer tourist trade. Greater sale of eggs during fall and winter is no doubt related to the fact that this is the season home flocks are not laying. Thirteen percent of the village merchants and 23 percent of the town merchants mentioned holidays in connection with the time of year they sell the most eggs. The holidays frequently referred to in connection with eggs were Easter and Christmas.

When asked at what time of the year they received the most customer complaints about eggs, 64 percent of the village merchants and 80 percent of the town merchants replied, "Don't receive complaints". Thirty-two percent of the merchants in villages and 15 percent of those in towns replied, "Spring and summer." The remaining answered, "No particular time."

About one half of both village and town merchants stated that in the past two years they had received fewer complaints about eggs than they received before that time. Twenty percent of the village and 41 percent of the town merchants stated they saw no difference. The others said they had been in business a short time only, or gave no reply.

One half of the merchants, both village and town, made favorable or very favorable comments about the eggs available since inspection. Some of these comments were "Egg inspection has cut complaints to none"; "Since egg inspection I have had no complaints"; "Good thing ungraded country eggs are almost of the past"; "Used to have lots of trouble with country eggs, no desire to go back to old way of buying"; "The merchant and customer are both getting a good deal from the egg program"; "Too much trouble before egg program"; "In summer sometimes found 5 or 6 bad eggs in a dozen"; "Remember when half of them would be rotten. I stopped buying them when graded eggs came in"; "Couldn't find good quality eggs before egg program."

Seventy-five of the grocery stores were visited in winter; 96 in the spring. Little or no difference, however, was found in frequency of deliveries by those interviewed at different seasons. Thirty-one percent of the 171 had egg deliveries twice weekly, 26 percent once weekly, 25 percent as needed or when called, and 18 percent 3 or more times a week.

Ninety-five of the 171 groceries kept all or part of their eggs refrigerated. These eggs were most often refrigerated at temperatures of 35° — 40° F. (temperatures were taken by Mrs. Johnston who visited each grocery store.⁴) At both periods of interview about two-thirds of the merchants had 30 dozen eggs or less on hand.

The time of the last delivery of eggs for about one half of the stores (49 percent in stores visited in winter; 57 percent in spring) was "today" or "yesterday". The time of the last delivery of eggs was "over 3 days ago" for only

⁴In visits to grocery stores Mrs. Johnston always carried along a thermometer which she used when the store refrigerator had none.

17 percent of the merchants contacted in spring and 29 percent contacted in winter.

Kind of Eggs Handled in 171 Groceries

Table 1 shows properties of grades AA, A, and B eggs according to Mississippi shell egg law based on USDA grades.

It was found that the sale of ungraded eggs (those not classified into grades) was more common in villages than in towns. In fact, there was a highly significant relationship between kind of eggs handled and location of store (Table 2).

At the time of the study only 14 of the 171 stores had eggs on hand that had been shipped in from out of the state. However, 16 stores in towns and two in villages reported they used such eggs.

Table 3 shows type of producers from whom village and town merchants purchased eggs.

Local egg marketing programs by the State Department of Agriculture have as their objective improving the quality of eggs and in turn increasing egg consumption. They work with commercial pro-

Table 1. Properties of grades AA, A, and B eggs.*

| Quality Factor | AA Quality | A Quality | B Quality |
|----------------|--|--|---|
| Shell | Clean, unbroken, practically normal | Clean, unbroken, practically normal | Slight soiled areas, unbroken, may be slightly abnormal |
| Air Cell | 1/8 inch or less in depth, practically regular | 2/8 inch or less in depth, practically regular, clear | 3/8 inch or less in depth, may show unlimited movement, and may be free but not bubbly |
| White | Clear, firm | May be reasonably firm | Clear, may be slightly weak |
| Yolk | Well centered outline, slightly defined, free from defects | May be fairly well centered, outline may be fairly well defined, practically free from defects | May be off center, outline may be well defined, may be slightly enlarged and flattened, definite but not serious defect |

*No grade C eggs are sold in stores of the state.

Table 2. Grades of eggs on hand at time of survey in stores of villages and towns.

| Grade of eggs on hand | Village Groceries | Town Groceries* |
|-----------------------|-------------------|-----------------|
| | Percent | Percent |
| Grade A only | 27 | 59 |
| Grade A & ungraded | 39 | 18 |
| Ungraded only | 34 | 21 |
| Total No. | 41 | 130 |

*One store sold both grades A and B and two stores gave no report. In other words eggs handled were either Grade A or ungraded eggs.

Table 3. Type of producer from whom village and town merchants purchased eggs.

| Type producer | Village Groceries | Town Groceries |
|---|-------------------|----------------|
| | Percent | Percent |
| Mississippi commercial | 34 | 64 |
| Mississippi commercial & hatchery | 0 | 2 |
| Mississippi commercial, hatchery & local farm | 0 | 1 |
| Mississippi commercial & local farm | 39 | 12 |
| Hatchery only | 0 | 2 |
| Shipped commercial only | 0 | 6 |
| Shipped commercial & Mississippi commercial | 0 | 4 |
| Local farm only | 27 | 8 |
| Hatchery and local farm | 0 | 1 |
| Total No. | 41 | 130 |

ducers showing them how to grade and size their eggs. They check eggs in stores to see if product is correctly labeled as to grade. Not all commercial producers grade eggs. In other words, some of these are sold as ungraded eggs, as are hatchery eggs.

Merchants in towns depend much less on eggs from the local farm, i.e. "bucket eggs", and more often sell graded eggs. This may in large part be related to the fact that many of these small local farm owners are regular customers as well as friends of the grocer. The grocery owner buys the eggs to promote and continue good will.

Table 4 shows amount of eggs sold per week in grocery stores. As will be noted, relatively more town grocers sold over 150 dozen eggs each week. In fact,

Table 4. Amount of eggs sold weekly in village and town grocery stores.

| Amount sold weekly | Village Groceries | Town Groceries |
|--------------------|-------------------|----------------|
| | Percent | Percent |
| 30 dozen or less | 29 | 30 |
| 30 - 60 dozen | 22 | 19 |
| 61 - 150 dozen | 37 | 18 |
| 151 dozen and over | 12 | 33 |
| Total No. | 41 | 130 |

there was a significant relationship between the amount sold and location of store.

A comparison of the practice of selling eggs in cartons in village and town groceries is shown in Table 5.

About one fifth of both village and town groceries using cartons had all or part of the cartons dated.

All types of eggs, i.e. grade A large, ungraded mixed, grade A medium, etc., usually sold for less than 50 cents a dozen in spring and for more than 50 cents a dozen in winter.

The sale of ungraded eggs was much more common in spring (Table 6). In fact, there was a highly significant relationship between kind of eggs sold and season. Many more of the ungraded eggs were sold in spring when local farmers'

Table 5. A comparison of the practice of selling eggs in cartons in village and town groceries.

| Practice | Village Groceries | Town Groceries |
|-------------------------|-------------------|----------------|
| | Percent | Percent |
| All eggs in cartons | 32 | 60 |
| No eggs in cartons | 29 | 25 |
| Part of eggs in cartons | 39 | 15 |
| Total No. | 41 | 130 |

Table 6. Grades of eggs on hand in groceries at time of survey, winter and spring.

| Grade of eggs on hand | In winter* | In spring* |
|-----------------------|------------|------------|
| | Percent | Percent |
| Grade A only | 69 | 37 |
| Grade A & ungraded | 14 | 31 |
| Ungraded only | 16 | 30 |
| Total No. | 75 | 96 |

*One sold both grade A and B.

**Two gave no report. eggs were available.

Table 7 shows that more local farm eggs are sold in spring than in winter. This is the season in which they are available in large quantities. In winter when there is a limited supply, merchants depend more on commercial producers.

Homemakers interviewed in the 10 towns and 4 villages were asked; "If you ever buy eggs, what do you think of the quality and kind of eggs offered for sale in this town or village?" Ninety percent of the women interviewed said the eggs in this town are good, o.k., satisfactory. In other words, most homemakers were pleased. Only one in ten gave qualified replies or indicated dissatisfaction. Typical of these replies were: good, if graded; good, if from a certain producer; some good, some poor; good, if brown or country. There was a highly significant relationship between quality of eggs sold and locations of stores.⁵

Importance of Eggs as a Food

In presenting the study the homemaker was told: "We are trying to learn ⁵By location is meant towns and villages in which study was made.

about foods used by families, what they like, and reasons for their likes. The information will help food producers and processors improve their products for all of us." Eggs were not mentioned in the first few pages of the schedule.

One of the questions asked in this part of the schedule was: "What foods should your family have every day?" If the interviewee did not mention eggs the interviewer was instructed to ask the next question: "What other protein foods should your family have each day?"

Sixty-two percent of the homemakers named eggs as a food the family should have every day. The place given eggs in this listing was:

| Eggs | Percent |
|-----------------|---------|
| Named | 62 |
| First | 9 |
| Second | 13 |
| Third | 14 |
| Fourth or later | 26 |
| Not named | 38 |

One half of those not naming eggs as a food the family should have each day (19 percent) named them as a protein food the family should have each day. Sixteen percent named them first, 2 percent second, and 1 percent third, fourth, or fifth. This means that about four out of every five homemakers consider that eggs are a food or a protein food the family should have each day.

Factors related to naming eggs as a food or protein food the family should have each day were place of residence (town, village), race, education of homemaker, and income of family the past

Table 7. Type of producers from whom merchants buy eggs, by season.

| Type of producer | In winter | In Spring |
|---|-----------|-----------|
| | Percent | Percent |
| Mississippi commercial | 78 | 41 |
| Mississippi commercial & hatchery | 1 | 2 |
| Mississippi Commercial, hatchery & local farm | 1 | 0 |
| Mississippi commercial & local farm | 8 | 26 |
| Hatchery only | 0 | 2 |
| Shipped commercial only | 1 | 7 |
| Shipped commercial & Mississippi commercial | 4 | 3 |
| Local farm only | 7 | 18 |
| Hatchery & local farm | 0 | 1 |
| Total No. | 75 | 96 |

year.⁶ More town than village homemakers, and more white than Negro women said "eggs." Homemakers with more than eighth grade schooling named eggs more than did those with less schooling. There was, however, no difference between replies of high school graduates and those with college training.

Homemakers from families with higher income more often named eggs as a food or protein food their family should have each day, as is shown in Table 8.

Serving Eggs

Special Dishes. Every homemaker was asked: "Are there any members of the family such as elderly people or persons on special diets who receive eggs or egg dishes prepared especially for them and not served to the other members of the family? If yes, tell what dishes are served to them. If yes, tell why."

One hundred and twenty-seven of the 1756 homemakers stated there were people in the family who had egg dishes especially prepared for them. About two-thirds (64 percent) mentioned soft cooked or soft boiled eggs. Other ways of preparation mentioned were poached, milk shake, egg nog, egg yolk, raw eggs, whites only, baked or boiled custard.

Only one of the factors examined — age of homemaker — was related to preparation of these special dishes. Homemakers under 30 years of age and 60 years and over more often reported persons receiving eggs or egg dishes especially prepared for them and not served to other members of the family.

⁶Relationship of all these factors and naming eggs was highly significant according to chi-square tests.

Table 8. Homemakers from families with less than \$2,000 income and with \$6,000 and over income, classified by whether named eggs as a food or a protein food their family should have each day.

| Place given eggs | Income of | Income of |
|---|-------------------|------------------|
| | Less than \$2,000 | \$6,000 and over |
| | Percent | Percent |
| Named eggs as a food needed every day | 60 | 63 |
| Named eggs as a protein food needed every day | 14 | 19 |
| Did not name eggs | 26 | 18 |
| No. families | 480 | 339 |

Some of the reasons given for serving egg dishes to individuals in the family and not served to other members were: bad stomach; diabetic, can't be cooked in grease; doctor's orders; children shouldn't eat fried eggs; boiled eggs good for small children; small son needs to eat soft boiled eggs; have ulcers; reducing; heart trouble.

All reasons given except two involved health. These two reasons involved personal likes or dislikes of the individual.

Eggs For Breakfast. Homemakers were asked about main dish served their family at breakfast each day during the past week. When eggs were mentioned they were asked how these were prepared. Main dishes served for breakfast by the 1756 families during the past week were as follows:

| Main dishes | Percent* |
|---|----------|
| Meat (all kinds) and eggs | 40 |
| Eggs only | 28 |
| Bread, grits, rice, pancakes | 11 |
| Cereal (with milk) | 9 |
| Meat only (all kinds) | 5 |
| Other protein combinations (with or without eggs) | 3 |
| Drink only** or nothing | 3 |

*Less than 1% served as main dish: dried eggs, cheese or cheese toast, or fruit or fruit juice only. These three equalled about 1%.

**Coffee, tea.

Eggs might be classified as the main breakfast food of the families surveyed. There was no day of the week on which eggs were served more than on any other. They had been served by about 1200 of the 1756 families each morning during the past week.

There was a highly significant relationship between serving eggs for breakfast and race, season, education and age

of homemaker, and family income.⁷ The relationship between whether eggs were served at breakfast and whether homemakers had work away from home was significant at the 5 percent level, with employed homemakers serving more.

White families, families interviewed in the spring, families in which the homemaker was middle-aged (40 — 59 years) and had a high school education or more, and high income families more often reported use of eggs at breakfast than did other families.

At the 8575 breakfast meals in which eggs were served, the eggs were cooked as follows:

| Method of cooking | Percent |
|----------------------------|---------|
| Scrambled | 44 |
| Fried | 40 |
| Poached | 4 |
| Soft boiled or soft cooked | 3 |
| All other | 9 |

There was a highly significant relationship between method of cooking eggs and education of homemaker, place of residence, race, and size of family. Village families, Negro families, families of 6 or more members and families with homemakers having 8th grade or less schooling more often reported having scrambled rather than fried eggs. This may be related to the fact that one can make scrambled eggs go further than fried eggs. In other words, one would fry 4 eggs, one for each family member, but might scramble 3 eggs.

Eggs At Noon Meal. Most of the families in this study had their main meal at noon; that is, they followed the traditional Southern small town or village pattern. However, there were a few who ate lunch at noon. Only 241 of the 1756 families served eggs at the noon meal during the week preceding the interview. The methods of preparing these eggs were as follows:

| Method of Preparation | Percent |
|---|---------|
| Deviled, hard cooked, stuffed | 60 |
| Scrambled | 20 |
| Poached | 3 |
| Sandwiches | 4 |
| Eggs and meat | 2 |
| Fried | 1 |
| All other, including those naming more than one | 10 |

Only three of the 241 named two egg dishes prepared for the noon meal during the past week. None named more than two. This means that egg dishes are not too popular as noon-meal dishes among the group surveyed.

Eggs At Evening Meal. Egg dishes were much more popular at the evening than at the noon meal. Seven hundred and thirty (about four-tenths) had served eggs once or twice at the evening meal during the report week. Fifty-three of the homemakers named two egg dishes served during this period. The methods of preparing these eggs were:

| Method of Preparation | Percent |
|---|---------|
| Deviled, hard cooked, stuffed | 44 |
| Scrambled | 39 |
| Fried | 4 |
| Poached | 2 |
| Eggs and meat | 2 |
| Sandwich | 1 |
| All other, including those naming more than one | 8 |

The method of preparation of eggs at the evening meal followed the pattern of the noon meal, except that deviled, hard cooked, stuffed eggs were less important and scrambled eggs more important at the evening meal. Deviled, hard cooked, stuffed eggs were often used with lettuce as a salad.

Members of Family Not Eating Eggs

Every interviewee was asked: "Is there any member of the household who does not eat eggs: If yes, why?" One hundred and sixty-seven of the 1756 families (less than 10 percent) reported a member or members of the household who did not eat eggs. Reasons given for not eating were as follows:

⁷Significant at the 1% level.

| Reasons* | Percent |
|----------------|---------|
| Dont like | 63 |
| Health | 30 |
| Gave no reason | 7 |

*none gave both "don't like" and "health" reasons.

Some typical replies were: can't eat, makes sick; don't like; don't care for them; doesn't like taste; can't digest; because of health; doctor's instructions; children don't like them, just doesn't like them; allergy; cholesterol.

Thoughts Connected With Eggs

It was considered desirable to determine the attitude of the homemakers towards eggs. The following question was designed for this purpose: "When someone says 'eggs' what is the first thing that pops into your mind?" Only two percent expressed actual distaste or dislike of eggs. There is, in other words, no deep-seated prejudice about eggs on the part of these village and town homemakers.

Most women associated eggs with chickens. This fact is no doubt related to the sample of families being drawn from villages and towns where some families raised a few chickens on their own, and other families had neighbors and friends who raised chickens. Furthermore, chickens had been kept at parental home sites of most of the interviewees.

How Often and Where Buy Eggs

Most families purchased eggs weekly as noted from the foregoing tabulation:

| Frequency of buying | Percent |
|-----------------------|---------|
| Weekly | 59 |
| No set time | 18 |
| 2 or 3 times a week | 19 |
| Less than once a week | 5 |
| Don't buy | 8 |

Included in the "don't buy" group were all or most of the 107 families who had their own flocks; 36 families with relatives such as mother or brother giving them eggs regularly; 3 families who had both home-produced and gift eggs; 2 families getting dried eggs as part of the gov-

ernment welfare program; and one family who used no eggs.

A highly significant relationship was found between frequency of buying eggs and place of residence, size of household, composition of family, family income, and amount spent for food per person per meal. Village families, larger families, families with children, families with higher income (\$6,000 and over), and families who had spent 50c or more per person per meal during the past year purchased eggs more frequently than other families.

Every homemaker was asked: "From whom do you buy most of your eggs?" About two-thirds mentioned a grocery store or other retail outlet, as is shown:

| Place of Purchase* | Percent |
|------------------------------------|---------|
| Grocery or other retail outlet | 65 |
| Commercial producer, grading plant | 10 |
| Other (farmer, peddler) | 16 |
| More than one source | 1 |
| Don't buy | 8 |

*Four families had eggs delivered by dairy, and two families gave no information.

Place where eggs were bought differed significantly between season, race, place of residence, and family income.⁸ More reported grocery store and other retail outlets in winter than in spring. More Negro than white families and more low income than higher income families reported buying eggs from grocery or other retail outlet. More town than village families reported they bought from commercial producers and grading plants. This is no doubt related to the fact that there were more commercial producers in and around the towns surveyed.

The relationship between place where purchased most eggs and cost of food per person per meal was significant at the 5 percent level. In other words, more of the low per capita spenders purchased eggs at grocery stores or other retail outlets.

⁸Significant at the 1% level, according to chi-square tests.

Homemakers were asked why they bought eggs from this source. Reasons given were:

| Reasons | Percent |
|--|---------|
| Convenience (where I trade, close to house, delivered, they charge) | 55 |
| Quality and/or size (fresh, infertile, graded) | 22 |
| Cheaper (same price year round) | 8 |
| Relative, friend, employer, business or political reasons, including own store | 3 |
| Other | 1 |
| No reason, don't know | 3 |
| Don't buy eggs | 8 |

Convenience was the main reason given for buying eggs where they did. Only about one in five mentioned quality and/or size of eggs.

Amount of Eggs Bought

Usually At One Time. Families most often purchased about two dozen eggs at a time, but about three dozen and one dozen were also popular purchases. The number of eggs usually bought at one time was as follows:

| Eggs bought at one Time | Percent |
|-------------------------|---------|
| Don't buy | 8 |
| 6 or less | 1 |
| 7 - 17 | 23 |
| 18 - 23 | 4 |
| 24 - 35 | 37 |
| 36 and over | 26 |
| No reply | 1 |

The relationships between amount of eggs purchased at one time and race, size of household, and income were significant at the 1 percent level. In other words, white families, larger families, and families with more income usually purchased more eggs at one time.

Last 7 Days. Homemakers reported that during the last 7 days they had bought the following amounts of eggs:

| Eggs Bought Past 7 Days | Percent |
|-------------------------|---------|
| Didn't buy any | 15 |
| 6 or less | 1 |
| 7 - 17 | 14 |
| 18 - 23 | 2 |
| 24 - 35 | 33 |
| 36 - 47 | 19 |
| 48 - 59 | 10 |
| 60 or more | 6 |

There was also a highly significant relationship between number of eggs bought last 7 days and race, size of household, and income. White families, larger families, and families with higher income had bought more eggs in the last 7 days.

The 264 families who had stated that they did not buy eggs during the last 7 days were asked why not? The following reasons were given:

| Reasons didn't buy | Percent |
|------------------------|---------|
| Home flock is laying | 43 |
| Had enough on hand | 30 |
| Received as gift | 16 |
| Can't afford, too high | 7 |
| Didn't want them | 3 |
| Other | 1 |

Use of Eggs

When asked, "How many eggs did you use the past week?", homemakers replied as follows:

| Eggs used past week* | Percent |
|----------------------|---------|
| None | 2 |
| 6 or less | 4 |
| 7 - 12 | 18 |
| 13 - 24 | 37 |
| 25 - 36 | 24 |
| 37 - 60 | 13 |
| Over 60 | 2 |

*Two families used dried eggs from welfare.

Those families who did not use eggs gave as their reasons: too expensive; couldn't afford; didn't want; hens aren't laying.

Eighty-eight percent of the families using eggs purchased all eggs. Seven percent of the families obtained eggs from home flocks, and 3 percent received their eggs as gifts. The remaining received eggs from more than one source, i.e. purchased and home-produced, purchased, and gifts. There was a highly significant relationship between amounts of eggs used the past week and race, size of household and family income. White families, larger families, and families with higher income had used more eggs the past week.

As will be noted from Table 9, there was a wide variation in smallest and lar-

gest number of eggs used per family during a week. Only 4 percent of the families named 4 dozen or more as the smallest amount and 30 percent named it as the largest amount.

Table 9. Smallest and largest number of eggs used during a week.

| Amount of eggs | Smallest number | Largest number |
|----------------|-----------------|----------------|
| | Percent | Percent |
| None | 3 | 0 |
| Less than 12 | 13 | 2 |
| 12 - 23 | 37 | 13 |
| 24 - 35 | 30 | 22 |
| 36 - 47 | 11 | 27 |
| 48 and over | 4 | 30 |
| No answer | 2 | 2 |

Reasons given for variation in amounts of eggs used from week to week were:

| Reasons for variation in egg use | Percent |
|----------------------------------|---------|
| Company or extra cooking | 50 |
| Changes in appetites and tastes | 14 |
| Holiday cooking | 6 |
| Depends on price | 5 |
| Doesn't differ | 15 |
| All other | 10 |

Every homemaker was asked the number of eggs used the past week in main egg dishes and the number used in cooking as in breads, desserts, salads, casseroles, etc. They reported as follows:

| Use of eggs in main dishes and other ways* | Percent |
|--|---------|
| No eggs in main dishes | 3 |
| Less than ½ in main dishes | 8 |
| ½ - ¾ in main dishes | 57 |
| Over ¾ in main dishes | 22 |
| All in main dishes | 8 |
| Not used | 2 |

*Two families used dried eggs from welfare.

There was a highly significant relationship between the use of all eggs in main dishes and race, place of residence, income of family, and schooling of homemaker. Negro families, town families, families with lower income, and families with homemaker having less than 8th grade schooling had more often used all their eggs in main egg dishes than had white, village, higher income families, and families with homemaker having 12th grade education or more.

Home-Produced Eggs Used

About 8 percent of the families in-

cluded in this study had used some home-produced eggs during the week preceding the interview. However, 13 percent of the families had kept some laying hens during the past year. Six percent had kept 10 or less hens, 5 percent from 11 — 20 hens, and 2 percent more than 20 hens. When asked about how many months hens lay, homemakers replied as follows:

| Months | Percent |
|-------------|---------|
| Less than 4 | 2 |
| 4 - 5 | 1 |
| 6 - 9 | 5 |
| Over 9 | 4 |
| Don't know | 1 |

Ten percent of the women reported that while hens were not laying they bought eggs for home use. The other three percent did not buy.

One to three dozen per week was the most frequent amount of eggs families got when hens were laying. Five percent of the 13 percent with laying hens got this amount. Two percent reported getting less than a dozen; 2 percent from 5 to 7 dozen; 2 percent over 7 dozen; and 2 percent said, "Don't know" or "Couldn't find."

Percent of Recommended Amount Used and Opinion of Homemaker as to Adequacy

In a low-cost food plan developed by the Consumer and Food Economics Research Division of the U.S.D.A., the following weekly quantities of eggs are suggested: (a) for children under 7 years and for women, 5 eggs per week; (b) for children 7 — 19 years and for men, 6 eggs per week.⁹ The recommended amount of eggs was calculated for each family. These figures were compared with amounts used. The percentages of rec-

⁹Family Food Plans and Food Costs, Home Economics Research Report No. 20, Agricultural Research Service, USDA, 1962, p.9. "Another Food Plan at Low Cost. Especially suitable for food habits of families in the Southeastern States."

ommended amounts used by the 1756 families were as follows:

| Percentage of Recommended Amounts Used | Percentage Using* |
|--|-------------------|
| Did not use eggs | 2 |
| 1 - 50 | 6 |
| 51 - 75 | 10 |
| 76 - 99 | 11 |
| 100 - 150 | 28 |
| 151 - 200 | 18 |
| Over 200 | 25 |

*Two families used dried eggs from welfare.

Twenty-nine percent of the families (about one third) used eggs in smaller amounts than recommended. On the other hand, one fourth used over 200 percent of the recommended amounts. There was a highly significant relationship between percentage of recommended amount of eggs used and residence, race, size of household, and amount spent for food per person per meal. More town families, Negro families, larger families, and families with low expense per person per meal used eggs in smaller amounts than recommended.

Homemakers were asked if they thought the amount of eggs their families used was about right, more than needed, or less than needed. (Table 10 classifies their replies by the percentage of recommended amount of eggs the family used).

There was a highly significant relationship between homemaker's answer to the above question and the percent of the recommended amount of eggs used. In other words, homemakers know more than they actually put into practice about the egg supply for their families.

Table 10. Opinion of homemaker as to amount of eggs used by her family by percentage of recommended amounts used.

| Opinion | Percentage of Recommended Amount | | | | | | Total |
|---------------------------|----------------------------------|--------|--------|----------|----------|-----------|-------|
| | 1-50% | 51-75% | 76-99% | 100-150% | 151-200% | Over 200% | |
| About right | 33 | 64 | 70 | 84 | 89 | 91 | 80 |
| More than needed | 6 | 2 | 3 | 4 | 4 | 7 | 4 |
| Less than needed | 57 | 25 | 21 | 10 | 5 | 1 | 13 |
| Don't know or no reply | 4 | 9 | 6 | 2 | 2 | 1 | 3 |
| No. families | 102 | 182 | 189 | 493 | 321 | 438 | 1725* |

*Thirty-one didn't use eggs or had dried eggs from welfare.

Knowledge of Homemaker About Nutritive Value of Eggs

Each homemaker was asked the following question: "Mrs. Smith had planned to serve scrambled eggs for the family's evening meal but found she was out of eggs. She had materials on hand to fix (1) macaroni and tomatoes, (2) hamburger, (3) pork and beans, (4) cooked cabbage flavored with pork fat or oleo. Which should she serve to take the place of eggs?"

The 1756 women replied as follows:

| Dishes to replace eggs | Percent |
|------------------------|---------|
| Hamburgers | 55 |
| Macaroni and tomato | 27 |
| Pork and beans | 10 |
| Cooked cabbage | 7 |
| No report | 1 |

This means that the majority of women had some knowledge concerning the nutritive value of eggs. The majority classified eggs in the animal protein group; that is, with hamburger. White women, women with more schooling, and women from families with higher income more often named hamburger than did Negro women, women with less schooling, and women from families with lower income.

Interviewees were asked why they said they would substitute the specified food. In Table 11 reasons given are briefly summarized. As will be noted, nutrition statements regarding hamburgers and pork and beans were more often right than wrong. However, those regarding macaroni and tomato and cabbage were more often wrong than right. A number

Table 11. Reasons given for substitution of specified foods for scrambled eggs.

| Food | Nutrition Reason Was Correct* | Nutrition Reason Was Incorrect* | Likes Taste | Health Reason | Ease of Preparation | No Reason or Other | Total |
|-------------------|-------------------------------|---------------------------------|-------------|---------------|---------------------|--------------------|-------|
| | Percent | Percent | | | | | |
| Hamburgers | 28.9 | .4 | 9.6 | 1.0 | 2.2 | 12.9 | 55 |
| Macaroni & Tomato | .1 | 7.8 | 5.9 | .7 | .4 | 12.1 | 27 |
| Pork & Beans | 2.1 | 1.5 | 1.5 | .2 | .7 | 4.0 | 10 |
| Cooked Cabbage | .1 | 1.8 | 2.7 | .6 | .2 | 1.6 | 7 |

*These gave a nutrition reason why they would substitute the specific food. Nutrition reasons are classified as whether correct or incorrect.

of women incorrectly stated that macaroni contains eggs. Liking the dish was an important reason for substitution of all four foods.

Sources That Influence Buying Extra Eggs

Homemakers were asked: "During the past 3 months, have you at any time bought extra eggs for the family because of an advertisement you saw in the newspaper or on TV, or heard on the radio; a demonstration using an egg dish, etc.?"

Purchase of extra eggs during the past three months because of various sources of information was not frequent, as is shown:

| Source of influence | Percent |
|---|---------|
| An ad in newspaper, TV, radio | 5 |
| Information or request from husband and children | 3 |
| Information from friends or relatives | 2 |
| Food articles in magazines, papers, or recipe books | 2 |
| A demonstration | 1 |
| Advice of doctor or nurse | 1 |
| More than one source | 1 |

Mass media and personal influence were equally important in getting family to purchase extra eggs; about 7 percent of the women mentioned each of these.

Eggs on Hand at Time of Interview

The interviewer was asked to check each homemaker's refrigerator for the number and kind of eggs on hand. The following amounts were reported:

| Number on hand | Percent |
|------------------------------|---------|
| None | 9 |
| 6 or less | 29 |
| 7 - 12 | 25 |
| 13 - 24 | 24 |
| 25 - 36 | 8 |
| 37 - 48 | 2 |
| More than 48 | 2 |
| No reply, or dried eggs only | 1 |

The amount of eggs on hand at the time of the interview was related to residence, race, size of family, and family income. Town families, Negro families, larger families, and families with lower income had fewer eggs on hand.¹⁰

Sixty-two percent of the 90 percent of families with eggs on hand had purchased all eggs in a carton; 27 percent had purchased no eggs in a carton; and one percent, part in carton, part not in carton.

Homemakers were asked about storing eggs. Fifty-six percent of the homemakers reported storing in carton. Thirty-one percent reported keeping in some other kind of container and three percent used both ways. Main reasons given by the women for storing in cartons were convenience, protection, keep better, prevents absorption of odors, and have no other place to keep.

The main reasons for keeping in another container were: refrigerator has an egg rack or container, refrigerator tray more convenient; refrigerator absorbs odor of a carton. White families, smaller families, and higher income families more often stored carton eggs in another

¹⁰Relationship was significant at the 1% level, by chi-square tests.

container than Negro families, larger families, and lower income families.

When asked how much they paid per dozen for eggs on hand, 17 percent reported no eggs, or no purchased eggs on hand. Two percent reported 25c a dozen or less; 13 percent, 26c—39c; 44 percent, 40c—54c; 21 percent, 55c—64c; 1 percent, 65c or more; 1 percent named two prices; and 1 percent said they didn't know. When asked if price is lower or higher than usual and the reason, 56 percent of the 1756 families replied the price was as usual, that they paid about the same price the year around. Only 4 percent mentioned buying on sale and 3 percent buying lower grade or small eggs or cracked eggs. Only 15 percent mentioned the season of the year—spring, more plentiful supply and cheaper; winter, short supply and more expensive. In other words, to many homemakers there did not seem to be much variation in price.

Grade of eggs on hand at time of interview were reported as follows:

| Grade | Percent |
|--|---------|
| No eggs on hand, no reply or dried eggs | 10 |
| Grade A | 50 |
| Grade B | 1 |
| Not graded | 32 |
| Part graded, part not graded | 1 |
| Homemaker in error as to grade | 6 |

Fifty-eight percent of the families reported they obtained their eggs from the grocery or other retail outlet; 8 percent purchased from a commercial producer or grading plant; 14 percent from neighbors, farmers, peddlers, or hatchery; and 1 percent from more than one source. Other eggs on hand were home-produced or gifts. Eight out of nine families with eggs on hand had had them on hand 7 days or less.

Size of eggs reported on hand was as follows: large, 40 percent; medium, 27 percent; small, 1 percent; mixed, 19 percent; more than one size, 2 percent. One percent of the homemakers was in error as to size, and ten percent had no eggs on hand.

Change in Quantity and Quality of Eggs Used in Last Year or So

When homemakers were asked whether in the last year or so the number of eggs used by their family had changed, 75 percent answered, "No change"; 15 percent said, "Use more"; 9 percent, "Use less"; and 1 percent said, "Don't know."

There was a highly significant relationship between change in eggs used and size of household. Small families more often than large families had made no change in the last year or so in the number of eggs used. Reasons for change in the use of eggs was most often related to family composition, new members of the household, children growing, and eating out. Some mentioned "get better eggs" as a reason for using more.

Each homemaker was also asked, "In the last year or so have you noticed any change in the quality of eggs that you buy?" Eighty-five percent said, "No change", 11 percent, "Better eggs"; 2 percent, "Worse eggs"; and 2 percent "Never buy". It would thus seem that homemakers are more aware of change in quantity than quality used.

Knowledge Homemaker Has of Egg Quality

Grade. Homemakers were asked what grade they associated with high quality. Eighty-one percent named grade A or AA; 18 percent didn't know or named other qualities, and 1 percent gave no reply.

Knowledge of homemaker about grade of eggs was related to type of market from which she purchased these eggs as well as personal factors such as schooling and age. There was a highly significant relationship between knowledge of homemaker and trading in an outlet where all eggs were refrigerated, and in an outlet where total egg sales were high.

Homemakers who purchased eggs directly from commercial producers or

grading plants more often associated higher quality eggs with grade A or AA than those who purchased from groceries or other retail outlet or from farmers and peddlers.

Homemakers who had lived in the village or town fewer years more often answered grade A and AA as the grade they associated with higher quality. Women who had lived in village or town fewer years, it should be pointed out, were younger women. Younger women, women with more schooling, and women in families with higher incomes more often associated higher quality eggs with grade A or AA. The relationship between all these factors and the knowledge of homemakers about egg grades was highly significant.

Characteristics of high quality eggs. Homemakers were asked two questions to determine characteristics they associated with high quality eggs. These were: "(1) If you wanted to buy high quality eggs and you could get any of the following, which would you choose — (a) eggs from a neighbor's or farmer's flock, (b) farm eggs from the grocery store, or (c) grade A eggs from the grocery store. (2) Top quality eggs must have which of the following characteristics — (a) white shells, (b) large size, (c) a yolk that stands up, (d) light yellow yolks, (e) some other quality, or (f) don't know."

To the first question 54 percent of the women answered grade A eggs from the grocery store; 42 percent, eggs from a farmer or neighbor; 3 percent, farm eggs from grocery. One percent said they did not know. The main reason given for buying grade A eggs from the grocery store was quality (been inspected, fresher, clean, graded, infertile, kept at proper temperature, feel safer). The main reason given for buying from a farmer or neighbor also related to quality of eggs with statements such as: fresh, good flavor or color in brown eggs, richer, best.

Homemakers in Negro families, in low income families, and in families with older homemakers more often said "eggs from neighbor or farmer" than did homemakers in white families, families of higher income and families with younger homemakers. A highly significant relationship was found between association of grade A with quality and stating that they would buy grade A eggs from a grocery.

Characteristics which top quality eggs should have were reported as follows by the 1756 women: yolk that stands up, 85 percent; large size, 23 percent; white shells, 17 percent; light yellow yolk, 10 percent. Other characteristics most often mentioned were dark yolk and brown shell. It is interesting to note that the only correct characteristic of top quality eggs (a yolk that stands up) was voted as a characteristic by 85 percent of the women, and that other characteristics were relatively unimportant.

More white than Negro women replied "yolk that stands up". Older homemakers, homemakers with more schooling and from higher income families more often selected as a characteristic of top quality eggs "a yolk that stands up".

Preference for shell color, yolk color, and size of eggs. None of these 3 items is included in the specifications for quality eggs, yet many homemakers consider them important items. Twenty-one percent of the women interviewed had no preference as to shell color of eggs; 43 percent preferred white shell eggs and 36 percent brown shell eggs. There was a highly significant relationship between preference of shell color and race, age of interviewee, and amount spent per meal per person for food. Low spenders for food, older women, and Negro women more often preferred brown shell eggs. Higher spenders for food per person per meal, white families, and families in which the homemakers were younger, more often preferred white

shell eggs. Shell color is not indicative of flavor or nutritive value of eggs.

Principal reasons given for preferring white shell eggs were: (1) exterior appearance (looks cleaner; like color; looks fresher) (2) yolks milder, not so rich; makes food taste better; (3) just prefer; (4) whites beat better; higher grade. Reasons given for preferring brown shell eggs were: (1) yolks richer, tastier, darker, more flavor; makes food taste better; (2) looks better, dirt doesn't show so much; (3) firmer yolks; (4) just prefer.

Only 14 percent of the homemakers had no preference for yolk color. Sixteen percent preferred light yolks, 37 percent dark yolks and 33 percent medium yolks.

As in the case of shell color, low spenders for food, older women, and Negro women more often preferred dark than light yolks. Main reasons given for preferring light-colored egg yolks were: (1) looks—looks better, dark looks rotten, don't make food as dark, right color, looks good in food; (2) taste—mild, not as strong, family likes; (3) just prefer, what I like.

Main reasons for preferring dark egg yolks were: (1) looks — looks richer, looks better, makes food pretty or yellow, the right color; (2) richer—flavor or food value, no mention of appearance; (3) taste — flavor, tastes better, light ones don't taste right, tastes richer; (4) food values — dark yolk from fertile egg, and fertile egg more nutritious, has more carotene, has more protein.

Looks, taste, and "just prefer" were the main reasons given for preferring a medium colored yolk. Some of the statements made about looks included: Don't like real dark or real light eggs; right color for cooking; in-between look; natural; prettier. Some of the statements about taste were: has right taste; dark too strong; more palatable; not strong; light tasteless.

When asked about preference for size of eggs, 9 percent of the homemakers

stated they had no preference; 60 percent stated that they preferred large eggs; 30 percent preferred medium eggs; and 1 percent stated they preferred small eggs. This means three out of five women preferred large eggs. More white families, families with younger homemakers and homemakers of more schooling, smaller families, and families of higher income preferred medium-sized eggs than did Negro families, families with older homemakers and homemakers of less schooling, larger families, and families of lower income.

The main reasons given for preferring large and medium eggs, however, were about the same. They were: (1) best size for family; (2) price; (3) habit.

Price of Eggs

Two questions were asked the homemaker about the price of eggs: (1) "What characteristics in eggs are worth an extra price to you; and (2) Which eggs would you buy: 1 dozen grade A medium at 40c, or 1 dozen grade A large at 49c?" When asked about the characteristics in eggs worth an extra price, homemakers replied as follows:

| Characteristics | Percent |
|---|---------|
| None | 7 |
| Size | 13 |
| High quality | 43 |
| Size and quality | 16 |
| Other characteristics, not size or quality, such as yolk or shell color | 15 |
| No answer | 6 |

To be noted is the fact that about three-fourths of the homemakers mentioned characteristics that are related to egg price (i.e., quality and/or size). More town than village homemakers, more Negro than white homemakers, more homemakers with little than more schooling, and more homemakers in families of lower than higher income mentioned characteristics other than quality and size.

Also to be noted is the fact that many homemakers seem to be unable to figure actual difference in cost of medium and large eggs. They were told: "A weekend special offers large grade A eggs at 49c a

dozen and medium grade A eggs at 40c a dozen. If you were planning to buy eggs which would you buy and why?" Forty-nine percent said grade A medium, and 50 percent grade A large.

One dozen large eggs weighs 24 ounces (one pound, 8 ounces) and one dozen medium eggs weighs 21 ounces (one pound, 5 ounces). This means 1 ounce of medium eggs costs 1.9 cents and 1 ounce of large eggs costs 2.04 cents, or that these medium eggs cost a little less.

Seventy-one percent of those saying they would buy medium eggs said they were cheaper (more for money). Other reasons given were: habit; best size for family; large and medium eggs same size.

Eighteen percent of those saying they would buy large eggs said they were cheaper. Other reasons given were: habit; more food; large eggs means high quality, I want the best.

Two Recommendations of Home Economists Regarding Use and Cooking of Eggs

Home Economists tell homemakers that lower grade eggs are good for dishes in which appearance and delicate flavor are not so important as in baked dishes, custards, sauces, and salad dressings. Top quality eggs (Grades AA and A) are good for all uses, but most appreciated when poached, fried or cooked in shell. Lower grade eggs can usually be purchased at a lower price than the higher quality eggs. A question was therefore included in the schedule to determine whether the homemaker was aware of difference in quality depending on type of dish. This question was: "Do you buy and use less expensive eggs for general cooking and baking than for table use?" Only 7 percent of the women answered in the affirmative.

There may be several reasons for this, but homemakers were not questioned on this point. In the first place, the choice is usually between grade A and ungraded

eggs. Few stores carry grade B eggs, and many homemakers hesitate to buy ungraded eggs. Then it may be somewhat more convenient to purchase one type of egg for all purposes.

From the question asked it would seem that most homemakers do not understand that different qualities of eggs might be used for different purposes.

Home Economists recommend soft scrambling of eggs. Homemakers were asked how well done their scrambled eggs were when served — whether (1) soft, (2) medium, or (3) well done, i.e. hard, dry, brown? Of those who gave a reply 54 percent said soft; 22 percent, medium; and 24 percent, well done. Well done eggs were reported more often by low income families, Negro families, and families in which the wife had less schooling.

Confidence of Homemaker in Egg Quality

A question was introduced in the schedule to determine homemaker's confidence in the quality of eggs she purchased. This question was: "If you are planning to scramble 6 eggs tell exactly what you do, from taking eggs from the refrigerator to putting the cooked eggs on a platter or dish." All answers except 36 fell in three categories, as is shown.

| What would do | Percent |
|--|---------|
| 1. Break eggs directly in skillet (complete confidence) | 11 |
| 2. Break all eggs in one bowl and transfer to skillet (some confidence) | 68 |
| 3. Break into small container; inspect; then empty into large container; transfer to skillet (no confidence) | 19 |

As will be noted, about two-thirds of the families had "some confidence" in quality of eggs they had bought. Surprisingly, homemakers with less education, Negro homemakers, and homemakers from low income families most often had complete confidence; i.e., "put eggs directly in skillet." Standards of this group, however, were lower.

Use of Frozen and Dried Eggs

Ninety-five percent (1667) of the homemakers stated they had never used frozen eggs; 5 percent (89) had frozen them. Most had frozen yolks and whites together with or without additives (salt, sugar, flour). Frozen eggs were usually used in general cooking or baking, rarely as a main egg dish.

Fifty-three of the 89 who had frozen eggs said they were as good as the fresh. The remainder gave derogatory or qualified remarks such as: "flavor not good, didn't taste fresh"; "dry"; "hard"; "good only for certain purposes".

Twenty-three percent (403 women) stated that they had used dried eggs.¹¹ Most of these had used them in general cooking or baking only. But 46 women (2.6 percent) had scrambled dried eggs.

One hundred and seventy-eight women gave very favorable replies about dried eggs such as: good, no difference, fine, excellent, the best. Eighty-five gave qualified replies about dried eggs, such as: accepted, but not as good as fresh; only good for certain purposes. One hundred and thirty-one gave derogatory replies, such as: do not like flavor; odor bad, wouldn't eat. The remainder gave "other" replies or said they didn't know.

Experience with Poor Quality Eggs

Homemakers were asked three questions regarding experience with poor quality eggs. They were: "(1) When was the last time you cracked an egg that had to be thrown out? What was the matter with it? (2) Have you within the last three months found a broken egg among those you purchased. Was the broken egg purchased in a carton? (3) Which of the following have you found wrong with purchased eggs in the last year (check as

many as interviewee mentions): dirty shells, lack of freshness, thinness of shells, blood spots, off-flavor, other (explain)."

To the first question regarding the last time she cracked an egg that had to be thrown out, homemakers answered as follows:

| Last time | Percent |
|---|---------|
| Have not cracked an egg that had to be thrown out past year; too long to remember; don't know | 56 |
| Preceding or current spring or summer | 25 |
| Preceding or current fall or winter | 15 |
| Other (time not given but less than 12 months) | 3 |
| No answer (including "maid does the cooking") | 1 |

At the time when there were most complaints (spring and summer) relatively more of these complaints came from homemakers who purchased eggs from stores with lowest weekly sales, from stores that did not refrigerate eggs, and from stores which handled some eggs from home flocks.

The two reasons given most often for throwing eggs out were: (1) not fresh — addled, rotten, yellow and white mixed, yellow broke, spoiled, watery, smelled bad; and (2) blood spots—bloody. "Other" reasons given were: contained foreign matter (worms,¹² white specks); spots in yolk, dirty; frozen; egg stuck to carton.

When asked if they had found a broken egg among those purchased within the past three months, 20 percent of the interviewees replied "Yes"; 74 percent, "No"; and 6 percent couldn't remember. About two-thirds (68 percent) of those who had found a broken egg had purchased the eggs in a carton.

The third question dealt with what the interviewee had found wrong with purchased eggs in the last year. Qualities checked were as follows:

¹¹These include dried eggs for feeding infants and dried egg whites in angel food cake mixes. No dried eggs were sold in areas studied but were used in school lunch rooms and were given to welfare clients who may have passed some on to relatives and friends.

¹²This is a rare occurrence and generally in poorly cared for farm flocks.

| Quality | Percent Checking* |
|--------------------|-------------------|
| Dirty shells | 13 |
| Lack of freshness | 17 |
| Thinness of shells | 36 |
| Blood spots | 43 |
| Off-flavor | 9 |

*Complaining of these qualities did not always mean the egg was thrown out.

"Other" qualities found wrong with purchased eggs were: foreign objects in eggs (worms, white flecks); spots in yolk; cracked eggs; eggs too small.

Young women and those with more schooling more often mentioned blood spots. Also, there were more complaints about blood spots from homemakers trading in stores selling eggs from home flocks than from those selling only commercial eggs.

Blood spots on the yolks are an abnormality usually detected in candling. Eggs with blood spots of one-eighth inch or more in diameter are classified by egg graders as inedible. Eggs with smaller spots are classified as grade C, but this grade is not found in Mississippi egg markets. The objection to blood spots is based on appearance rather than taste or nutritive value.

Those complaining of thinness of shell, unlike those complaining of blood spots, were not centered in any particular group or groups. However, older women complained somewhat more about thinness of shell than did younger women. Some mentioned arthritis in the fingers which made it difficult to pick up thin shelled eggs from the carton without breaking. Relationship between age and this complaint was significant at the 5% level.

Information Wanted on Cartons

Two questions were asked each interviewee concerning characteristics that she wanted in a carton. The first asked which three of the following five factors she thought most important on a carton: (1) grade; (2) date when eggs were graded and packed; (3) total weight of the dozen eggs; (4) statement that eggs are infertile; and (5) brand name. The

characteristics selected were as follows:

| Characteristics | Percent choosing |
|-----------------|------------------|
| Grade | 92 |
| Date | 91 |
| Weight | 27 |
| Infertile | 49 |
| Brand | 36 |

Practically all women named grade and date. More village than town women mentioned infertile. White women with more schooling and higher incomes more frequently selected infertility than did town women, Negro women, and women of less schooling and from families of lower income.

Brand name and weight of eggs were characteristics more often selected by town families, by Negro families, and by families of lower income.

The second question related to which of the 5 characteristics in an egg carton interviewee thought most important and second in importance: (1) attractiveness; (2) method of removing eggs from carton easily; (3) openings so you can see eggs you are buying; (4) a cellophane wrapper over the carton; and (5) other. Those noted as of first importance were:

| Characteristics | Percent naming |
|--|----------------|
| Attractiveness | 15 |
| Method of removing eggs easily | 37 |
| Opening so you can see eggs you are buying | 41 |
| Cellophane wrapper over carton | 4 |
| Other | 1 |
| Don't know | 2 |

Characteristics listed as of second or next importance resembled those listed as of first importance. Eighteen percent named attractiveness; 27 percent, method of removing eggs easily; 40 percent, openings so you can see eggs you are buying; 8 percent, cellophane wrapper over carton; 2 percent, other; 5 percent, "don't know."

More town and Negro homemakers, more homemakers with less schooling and of lower income selected as of first importance an attractive carton. More white homemakers, women with more schooling, and from higher income fam-

ilies, more often selected method of removing eggs easily.

When asked why they selected method of removing eggs from carton easily, the majority of women mentioned breaking, dropping, or cracking eggs in the process of removing from cartons. Others did not mention breakage but related other difficulties with cartons such as "eggs too large for carton"; "hard to get big eggs from carton"; "dividers too high"; "can't grasp eggs". A number of women spoke of the time it took to remove eggs from cartons.

More Negro interviewees and interviewees of less schooling and low income selected as of first importance "openings to see eggs." But more white interviewees and interviewees of more schooling and higher incomes selected "cellophane wrapper over carton." Reasons for selection of cellophane wrapper over carton included: keep eggs fresh (prevent evaporation); keep out odors (keep out air); protects from breakage; more easily handled.

Other characteristics of an egg carton which homemakers thought important were: more efficient closure (either so carton won't come open so easily, or so that it can be opened easily); stronger cartons; different shape for cartons; clean plastic top; padded bottom.

Summary

It was the purpose of this study (1) to determine: (a) from representative families, basic factors regarding sources, kinds, amounts, and uses of purchased eggs; opinions concerning changes in quantity and quality of eggs purchased; and sources and kinds of information that influence housewives in purchasing eggs; and (b) from merchants in areas where families resided, quantities and kinds of eggs handled; methods of handling eggs; and changes noticed since state egg inspection program began; and (2) to evaluate local marketing programs now in operation.

Data were obtained during the fall and

winter of 1961-62 and the spring of 1962 by personal interview with a representative sample of approximately 125 families in each of 10 towns and 4 villages of Mississippi. Schedules were completed for 1756 families.

Data concerning eggs were obtained from 171 grocery stores, from 41 in 4 villages and from 130 in the 10 towns. Ninety-five of the 171 groceries kept all or part of their eggs refrigerated. These eggs were most often kept at 35° — 40°F. Time of last delivery of eggs was "more than 3 days ago" for only 17 percent of the merchants contacted in the spring and 29 percent contacted in the winter. In both seasons of interview about two-thirds of the merchants had 30 dozen eggs or less on hand.

About one half of both village and town merchants stated they had had fewer complaints about eggs they sold in the past 2 years than before inspection service. These made very favorable comments about eggs since the inspection service. Ninety percent of the women interviewed said the eggs in their town or village were satisfactory. Only one in ten gave qualified replies or indicated dissatisfaction.

When asked about the last time she cracked an egg that had to be thrown out, more women who shopped at grocery stores with a small stock of eggs kept on hand, not having a refrigerator for keeping eggs, and buying part or all of their eggs from home flocks, cited examples of eggs thrown away.

When asked which eggs they would choose, (a) eggs from a neighbor's or farmer's flock, (b) farm eggs from a grocery store, or (c) grade A eggs from a grocery store, 54 percent selected grade A eggs from a grocery store; 42 percent, eggs from a neighbor or farmer. More homemakers from lower income families, Negro families, and families with older homemakers mentioned neighbor or farmer.

The majority of homemakers recognized the importance and place of eggs in family diets. More women from low income families, Negro families, and from families in which homemakers had less schooling, did not know the importance of eggs in the diet.

Twenty-nine percent of the families (about one third) used eggs in smaller amounts than recommended in low-cost food plans of the USDA specialists. More town families, Negro families, larger families, and families with low expense for food per person per meal, used eggs in smaller amounts than recommended.

Fifty-seven percent of the homemakers reported that from one-half to three-fourths of all eggs used during the week preceding the interview were used in main dishes. Relatively more eggs are used in general cooking and baking by white families, village families, higher income families, and families in which the homemaker had more schooling.

Eighty-one percent of the homemakers, when asked what grade was associated with high quality, said grade A or AA. When asked about characteristics in eggs worth an extra price, about three-fourths mentioned quality and/or size.

Younger women, women with more schooling and from families with higher income, more often associated quality eggs with grades A or AA.

When asked about preference for size of eggs, 9 percent of the women had no preference; 30 percent said medium eggs; and 60 percent, large eggs. White families, families with younger homemakers, and homemakers of more schooling, smaller families, and families of higher income, more often preferred medium-sized eggs than did Negro families, families with older homemakers, and homemakers of less schooling, larger families, and families of lower income.

Twenty-one percent of the women interviewed had no preference as to shell color of eggs; 43 percent preferred white shell eggs, and 36 percent brown shell.

Fourteen percent had no preference for yolk color. Sixteen percent preferred light yolks, 37 percent dark yolks, and 33 percent medium yolks. Low spenders for food, older women, and Negro women more often preferred dark shell and yolks. Characteristics most often mentioned as wrong with eggs were blood spots and thinness of shells.

When asked which one of five characteristics they wanted in an egg carton, more women voted for (1) a method of removing eggs easily and (2) openings so you can see eggs you are buying. These characteristics were mentioned by relatively more homemakers in white and higher income families, and in families in which the wife had more schooling.

The grade and date when eggs were graded and packed was the information wanted on cartons by most women.

Implications

There are a number of implications in this study for other geographical areas, for producers, for educators, and for merchants.

From all indications the egg inspection program has paid off. Most women with such a service say they associate high quality eggs with grade A or AA. Eighty-five percent were able to select the one correct characteristic of top quality eggs from a list. About one-half of the merchants said they had had fewer complaints since inspection service.

It is important to egg producers that most complaints about eggs come from stores handling eggs from home flocks. Producers must have their eggs graded if they are to continue in egg production. The market for eggs is increasing in these small towns and villages as many families have shifted from home production. Only 8 percent of the 1756 families reported they didn't buy eggs.

Families of low income, Negro families, larger families, families with homemakers of limited schooling, families spending lower amounts per person per

meal are in special need of help in planning amounts of eggs to use and how to prepare these eggs. Many of these already realize they are using too few eggs. Use of eggs in general cooking needs more emphasis. Also there is need for more attention toward use of eggs at meals other than breakfast. The facts that shell color is due to breed and yolk color mainly to diet of the hens need to be given attention. These are not characteristics used in grading. These characteristics became important when the best eggs were from home flocks and continue to be important to the older citizen and those with a rural background. Also there is need for more em-

phasis on eggs as a special bargain during seasons of high production. Education regarding relative size of eggs is needed, since the medium size eggs are often the best buy. Emphasis needs to be placed on the fact that size and quality are different factors.

In merchandizing eggs packers need to pay more attention to the cartons used. An effort should be made to develop cartons from which eggs are easily removable. Also, further testing should be done on openings of cartons so the customer can see the eggs she is buying. It would seem that the date on the carton when eggs were graded and packed would please most shoppers.