A CONSUMER PREFERENCE STUDY OF BUTTER AND OLEOMARGARINE

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INTRODUCTION

The use of consumer preference surveys to determine the likes and dislikes of the public is not new. Many large manufacturing concerns do not place a product on the market until the product has been proven acceptable to the consumer by some type of consumer preference survey. These surveys may be in the form of a consumer testing panel, the mailing of questionnaires to respondents, personal interviews of the respondents, or some modification of these types. Each has its own advantages and disadvantages. Only recently has the dairy industry applied consumer preference studies to milk and milk products.

With the advent of new or improved substitute dairy products on the market, it is imperative the dairy industry make available to the public the quality of dairy products that will be most acceptable. The use of consumer preference studies places a tool in the hands of the dairy industry which can be applied in many practical ways. One of the most important aids is that of determining what the consumers want in dairy products.

This present survey was conducted to determine (1) the grade of butter that consumers prefer, (2) the quality and price of butter necessary to compete with oleomargarine, and (3) the per capita consumption of butter and of oleomargarine.

REVIEW OF LITERATURE

Very little work has been reported on consumer preference studies on dairy products. Olson and Von Gunten (8) conducted a survey of a randomly selected 1% of the households in Payne County, Oklahoma. The respondents were allowed to taste samples, identified by numbers only, of Grades AA, A, B, and C of butter and a sample of oleomargarine. The respondents were then asked to judge the samples on several characteristics. On the basis of flavor, Grade AA of butter, oleomargarine, Grades B, A, and C of butter were ranked in the order named. The interview portion of their questionnaire dealt with the rate of consumption and consumers opinions of butter and oleomargarine. The weekly per capita consumption of butter by butter users was 0.39 pounds. The consumption of oleomargarine by oleomargarine users was approximately the same, 0.38 pounds. The average price the consumers were willing to pay for butter was 44.1¢ per pound when compared to oleomargarine at 30¢ a pound. Of the 212 respondents surveyed, 15.80% used butter, 52.70% used oleomargarine, and 31.50% used both products.

Kelly and et al (6) sampled consumers in six representative grocery stores in Manhattan, Kansas and Lincoln, Nebraska. The respondents were allowed to taste samples of Grades A and B of butter. Of the 876 respondents surveyed, 396 preferred Grade A butter and 341 picked Grade B butter over Grade A butter.

Eppright (5) studied the food habits and preferences of two age groups of Iowa people in a survey of an area-probability sample of

the entire state of Iowa. Butter was one of the most highly preferred foods of both groups and the appetite level for oleomargarine was lower than for butter.

Shepherd (10) reported some interesting figures in his report of changes in demand for meat and dairy products. The per capita consumption of butter declined from 17.9 pounds in 1924 to 10.1 pounds in 1948, a decline of more than 33 1/3%. At the same time oleomargarine increased from 2 pounds in the period 1923 - 1926 to 6.1 pounds in 1948, an increase of approximately 300%.

The American Dairy Association recently issued a report on a survey on public attitudes toward dairy products (1). This survey covered 3,905 interviews from 400 sample areas in 55 localities of the United States. The survey showed that 30.4% of the respondents used butter, 40% used oleomargarine and butter, 28.9% used oleomargarine and only 0.7% used neither. The most important objection to the use of butter was the high price in relation to the price of oleomargarine. Income had very little influence on the amount of butter and/or oleomargarine used by a family. Taste, texture, keeping quality, and nutritive value were the most common characteristics people looked for when buying butter or oleomargarine.

Baum and Elkinton (2) interviewed 1,100 buyers in four large chain stores in Seattle, Washington. They reported that 40.5% of the respondents used butter, 37.0% used oleomargarine, and 22.5% used both products. Those interviewed rated butter superior to oleomargarine for flavor and seasoning properties.

Blakley, McMullin, and Boggs (3) interviewed a random 1% of the Oklahoma City population in a dairy products and services survey. Of

821 families interviewed approximately 25% reported using butter the week before the interview. The average weekly consumption of butter per family was 1.1 pounds. About 83% of the families reported using oleomargarine. This survey also pointed out very little relationship of family income to the amount of butter purchased. The average weekly consumption of oleomargarine per family was 1.3 pounds.

Coles (4) interviewed, during a seven day period, 424 Oakland, California families, and 513 Los Angeles, California families. She reported that 52% of the people used butter. The average quantity of butter used by all families surveyed was a little more than one-half a pound per family per week.

Shaffer and Quackenbush (9) using a consumer panel of approximately 240 families selected to represent a Michigan city of 100,000 population, found that in food value 63% of the panel preferred butter and only 3% selected oleomargarine. On the basis of taste, 83% of the panel preferred butter compared to the 7% choosing oleomargarine. They also conducted an interview survey which included 316 families. They reported that 38% of the people used butter, 31% used oleomargarine and 29% used both products.

EXPERIMENTAL METHODS

A. SOURCE OF SAMPLES

1. Samples for flavor preference. The samples used for the determination of flavor preference were obtained from various creameries throughout the state of Oklahoma. The butter was graded by a licensed Federal butter grader. The samples were considered to be representative of the four grades of butter recognized by the Federal government as being acceptable for table use, namely, Grades AA, A, B, and C. In selecting the samples, an attempt was made to pick those which most nearly matched the color of the oleomargarine sample selected. The samples of butter were printed into two-ounce prints using a Doering butter printer. Plain parchment, cut to fit, was used in wrapping the two-ounce prints. This made an attractive and neat package to present to the respondents. An identifying randomly selected number was placed on each sample package so when the sample was unwrapped the number appeared on the bottom and could not be seen by the respondent. This eliminated the possibility of the respondent selecting the samples by the identifying number.

The oleomargarine sample was obtained from a local distributor in the form of quarter pound prints. This oleomargarine was selling for 32¢ per pound and was considered to be one of the better grades. In order to eliminate any difference in appearance between the butter and the oleomargarine sample, the prints were run through the Doering printer and wrapped in the same way as were the butter samples.

The prepared samples were stored in an ice cream hardening room maintained at a temperature of 0° to -10° F. until they were needed in the survey.

Throughout the survey period the butter samples were judged by three competent judges at weekly intervals. The purpose of this was to check the samples for evidence of deterioration from the grade that had been assigned to each sample. It was found necessary during the survey to replace one sample with a new one. The new sample was selected and prepared in the same manner as the previous samples.

2. Samples for color preference. The samples for the color preference were prepared by churning 137 grams of 37% cream in a malt-mixer. During the churning process, the calculated amount of certified commercial butter color was added to the lots of cream being churned. A certified color tablet was dissolved in 100 ml. of 95% ethyl alcohol. The resulting mixture was filtered through a paper filter. This filtrate was used to color the lots of cream being churned. Whipping of the cream, instead of churning, was prevented by adding small amounts of ice water during the churning process. After churning the butter was washed and worked out by hand.

Various shades of colored butter were made up ranging from no color to twenty times the normal amount. Five shades were chosen, twice normal, normal, one-half normal, one-fourth normal, and uncolored. The color samples were placed into 50 x 15 mm. Petri dishes. The covers were sealed on with masking tape and an identifying letter placed on the bottoms of each dish. A duplicate set of color samples was made up in case of breakage of the original set.

3. Samples for salt preference. The butter samples for the salt

preference were obtained by dividing twenty-five pounds of unsalted sweet cream into five pound lots, adding various amounts of butter salt, calculated to the nearest 0.1 gram and working by hand. The amount of salt added to each sample was as follows: none, 0.5%, 1.0%, 1.5% and 2.0%.

These five pound lots were stored in the hardening room of the college creamery (0° to -10° F.). Only sixty patties at a time were printed as needed to help control off flavors which might arise due to the large surface area of the pats. Each pat was placed in a paper chip, covered with another chip and an identifying letter placed on the bottom. The salt samples were then restored in the hardening room until they were needed in the survey.

The flavor and salt samples were tempered overnight at approximately 36° F. before using in the survey. The morning the samples were to be used, sets of the flavor samples were placed into paper bags and sets of the salt samples were placed into smaller paper bags. The smaller bags of salt samples then were placed into the bags of flavor samples. This made a convenient package which could be easily carried by the interviewer to the respondents' houses. To keep the samples at spreading temperature throughout the sampling day, the sacks of samples were stored in a one gallon ice cream packer.

B. METHOD OF SAMPLING

1. Selection of Universe. The random sample was drawn from the households in Payne County, Oklahoma. Since the population of Oklahoma is approximately 50% urban, 25% rural-non-farm (towns of 2,500 or less population) and 25% rural farm people, the sample was approximately in this proportion.

The households in the sample were selected by appropriate statistical procedure as determined by Dr. Carl Marshall and Mr. John W. Hamblen of the Statistical Laboratory at Oklahoma A and M College. In the cities and towns the households were selected randomly by numbering the dwelling units of each street beginning on one side of the town or city, and selecting every nth household depending on the size of sample to be drawn. In the rural areas the households were selected by numbering the households in random selected sections and interviewing every nth household, depending on the size of sample required. If a respondent was not home or refused to be interviewed, a recall was made at a later date. If the respondent still was absent or refused again an alternate household was called on and interviewed.

2. Preparation of the Questionnaire. The questionnaire used in this survey resulted from the experiences gained with questionnaires used in the two previous surveys at this station. The first questionnaire was made up to test the repeatability and acceptance of questions which appeared to be useful for the survey. The first questionnaire was tested on twenty random selected respondents. The questions which were discovered to be misleading, not repeatable, or biased were discarded or revised. The resulting questionnaire was used by Olson and Von Gunten (8) in the preliminary study of 1955.

The questionnaire for the present study was modified to include blanks for the salt and color preferences of the respondents. Some of the questions used by Olson and Von Gunten (8) were considered irrelevant and were eliminated. A copy of the questionnaire is shown on page 9 . The questionnaire required from twenty to thirty minutes to answer fully and completely.

QUESTIONNAIRE ON CONSUMER PREFERENCE FOR BUTTER

I. Rank of samples according to several characteristics: Schedule No._____
Users Code_____
Location_____

Procedure	Patty Sample Number 1	2	3	4	5	Remarks
1. Rank as to appearance						
2. Rank as to taste						
3. Rank as to spreadability						
4. Butter or oleomargarine?						

5. (a) Salt_____ (b) Color_____

II. Would you prefer good butter or good oleomargarine with respect to the following: (Interviewer's code: Butter (1) Oleo (2) No choice (0)

	Preference
Appearance	
Taste	
Spreadability	
Food value	
Digestibility	
Uniformity of quality	
Keeping quality	
Cooking quality	
Others	

III. How many persons normally eat here (No. in family at home, plus boarders) ? _____

IV.a. How much oleomargarine does your family use per week? _____ lbs.

b. If oleomargarine were the same price as butter is now, would you use less oleomargarine ? Yes____ No____

V.a. How much butter does your family use per week ? _____ lbs.

b. What per cent of your weekly supply of butter do you use for cooking, baking, etc.? _____ %

c. If butter were the same price as oleomargarine is now, would you use more butter? Yes____ No____

VI. If the price of high grade oleomargarine were fixed at 30¢ what price would you be willing to pay for the kind of butter you want? _____ ¢ per lb.

VII. What is the approximate income of the family per year?

<1200	1200	2400	3600	4800	6000	7200	8400	>8400
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

3. Technique of interviewing. All the interviewing was carried out by the author, during a two month period (March 12 to May 14, 1956). The author was trained by Von Gunten (8) in the techniques used in the preliminary study. The procedure used in interviewing was as follows.

The respondents were first asked to select which color sample they preferred of the five that were displayed to them. They were then asked to taste the salt samples and select the one that appealed to their taste. The five flavor samples were prepared by unwrapping and arranging in random order. The respondents were then asked to judge and place the five samples on appearance. The samples were then rearranged, the ends cut off and the respondent was asked to taste out of the center of each sample and to rank the samples in order of flavor preference. They were then asked to judge the spreadability by spreading each sample onto a paper bag with a table knife. Each respondent was asked whether he or she thought any of the five samples was oleomargarine and was allowed to taste the samples again if necessary to render a decision.

The questions on the questionnaire were read verbatim to each respondent. If any explanation was needed the interviewer attempted to give a complete and objective answer and not to bias the answer of the respondent.

Some respondents refused to taste the samples or to answer all the questions on the questionnaire. In these cases the portions they refused to answer were left blank. All the information they did give to the interviewer was used in the analysis of the results.

C. CALCULATION OF FLAVOR, APPEARANCE, AND SPREADABILITY RESULTS

The procedure for calculating the results for the flavor, appearance, spreadability portion of the survey is described by Lucas (7). It is a method where a record is kept of the number of people placing each sample first, second, third, fourth, or fifth (referred to as the numerical placing). Each sample was then rated by multiplying the number of respondents placing it by the numerical placing. The sample having the lowest rating would rank first. The results obtained by this method will be referred to as "the score" throughout this paper.

EXPERIMENTAL RESULTS AND DISCUSSION

A. CONSUMER PREFERENCE FOR FLAVOR OF VARIOUS GRADES OF BUTTER AND OLEOMARGARINE

The main purpose of this survey was to determine what grade of butter the consumers prefer. The butter used in this survey was Federal graded samples representing Grades AA, A, B, and C of butter. A good brand of oleomargarine was used to determine where the consumer ranks oleomargarine in relation to the various grades of butter.

Out of a total of 216 respondents interviewed only 189 respondents tasted the samples for flavor preference. Some reasons advanced by the 27 respondents for not tasting were most generally, "The doctor has me on a non-fat diet", or "I'm not allowed to eat salt." The 189 respondents representing urban, rural-non-farm, and farm population groups examined the samples and ranked each sample of butter and the sample of oleomargarine in order of preference for flavor. The procedure for calculating the results is described by Lucas (7).

The results obtained from 189 respondents on the preference ratings for flavor for the four grades of butter and one sample of oleomargarine are shown in Table I. The samples were ranked on flavor in the following order: Grades A, AA, and B of butter, oleomargarine, and Grade C butter. The scores were: 490, 512, 518, 634, and 681 respectively. The scores on the first three samples were very close as only 22 points separated Grade A butter from Grade AA butter and only 6 points separated Grade AA butter from Grade B butter and there were only 28 points difference

TABLE I

CONSUMER PREFERENCE FOR FLAVOR OF VARIOUS GRADES OF BUTTER AND OF OLEOMARGARINE

Group	Placing	GRADES OF BUTTER AA No. of Respondents	AA Consumers Score*	A No. of Respondents	A Consumers Score*	B No. of Respondents	B Consumers Score*	C No. of Respondents	C Consumers Score*	OLEOMARGARINE No. of Respondents	OLEOMARGARINE Consumers Score*
Entire Group	1st.	49	49	51	51	40	40	19	19	31	31
	2nd.	38	76	48	96	53	106	22	44	27	54
	3rd.	46	138	38	114	40	120	38	114	27	81
	4th.	32	128	31	124	28	112	46	184	52	208
	5th.	24	120	21	105	28	140	64	320	52	260
	Total	189	512	189	490	189	518	189	681	189	634
	Rank**		2		1		3		5		4
Urban	1st.	11	11	21	21	15	15	10	10	12	12
	2nd.	15	30	16	32	21	42	8	16	9	18
	3rd.	17	51	14	42	15	45	16	48	7	21
	4th.	14	56	10	40	9	36	14	56	22	88
	5th.	12	60	8	40	9	45	21	105	19	95
	Total	69	208	69	175	69	183	69	235	69	234
	Rank**		3		1		2		5		4
Rural non-Farm	1st.	19	19	14	14	15	15	6	6	11	11
	2nd.	10	20	22	44	17	34	8	16	8	16
	3rd.	19	57	15	45	9	27	12	36	10	30
	4th.	13	52	7	28	13	52	16	64	16	64
	5th.	4	20	7	35	11	55	23	115	20	100
	Total	65	168	65	166	65	183	65	237	65	221
	Rank**		2		1		3		5		4
Farm	1st.	18	18	16	16	10	10	3	3	8	8
	2nd.	14	28	10	20	15	30	6	12	10	20
	3rd.	10	30	9	27	16	48	10	30	10	30
	4th.	5	20	14	56	6	24	16	64	14	56
	5th.	8	40	6	30	8	40	20	100	13	65
	Total	55	136	55	149	55	152	55	209	55	179
	Rank**		1		2		3		5		4

* Consumer score calculated by the method described by Lucas (7)

** Lowest total consumer score ranks first

between the first choice (Grade A butter) and the third choice (Grade B butter). There was a much larger spread (116 points) between Grade B butter and oleomargarine and (47 points) between oleomargarine and Grade C butter.

Grade A butter was probably placed over Grade AA butter by many of the respondents because it had the higher degree of flavor, which the people are accustomed to in Oklahoma. Grade AA butter was criticized by many of the respondents for being "flat," "tasteless," etc. Grade B butter was not generally criticized by the respondents, but some of the consumers objected to the definite flavor defects present in this grade of butter.

There was a 116 point drop from the third place sample (Grade B butter) to the fourth place sample (oleomargarine). The oleomargarine sample was criticized for tasting "greasy," "tasteless," and "flat." A total of 47 points separated the oleomargarine from the fifth place sample (Grade C butter). A total of 163 points separated the Grade C butter (fifth place) from the Grade B butter (third place). There appeared to be a very strong objection by the consumers to Grade C butter which received many criticisms for tasting "sour," "old," "rancid," and "too strong."

The top three grades of butter are much preferred by the people of Oklahoma to oleomargarine and to Grade C butter. One of the reasons the respondents preferred Grade A butter was probably because the consumers are accustomed to considerable flavor in butter. Grade AA butter was ranked in second place behind Grade A butter because the people generally objected to the flat taste of the Grade AA butter. From the results it appears that to compete successfully with

oleomargarine, the butter would have to be at least a Grade B , with Grade A butter preferred. Grade AA butter could probably be made more attractive to the people by an intelligent use of good starter culture to impart a distinct flavor to the butter.

Sixty-nine of the 189 respondents were urban dwellers. The results of their rankings of the samples on flavor are shown in Table I. The samples were ranked on flavor in the following order: Grade A, B, AA of butter, oleomargarine, and Grade C butter. The scores were: 175, 183, 208, 234, and 235, respectively. Only 8 points separated Grades A and B of butter, 25 points separated Grade B butter and Grade AA butter, and 26 points separated the Grade AA butter and oleomargarine. The placing of Grade A butter first and Grade B butter second differs slightly from the trend pointed out above for all the respondents. The urban consumers of Oklahoma appear to prefer the higher degree of flavor present in the Grades A and B of butter than in Grade AA butter. Grade AA butter was ranked 25 points behind the Grade B butter, pointing up that the urban consumers do not care for the rather flat taste of this butter. Only 1 point separated the oleomargarine and Grade C butter indicating both were preferred equally well by the urban respondents.

Sixty-five of the respondents interviewed live in the rural non-farm area of Payne County. The results of their ranking of the samples on flavor are also shown in Table I. The samples were ranked in the following order: Grades A, AA, and B of butter, oleomargarine, and Grade C butter. The scores were: 166, 168, 183, 221, and 237 respectively. Only two points separated Grade A butter (first place) from Grade AA butter (second place). A total of 15 points separated the Grade AA butter (second place) from Grade B butter (third place).

Grade B butter was separated by 38 points from oleomargarine (fourth place). Oleomargarine was separated by 16 points from Grade C butter (fifth place).

The two point spread between the Grade A butter and Grade AA butter samples was very small, indicating that both were preferred equally well by the consumers in the rural non-farm group. The spread was considerably greater (15 points) between the second place sample (Grade AA butter) and the third place sample (Grade B butter). This is perhaps a normal spread of points. Again, the oleomargarine and Grade C butter were objected to for the same reasons as stated before.

A total of 55 of the 189 respondents represented the farm population of Payne County. The results obtained from these 55 respondents are shown in Table I. The samples were ranked on flavor in the following order: Grades AA, A, and B of butter, oleomargarine, and Grade C butter. The scores were 136, 149, 152, 179, and 209 respectively. Again the top three grades of butter were in a distinct group, as only a total of 16 points separated the first place from the third place sample. It may be pointed out that the farm group of respondents was the only group which placed the top three grades of butter in the same order as the Federal butter graders. Since many of the respondents in the farm group market cream and milk, they are probably able to pick out certain defects which could not be detected by the respondents in the urban and rural-non-farm groups. A possible reason for placing Grade B butter so close to Grade A butter would be that many of the farm respondents churn their butter from sour cream, and thus the Grade B butter would be more nearly the flavor of their farm churned butter.

The farm group ranked the oleomargarine far behind the third place sample (Grade B butter) and 30 points separated the oleomargarine sample (fourth place) from the Grade C butter (fifth place).

In comparing the rankings of the three groups of respondents, urban, rural-non-farm, and farm, the samples seemed to be put into three classes, namely: Grades AA, A, and B butter in the top class, oleomargarine in the middle class, and Grade C butter in the lowest class. The oleomargarine was ranked in fourth place by every group, and it was a definite choice above the poor quality Grade C butter which was a last choice of each of the three groups.

It may be noted in comparing the three groups of respondents that the farm respondents were more critical in their placing of the samples. It may be remembered that the farm group was the only group to place the top three samples exactly as the Federal butter grader. The farm group exhibited more interest, knowledge, and cooperation when placing the samples as compared to the urban group. Frequently the farm respondents retasted the samples two or more times before reaching a decision on the ranking of the samples. By comparison the urban group often hurried through the samples and at times appeared to be guessing at the ranking of the samples. It may be remembered that the urban group exhibited the worst results when compared to the Federal grading of the samples. The rural-non-farm group seemed to be about the same as the farm group. This group included respondents who also churned their own butter. Quite possibly what was said about the farm group could also be applied to the rural-non-farm group in regard to the placing of the samples.

B. CONSUMER PREFERENCE FOR CERTAIN CHARACTERISTICS OF VARIOUS GRADES OF BUTTER AND OF OLEOMARGARINE

1. Consumer preference for spreadability. The 216 respondents were asked to test the samples of butter and the sample of oleomargarine for spreadability. The respondents were requested to spread each sample with a table knife onto the surface of a brown paper sack. The samples were stored in a well insulated ice cream packer in an attempt to maintain the samples at a suitable spreading temperature.

Only the results from 189 respondents were used in the final analysis of the spreadability test as 27 respondents' results were not used either because the samples were too warm to spread or the respondent refused to test the spreadability. The procedure for calculating the results is described by Lucas (7).

The results obtained from 189 respondents on the preference ratings for spreadability for the four grades of butter and the one sample of oleomargarine are shown in Table II. The samples were ranked on spreadability in the following order: oleomargarine, Grades A, AA, B, and C of butter. The scores were: 456, 502, 566, 581, and 730 respectively. A total of 46 points separated oleomargarine from Grade A butter. The results indicates that the respondents considered oleomargarine definitely superior in spreadability to the various grades of butter. A total of 64 points separated Grades A and AA butter, indicating that the Grade A butter had better spreadability than the Grade AA butter. A total of 15 points separated Grade B butter and Grade AA butter, indicating the spreadability of the two were about the same. A total of 149 points separated Grade B butter (fourth place) from Grade C butter (fifth place). Grade C butter

TABLE II

CONSUMER PREFERENCE FOR SPREADABILITY OF VARIOUS GRADES OF BUTTER AND OF OLEOMARGARINE

Group	Placing	GRADES OF BUTTER AA No. of Respondents	AA Consumers Score *	A No. of Respondents	A Consumers Score *	B No. of Respondents	B Consumers Score *	C No. of Respondents	C Consumers Score *	OLEOMARGARINE No. of Respondents	OLEOMARGARINE Consumers Score *
Entire Group	1st.	38	38	47	47	21	21	14	14	69	69
	2nd.	37	74	47	94	43	86	23	46	39	78
	3rd.	35	105	43	129	52	156	27	81	32	96
	4th.	46	184	28	112	47	188	36	144	32	128
	5th.	33	165	24	120	26	130	89	445	17	85
Total		189	566	189	502	189	581	189	730	189	456
Rank**			3		2		4		5		1
Urban	1st.	17	17	18	18	4	4	7	7	26	26
	2nd.	12	24	16	32	20	40	11	22	13	26
	3rd.	7	21	21	63	18	54	14	42	12	36
	4th.	19	76	7	28	17	68	15	60	14	56
	5th.	17	85	10	50	13	65	25	125	7	35
Total		72	223	72	191	72	231	72	256	72	179
Rank**			3		2		4		5		1
Rural non-Farm	1st.	13	13	16	16	10	10	3	3	24	24
	2nd.	13	26	18	36	13	26	7	14	15	30
	3rd.	18	54	13	39	18	54	7	21	10	30
	4th.	18	72	11	44	17	68	10	40	10	40
	5th.	4	20	8	40	8	40	39	195	7	35
Total		66	185	66	175	66	198	66	273	66	159
Rank**			3		2		4		5		1
Farm	1st.	8	8	13	13	7	7	4	4	19	19
	2nd.	12	24	13	26	10	20	5	10	11	22
	3rd.	10	30	9	27	16	48	6	18	10	30
	4th.	9	36	10	40	13	52	11	44	8	32
	5th.	12	60	6	30	5	25	25	125	3	15
Total		51	158	51	136	51	152	51	201	51	118
Rank**			4		2		3		5		1

* Consumer score calculated by method described by Lucas (7).
** Lowest total consumer score ranks first.

was criticized by many respondents for being, "too hard to spread."

Seventy-two of the respondents were urban dwellers. They ranked the samples on spreadability in the following order: oleomargarine, Grades A, AA, B, and C of butter. The scores were: 179, 191, 223, 231, and 256 respectively. It may be noted that the ranking of the samples by the urban group was the same as the entire group's ranking of the samples. The magnitude of spread of points was less between the oleomargarine and Grade AA butter in the urban than in the entire group. As before the Grade C butter was ranked in last place.

Sixty-six of the respondents were in the rural-non-farm group. They ranked the samples in the following order: oleomargarine, Grades A, AA, B, and C of butter. The scores were, 159, 175, 185, 198 and 273 respectively. The ranking of the five samples was the same as noted in the entire group and urban group.

Fifty-one of the respondents were in the farm group. They ranked the samples in the following order: oleomargarine, Grades A, B, AA, and C of butter. The scores were 118, 136, 152, 158, and 201 respectively. Oleomargarine again ranked first and the Grade C butter was again ranked last. The interesting thing about this group was the placing of Grade AA butter fourth instead of third where the other groups had placed it. The sample of Grade AA butter used in sampling of the urban and rural non-farm respondents had, on weekly examination, showed signs of deterioration. A new sample of Grade AA butter from a different creamery replaced it for the sampling of the farm respondents. The results indicate that the new Grade AA butter sample had poorer spreadability than the first sample of Grade AA butter.

In comparing the three groups of respondents, urban, rural-non-farm, and farm, it was noted that oleomargarine always ranked first and the Grade C butter last in each of the three groups of respondents. Most of the respondents remarked that the oleomargarine spreads "smoothly" and "evenly", while the Grade C butter was criticized for being "crumbly," "rolls up," and "hard to spread."

2. Consumer preference for appearance. The samples of butter and the sample of oleomargarine used in judging flavor and spreadability were also judged on general appearance. An effort was made to obtain the same shade of color for all the samples but there was some variation in the color among the samples. This was very unfortunate as many of the respondents showed a definite tendency to place the samples entirely on color.

Three experienced butter judges ranked the samples, on the basis of color from the darkest shade to the lightest shade, as follows: Grades AA, A, B, C of butter and the sample of oleomargarine.

Of a total of 216 respondents only the results from 206 were used. The other ten respondents had placed the samples as being the same in appearance. In the final analysis these have been discarded.

The results obtained from the 206 respondents on the preference ratings for appearance for the four grades of butter and the one sample of oleomargarine are shown in Table III. The samples were ranked on appearance in the following order: Grades B, A, and AA of butter, oleomargarine, and Grade C butter. The scores were 481, 491, 587, 725, and 806 respectively. The samples placings were almost entirely based on the color of the samples. The two

TABLE III

CONSUMER PREFERENCE FOR APPEARANCE OF VARIOUS GRADES OF BUTTER AND OF OLEOMARGARINE

Group	Placing	GRADES OF BUTTER AA No. of Respondents	AA Consumers' Score *	A No. of Respondents	A Consumers' Score *	B No. of Respondents	B Consumers' Score *	C No. of Respondents	C Consumers' Score *	OLEOMARGARINE No. of Respondents	OLEOMARGARINE Consumers' Score *
Entire Group	1st.	47	47	60	60	57	57	15	15	27	27
	2nd.	41	82	63	126	66	132	16	32	20	40
	3rd.	45	135	41	123	50	150	35	105	35	105
	4th.	42	168	28	112	23	92	46	184	67	268
	5th.	31	155	14	70	10	50	94	470	57	285
	Total	206	587	206	491	206	481	206	806	206	725
	Rank**		3		2		1		5		4
Urban	1st.	19	19	23	23	14	14	10	10	11	11
	2nd.	14	28	24	48	27	54	6	12	6	12
	3rd.	10	30	15	45	24	72	14	42	14	42
	4th.	19	76	8	32	9	36	19	76	22	88
	5th.	15	75	7	35	3	15	28	140	24	120
	Total	77	228	77	183	77	191	77	280	77	273
	Rank**		3		1		2		5		4
Rural non-Farm	1st.	16	16	22	22	25	25	0	0	9	9
	2nd.	17	34	24	48	20	40	4	8	7	14
	3rd.	19	57	14	42	12	36	13	39	14	42
	4th.	10	40	10	40	12	48	15	60	25	100
	5th.	10	50	2	10	3	15	40	200	17	85
	Total	72	197	72	162	72	164	72	307	72	250
	Rank**		3		1		2		5		4
Farm	1st.	12	12	15	15	18	18	5	5	7	7
	2nd.	10	20	15	30	19	38	6	12	7	14
	3rd.	16	48	12	36	14	42	8	24	7	21
	4th.	13	52	10	40	2	8	12	48	20	80
	5th.	6	30	5	25	4	20	26	130	16	80
	Total	57	162	57	146	57	126	57	219	57	202
	Rank**		3		2		1		5		4

* Consumer score calculated by the method described by Lucas (7).
** Lowest total consumer score ranks first.

lowest place samples (oleomargarine and Grade C butter) were the lightest shade of yellow.

Seventy-seven of the respondents were urban dwellers. They ranked the samples in the following order: Grades A, B, and AA of butter, oleomargarine, and Grade C butter. The scores were: 183, 191, 228, 273, and 280 respectively. It may be noted that the ranking of the samples by the urban group was different from the total group ranking of the samples.

Seventy-two of the respondents were rural non-farm dwellers. They ranked the samples on appearance in the following order: Grades A, B, and AA of butter, oleomargarine, and Grade C butter. The scores were: 162, 164, 197, 250, and 307 respectively. The ranking of the samples by this group was the same as noted for the urban groups.

Fifty-seven of the respondents were farm dwellers. They ranked the samples on appearance in the following order: Grades B, A, and AA of butter, oleomargarine, and Grade C butter. The scores were: 126, 146, 162, 202, and 219 respectively. The interesting thing to note about this group was the placing of Grade B butter over Grade A butter. The farm group place the samples the same as the entire group of respondents. The farm group, again displayed more interest and cooperation than the other groups in the ranking of the samples on appearance.

In comparing the three groups it was noted that the urban and rural-non-farm groups ranked the samples exactly the same. The farm group differed from the other two groups in placing Grade B butter over Grade A butter. All three groups showed a tendency to rank the

samples on color, however, the farm group seemed to make a more conscientious effort to place the samples on general appearance.

C. CONSUMER PREFERENCES FOR CERTAIN CHARACTERISTICS OF BUTTER

1. Salt preference. Five samples of butter containing different amounts of salt (0%, 0.5%, 1.0%, 1.5% and 2.0%) were prepared. The respondents were requested to taste each of the samples and then select the one that contained the amount of salt they preferred.

The results from only 189 respondents were used in the final analysis of the salt preference test because 27 of the respondents refused to taste the salt samples either because of doctor's orders or other personal reasons. The results obtained on the salt preference test are shown in Table IV.

For the entire group of 189 respondents 27.67% preferred the 1.5% salt sample, 23.79% preferred the 1.0% salt sample, 22.82% preferred the 2.0% salt sample, 20.87% preferred the 0.5% salt sample, and only 4.85% preferred the unsalted sample. More of the respondents preferred the 1.5% salt sample than any of the others but the differences in preference were not great.

For the urban group of respondents 25.00% preferred the 2.0% salt sample, 25.00% preferred the 1.5%, 25.00% preferred the 1.0% salt sample, 15.00% preferred the 0.5% salt sample, and 10.00% preferred the unsalted sample. The urban group showed a preference for the 2.0%, 1.5% and 1.0% salt samples, or the same as the entire group of 189 respondents.

For the rural-non-farm group of respondents 32.35% preferred the 0.5% salt sample, 29.41% preferred the unsalted sample and the 1.5%

TABLE IV

CONSUMER PREFERENCE FOR SALT CONTENT IN BUTTER

Group	Unsalted %	0.5% Salt %	1.0% Salt %	1.5% Salt %	2.0% Salt %
Entire Group	4.85	20.87	23.79	27.67	22.82
Urban	10.00	15.00	25.00	25.00	25.00
Rural Non-Farm	29.41	32.35	25.00	29.41	10.29
Farm	0.00	15.52	20.69	29.31	34.48

TABLE V

CONSUMER PREFERENCE FOR SHADE OF COLOR OF BUTTER

Group	Un-Colored %	¼ Normal Color* %	½ Normal Color* %	Normal Color* %	Twice Normal Color* %
Entire Group	2.79	19.53	11.63	57.67	8.37
Urban	5.95	17.86	10.76	58.33	7.14
Rural Non-Farm	1.39	15.28	15.28	56.94	11.11
Farm	0.00	27.12	8.47	57.63	6.78

* For calculation of color see experimental method section.

salt sample, 25.00% preferred the 1.0% salt sample and 10.29% preferred the 2.0% salt sample. The rural non-farm group differs from the other two groups in that this group showed a stronger preference for the unsalted and the 0.5% salt sample.

For the farm group of respondents 34.48% preferred the 2.0% salt sample, 29.31% preferred the 1.5% salt sample, 20.69% preferred the 1.0% salt sample, 15.52% preferred the 0.5% salt sample and none preferred the unsalted sample. The farm group showed a strong preference for the 1.5 and 2.0% salted samples.

In each group there was no clear cut choice for any of the samples. It appeared that a wide range of salt in butter could occur before the consumer would discriminate against it.

2. Color preference. Five samples of butter containing different amounts of color (uncolored, one-fourth normal color, one-half normal color, normal color, and twice normal color) were prepared and placed into 50 X 150 mm. Petri dishes. The respondents were requested to select the one sample of the five which they preferred for color of butter. The results obtained are shown in Table V.

For the entire group of 216 respondents, 57.67% preferred the normal color sample, 19.53% preferred the one-fourth normal color sample, 11.63% preferred the one-half normal color sample, 8.37% preferred the twice normal color sample and only 2.79% preferred the uncolored sample. The entire group of 216 respondents showed a majority preferring the normal color sample.

For the urban group of respondents 58.33% preferred the normal color, 17.86% preferred the one-fourth normal color, 10.76% preferred the one-half normal color, 7.14% preferred the twice normal color,

and 5.95% preferred the uncolored sample which is in general agreement with the preference for the entire group of 216 respondents.

For the rural non-farm group of respondents 56.94% preferred the normal color, 15.28% preferred the one-fourth normal color, and the one-half normal color, 11.11% preferred the twice normal color, and only 1.39% preferred the uncolored sample.

For the farm group of respondents 57.63% preferred the normal color, 27.12% preferred the one-fourth normal color, 8.47% preferred the one-half normal color, 6.78% preferred the twice normal color and none preferred the uncolored sample.

In comparing the three groups it was noted that a majority in each group preferred the normal color butter and that the ranking of the other four samples were the same for the three groups. It can be assumed that the butter now placed on the market in Oklahoma is of the approximate shade of color that the consumer prefers.

D. COMPARISON OF BUTTER AND OLEOMARGARINE

1. Ability of consumers to detect oleomargarine. The respondents had not been informed that one sample of the five used for the flavor, spreadability, and appearance tests was oleomargarine. When they finished these tests they were then asked if they thought any of the samples was oleomargarine. The results obtained are shown in Table VI.

Only 17.14% of the entire group of 189 respondents, 19.51% of the urban respondents, 15.07% of the rural non-farm respondents, and 15.52% of the farm respondents correctly identified the oleomargarine sample.

In comparing the three groups it was noted that the urban respondents had a higher percentage selecting the oleomargarine than either of the other two groups. The respondents showed a rather poor ability to detect oleomargarine from among the five samples which indicates that oleomargarine may be substituted for butter without its being detected readily by the average consumer.

TABLE VI

ABILITY OF RESPONDENTS TO DETECT OLEOMARGARINE

Respondent Groups	% Correctly Detected oleomargarine	% Incorrectly Detected oleomargarine
Entire Group	17.14	82.86
Urban	19.51	80.49
Rural-non-farm	15.07	84.93
Farm	15.52	84.48

2. Consumers' opinions of butter and of oleomargarine. The entire group of 216 respondents were asked for their opinions of good butter or good oleomargarine with respect to the following: appearance, taste, spreadability, food value, digestibility, uniformity of quality, keeping quality, and cooking quality (see section II of the questionnaire). One of three answers was acceptable, butter, oleomargarine or no choice. The results obtained are shown in Table VII.

The opinions on appearance for the entire group of 216 respondents showed that 56.02% preferred butter, 17.13% preferred oleomargarine, and 26.85% had no choice. For the urban group, 53.57% preferred butter, 19.05% preferred oleomargarine, and 27.38% had no choice. For the rural-non-farm group, 58.90% preferred butter, 16.44% preferred oleomargarine, and 24.66% had no choice. For the farm group 55.93%

TABLE VII

CONSUMERS' OPINIONS OF BUTTER AND OF OLEOMARGARINE

Characteristics	Choice	% Respondents in each group preferring butter or oleomargarine			
		Entire Group	Urban	Rural non-farm	Farm
Appearance	Butter	56.02	53.57	58.90	55.93
	Oleo*	17.13	19.05	16.44	15.25
	No choice	26.85	27.38	24.66	28.81
Taste	Butter	79.17	72.62	78.08	89.83
	Oleo*	15.74	20.24	17.81	6.78
	No choice	5.09	7.14	4.11	3.39
Spreadability	Butter	38.89	33.33	49.32	33.90
	Oleo*	39.35	40.48	31.50	47.46
	No choice	21.76	26.19	19.18	18.64
Food value	Butter	83.33	77.38	84.93	89.83
	Oleo*	5.09	7.14	4.11	3.39
	No choice	11.57	15.48	10.96	6.78
Digestibility	Butter	35.65	35.71	39.73	30.51
	Oleo*	24.07	29.76	19.18	22.03
	No choice	40.28	34.52	41.10	47.46
Uniformity of quality	Butter	41.20	34.52	49.32	40.68
	Oleo*	42.13	53.57	34.25	35.59
	No choice	16.67	11.90	16.44	24.33
Keeping quality	Butter	12.96	16.67	15.07	5.09
	Oleo*	68.52	67.86	69.86	67.80
	No choice	18.52	15.48	15.07	27.12
Cooking quality	Butter	60.65	53.57	63.01	67.80
	Oleo*	29.17	32.14	26.03	28.81
	No choice	10.19	14.29	10.96	3.39

* Abbreviation of Oleomargarine.

preferred butter, 15.25% preferred oleomargarine, and 28.81% had no choice. There were no large differences between the groups on their opinions on appearance. A majority in each group preferred the appearance of butter over oleomargarine.

The opinions on taste of the entire group of 216 respondents showed that 79.17% preferred butter, 15.74% preferred oleomargarine, and 5.09% had no choice. For the urban group 72.62% preferred butter 20.24% preferred oleomargarine, and 7.14% had no choice. For the rural-non-farm group 78.08% preferred butter 17.81% preferred oleomargarine, and 4.11% had no choice. For the farm group 89.83% preferred butter, 6.78% preferred oleomargarine, and 3.39% had no choice. The farm group showed a larger percentage preferring butter as compared to the other groups. A large majority in each group preferred butter over oleomargarine. The respondents' opinions on flavor (taste) showed that 79.17% preferred butter over oleomargarine. The actual placing of the samples on flavor by the respondents showed that 65.96% preferred Grade AA butter over oleomargarine, 65.62% preferred Grade A butter over oleomargarine, 63.68% preferred Grade B butter over oleomargarine, and only 44.79% preferred Grade C butter over oleomargarine. This again points out that the consumers preferred Grade B butter or better over oleomargarine.

The opinions on spreadability of the entire group of 216 respondents showed that 38.89% preferred butter, 39.35% preferred oleomargarine and 21.76% had no choice. For the urban group 33.33% preferred butter, 40.48% preferred oleomargarine, and 26.19% had no choice. For the rural-non-farm group 49.32% preferred butter, 31.50% preferred

oleomargarine and 19.18% had no choice. For the farm group 33.90% preferred butter, 47.46% preferred oleomargarine, and 18.64% had no choice.

The results obtained from the opinion questions were in disagreement with the results obtained with the testing of butter and oleomargarine. The actual placing of the samples on spreadability showed that 62.56% preferred oleomargarine over Grade AA butter, 54.59% preferred oleomargarine over Grade A butter, 63.91% preferred oleomargarine over Grade B butter, and 77.04% preferred oleomargarine over Grade C butter.

The opinions for food value of the entire group of 216 respondents showed that 83.33% preferred butter, 5.09% preferred oleomargarine, and 11.57% had no choice. For the urban group 77.38% preferred butter, 7.14% preferred oleomargarine, and 15.48% had no choice. For the rural-non-farm group 84.93% preferred butter, 4.11% preferred oleomargarine, and 10.96% had no choice. For the farm group 89.83% preferred butter, 3.39% preferred oleomargarine, and 6.78% had no choice. The results indicated that a strong majority in each group preferred butter over oleomargarine in food value. Only a small minority in each group preferred oleomargarine. The farm group had the strongest preference for butter, followed by the rural-non-farm group, and last, the urban group.

The opinions on digestibility of the entire group of 216 respondents showed that 35.65% preferred butter, 24.07% preferred oleomargarine, and 40.28% had no choice. For the urban groups 35.71% preferred butter, 29.76% preferred oleomargarine, and 34.52% had no choice. For the rural-non-farm group 39.73% preferred butter, 19.18%

preferred oleomargarine, and 41.10% had no choice. For the farm group 30.51% preferred butter, 22.03% preferred oleomargarine, and 47.46% had no choice. All three groups preferred butter over oleomargarine for digestibility, but even a larger percentage in each group was either undecided or did not know which was the more digestible. It was interesting to note that the farm group showed less preference for butter than the other two groups.

The opinions on uniformity of quality of the entire group of 216 respondents showed that 41.20% preferred butter, 42.13% preferred oleomargarine, and 16.67% had no choice. For the urban group 34.52% preferred butter, 53.57% preferred oleomargarine, and 11.90% had no choice. For the rural-non-farm group 49.32% preferred butter, 34.25% preferred oleomargarine and 16.44% had no choice. For the farm group 40.68% preferred butter, 35.59% preferred oleomargarine, and 24.33% had no choice. Both the farm and rural-non-farm group considered butter to be more uniform in quality than oleomargarine, while the urban group considered oleomargarine to be more uniform in quality.

The opinions on keeping quality of the entire group of 216 respondents showed that 12.96% preferred butter, 68.52% preferred oleomargarine, and 18.52% had no choice. For the urban group 16.67% preferred butter, 67.86% preferred oleomargarine, and 15.48% had no choice. For the rural-non-farm group 15.07% preferred butter, 69.86% preferred oleomargarine, and 15.07% had no choice. For the farm group 5.09% preferred butter, 67.80% preferred oleomargarine, and 27.12% had no choice. A strong majority in each group were of the opinion that oleomargarine was superior in keeping quality to butter, especially when held without refrigeration. In comparing the groups

a larger percentage of the farm group considered oleomargarine to be superior to butter in keeping quality than did those in the other groups. Some of the farm respondents lacked mechanical refrigerators, in such cases oleomargarine was always preferred over butter.

The opinions on cooking quality of the entire group of 216 respondents showed that 60.65% preferred butter, 29.17% preferred oleomargarine, and 10.19% had no choice. For the urban group of respondents 53.57% preferred butter, 32.14% preferred oleomargarine, and 14.29% had no choice. For the rural non-farm group 63.01% preferred butter, 26.03% preferred oleomargarine, and 10.96% had no choice. For the farm group 67.80% preferred butter, 28.81% preferred oleomargarine, and 3.39% had no choice. A majority of the respondents recognized the superior cooking quality of butter. The farm group showed the strongest preference for butter, followed by the rural non-farm group and urban group. Many of the respondents said that butter always made things taste better.

It was noted from the results that butter was preferred over oleomargarine by a majority of respondents for taste, appearance, food value, and cooking quality. Oleomargarine was preferred by a majority of respondents for keeping quality. The preference for butter and oleomargarine was about the same for spreadability, digestibility, and uniformity of quality. It appears from the results that if the keeping quality of butter could be improved the consumers would buy more butter.

E. CONSUMPTION OF BUTTER AND/OR OLEOMARGARINE

1. Distribution of users of butter and/or oleomargarine. Each respondent was asked, "How much oleomargarine does your family use per week?" and "How much butter does your family use per week?" to determine the percentages of each group using butter and/or oleomargarine. The results obtained are shown in table VIII - Part I.

Of the entire group of 216 respondents 15.42% used butter, 56.07% used oleomargarine, and 28.50% used both products. For the urban group 7.24% used butter, 59.03% used oleomargarine, and 33.73% reported using both products. For the rural-non-farm group 13.88% used butter, 55.55% used oleomargarine, and 30.55% used both products. For the farm group 28.81% used butter, 52.54% used oleomargarine, and 18.64% reported using both products. These percentages included the 9.72% of the respondents who churned and used their own butter. As may be expected, the farm group used more butter than any other group. The urban and rural-non-farm groups had the least number of people using butter; however, nearly one-third of each of these two groups reported using both products, indicating that these groups may use a considerable amount of butter.

2. Per capita consumption of butter and/or oleomargarine. The median and mean weekly per capita consumption were calculated. Because the mean seemed to give a false impression of the per capita consumption, the median was also calculated. The results obtained for the mean and median per capita consumption are shown in Table VIII part 2.

The mean weekly per capita consumption of butter and/or oleomargarine

TABLE VIII

CONSUMPTION OF BUTTER AND/OR OLEOMARGARINE

Part 1. Distribution of users of butter and/or oleomargarine.

Product	% of each group using butter and/or oleomargarine			
	Entire Group	Urban	Rural Non-Farm	Farm
Butter	15.42	7.24	13.88	28.81
Oleomargarine	56.07	59.03	55.55	52.54
Both Products	28.50	33.73	30.55	18.64

Part 2. Per capita consumption of butter and/or oleomargarine

Group	Weekly per capita mean and median consumption of butter and/or oleomargarine per (pound)							
	Butter		Oleomargarine		Both Products			
					Butter		Oleomargarine	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Entire Group	0.42	0.38	0.41	0.36	0.36	0.33	0.39	0.33
Urban	0.42	0.29	0.37	0.33	0.33	0.33	0.38	0.33
Rural Non-Farm	0.50	0.50	0.41	0.38	0.37	0.33	0.41	0.31
Farm	0.54	0.50	0.42	0.38	0.42	0.38	0.38	0.50

by the entire group of respondents was as follows: butter 0.42 pound oleomargarine, 0.41 pound; both products 0.36 pound for butter and 0.39 pound for oleomargarine.

The mean weekly per capita consumption of butter and/or oleomargarine by the urban group was as follows: butter 0.42 pound, oleomargarine 0.37 pound, both products 0.33 pound for butter and 0.38 pound for oleomargarine.

The mean weekly per capita consumption of butter and/or oleomargarine by the rural non-farm group was as follows: butter 0.50 pound, oleomargarine 0.41 pound, both products 0.37 pound for butter and 0.41 pound for oleomargarine.

The mean weekly per capita consumption of butter and/or oleomargarine by the farm group was as follows: butter 0.54 pound, oleomargarine 0.42 pound, both products 0.42 pound for butter and 0.38 pound for oleomargarine.

In comparing the three groups (urban, rural non-farm, and farm) it was noted that the farm and the rural non-farm groups consumed more butter than the urban group. Many of the respondents in the farm and rural non-farm group churned their own butter, this probably accounts for the relatively high amount of butter consumed in these groups. It was also noted that the users of both products used considerably more butter and oleomargarine combined per person than the users of only one of the two products.

Many of the respondents using both products used them in place of cooking fats and oils, which would help explain the large consumption of both products by the consumers.

As the results were calculated from the respondents' answers to

the questions there was no way to check the validity of the results in the universe sampled. However, the respondents' annual consumption of these two products were calculated to see how they compared to the national average. The butter users consumed 21.8 pounds per person per year, the oleomargarine users consumed 21.3 pounds per person per year. The users of both products consumed 18.7 pounds of butter per person per year and 20.3 pounds of oleomargarine per person per year, or a total of 39.0 pounds per person per year. The annual per capita consumption of these products by the respondents seemed to be more than that of the national average of approximately nine pounds of butter per capita per year, approximately nine pounds of oleomargarine per capita per year and approximately eighteen pounds per capita per year for the users of both products.

F. INFLUENCE OF PRICE ON CONSUMPTION OF BUTTER AND OF OLEOMARGARINE

1. Butter and oleomargarine priced at the same level. Each respondent was asked the question: "If oleomargarine were the same price as butter is now, would you use less oleomargarine?" The results obtained from the answers to this question are shown in Table IX part 1. For the entire group of 216 respondents 65.27% answered "Yes," 30.55% answered "No," and 4.18% had some other answer or did not answer. For the urban group 66.66% answered "Yes," and 33.33% answered "No." For the rural-non-farm group 71.22% answered "Yes," 26.03% answered "No," and 2.75% had some other answer. For the farm group 55.93% answered "Yes," 32.22% answered "No," and 11.85% answered something else, usually, that they were not using any oleomargarine. The results indicated that price is one of the most

TABLE IX

INFLUENCE OF PRICE ON CONSUMPTION OF BUTTER AND OLEOMARGARINE

Part 1. "If oleomargarine were the same price as butter is now, would you use less oleomargarine?"

Group	% Respondents Answering Yes	No	Other
Entire Group	65.27	30.55	4.18
Urban	66.66	33.33	
Rural non-farm	71.22	26.03	2.75
Farm	55.93	32.22	11.85

Part 2. "If butter were the same price as oleomargarine is now, would you use more butter?"

Group	% Respondents Answering Yes	No	Other
Entire Group	72.22	22.68	5.10
Urban	73.80	23.80	2.14
Rural non-farm	76.71	20.54	2.75
Farm	64.40	23.73	11.18

Part 3. "If the price of high grade oleomargarine were fixed at 30¢/pound what price would you be willing to pay for the kind of butter you want?"

Price Range	Users of Butter only %	Users of Oleomargarine only %	Users of Both Products %	All Respondents %
20¢ - 29¢	-	.81	-	.47
30¢ - 39¢	9.68	40.32	16.07	29.38
40¢ - 49¢	29.02	32.25	21.43	28.91
50¢ - 59¢	9.68	21.78	35.72	23.70
60¢ - 69¢	19.36	4.84	17.86	10.43
70¢ - 79¢	9.68	-	5.36	2.84
80¢ - 89¢	6.46	-	1.78	1.42
Price no object	16.12	-	1.78	2.84

important reasons why people are not using more butter.

The respondents were also asked, "If butter were the same price as oleomargarine is now, would you use more butter?" The results obtained from the answers to this question are shown in table IX part 2. For the entire group of 216 respondents 72.22% answered "Yes," 22.68% answered "No," and 5.10% had some other answer. For the urban group 73.80% answered "Yes," 23.80% answered "No," and 2.40% had some other answer. For the rural-non-farm group 76.71% answered "Yes," 20.54% answered "No," and 2.75% had some other answer. For the farm group 64.40% answered "Yes," 23.72% answered "No," and 11.18% had some other answer. Some of the other answers were that the respondents were using all the butter they wanted.

Less farm respondents answered "Yes," probably due to the fact many of the respondents were already using as much butter as they wanted, as many of them churned their own butter.

A higher percentage answered "Yes" to the second question as compared to the first question and this suggests that the price of butter is too high for many of the consumers .

2. Price of butter in relation to fixed price of oleomargarine. To determine the price consumers were willing to pay for butter, the respondents were asked: "If the price of high grade oleomargarine was fixed at 30¢ per pound what price would you be willing to pay for the kind of butter you want?" The results of this question were divided into three distinct groups, namely: butter users, oleomargarine users, and users of both products. The results obtained are shown in table IX part 3.

A total of 0.47% of all the respondents, 0.81% of the oleomargarine

users, and none of the rest of the others would pay between 20 and 29¢ a pound for butter.

A total of 29.38% of all the respondents, 9.68% of the butter users, 40.32% of the oleomargarine users and 16.07% of the users of both products were willing to pay between 30 and 39¢ a pound for butter.

A total of 28.91% of all the respondents, 29.02% of the butter users, 32.25% of the oleomargarine users and 21.43% of the both products users were willing to pay between 40 and 49¢ a pound for butter.

A total of 23.70% of all the respondents, 9.68% of the butter users, 21.78% of the oleomargarine users, and 35.72% of the users of both products were willing to pay between 50 and 59¢ a pound for butter.

A total of 10.43% of the oleomargarine users, and 19.36% of the butter users, 4.84% of the oleomargarine users, and 17.86% of the users of both products were willing to pay between 60 and 69¢ a pound for butter.

A total of 2.84% of the total respondents, 9.68% of the butter users, none of the oleomargarine users and 5.36% of the users of both products were willing to pay between 70 and 79¢ a pound for butter.

A total of 1.42% of the total respondents, 6.46% of the butter users, none of the oleomargarine users, and 1.78% of the users of both products were willing to pay between 80 and 89¢ a pound for butter.

A total of 2.84% of the total respondents, 16.12% of the butter users, none of the oleomargarine users, and 1.78% of the users of both products were willing to pay whatever necessary to buy butter.

Based on the total number of respondents, the price they are willing to pay for butter would be as follows: 2.84% were willing to pay the current price regardless of what it might be, 4.26% were

willing to pay 80¢ or more, 7.10% were willing to pay 70¢ or more, 17.53% were willing to pay 60¢ or more, 41.23% were willing to pay 50¢ or more and 70.14% were willing to pay 40¢ or more for butter. It appears that on the basis of these results that butter should sell at between 40 and 50¢ a pound in order to compete with 30¢ a pound oleomargarine.

3. Relation of income level to the price consumers would pay for butter. The results were calculated to see if the respondents' annual income affected the average price they were willing to pay for butter. The annual incomes of the respondents were divided into nine levels. The results obtained are shown in table X. There appeared to be no correlation between the level of income and the price the consumers were willing to pay for butter.

For the total group of 216 respondents, the average prices the consumers were willing to pay for butter by each income level were as follows: less than $1,200, 49.7¢; $1,200 to $1,800, 44.9¢; $1,800 to $3,000, 47.7¢; $3,000 to $4,200, 44.0¢; $4,200 to $5,400, 42.8¢; $5,400 to $6,600, 49.3¢; $6,600 to $7,800, 57.0¢; $7,800 to $8,400 60.0¢; and over $8,400, 41.6¢.

It was interesting to note that the highest price that the consumers were willing to pay for butter was by the $7,800 to $8,400 income level, the next highest price was by the $6,600 to $7,800 income level, the next price was by the lowest income level (less than $1,200). The lowest price (41.6¢) was the $8,400 or over income level was willing to pay for butter. Some of the highest prices which the consumers were willing to pay for butter were by those in the lower income levels. From the results it appears that the income level had

TABLE X

RELATION OF INCOME LEVEL TO THE PRICE CONSUMERS WOULD PAY FOR BUTTER*

GROUP	Less than $1200	$1200 to $1800	$1800 to $3000	$3000 to $4200	$4200 to $5400	$5400 to $6600	$6600 to $7800	$7800 to $8400	Over $8400
	¢/lb.	¢/lb.	¢/lb.	¢/lb.	¢/lb.	¢/lb.	¢/lb.	¢/lb.	¢/lb.
Entire group	.497	.449	.477	.440	.428	.493	.570	.600	.416
Urban	.583	.408	.458	.395	.435	.505	.425	.900	.416
Rural non-farm	.458	.518	.522	.450	.416	.513	.300	-----	-----
Farm	.490	.440	.433	.468	.436	.300	.400	.300	-----

*"If the price of oleomargarine were fixed at 30¢ a pound what price would you be willing to pay for the kind of butter you want?"

no influence on the price the consumers were willing to pay for butter.

G. RELATION OF INCOME LEVEL TO USAGE OF BUTTER AND/OR OLEOMARGARINE

The users of butter and/or oleomargarine were calculated by income level to see if income had any influence on whether butter and/or oleomargarine was being used. Since there were only three respondents with incomes over $8,400, these were calculated as having incomes of $7,800 or more. The results obtained are shown in table XI.

The results showed that as the income level rises the usage of butter declines. It was noted that the lowest income group showed the highest percentage of butter users and that butter was not used by the two highest income groups. On the other hand, there appeared to be an increase in the usage of oleomargarine as the income level became higher. The users of both butter and oleomargarine did not show a definite pattern as noted for the butter and the oleomargarine users.

The farmer's income usually given to the interviewer was the net income; also many of the farm respondents churned their own butter. For these reasons the percent of respondents using butter and using both products appeared larger in the lower income brackets. If there had been a way to calculate the gross income of the farm group, there probably would have been a larger percentage of butter users in the income brackets above $3,000 than was shown in the results.

TABLE XI

RELATION OF INCOME LEVEL TO USAGE OF BUTTER AND/OR OLEOMARGARINE

Income Range $	% Respondents Using		
	Users of Butter Only	Users of Oleo-margarine Only	Users of Both Products
7,800 to 8,400	-	40.00	60.00
7,800 - 6,600	-	80.00	20.00
6,600 - 5,400	6.66	73.33	20.00
5,400 - 4,200	7.84	68.63	23.53
4,200 - 3,000	5.26	73.68	21.05
3,000 - 1,800	22.23	47.22	30.55
1,800 - 1,200	27.66	34.04	38.30
< 1,200	26.67	46.67	26.67

SUMMARY AND CONCLUSIONS

A survey was conducted to determine consumer preferences for various grades of butter and for oleomargarine and to obtain certain other information concerned with the factors affecting the purchase of butter and oleomargarine.

Approximately 1% of the households in Payne County, Oklahoma were randomly selected and interviewed. The households were divided into three groups, namely: urban, rural-non-farm, and farm.

To discover consumer preferences for flavor, appearance, spreadability, and ability to detect oleomargarine from butter, four samples of federally graded butter (Grades AA, A, B, and C) and one sample of a good brand of oleomargarine (selling for 30¢ a pound) were submitted to the respondents for their examination and opinions.

Salt and color preference of butter were determined by allowing the respondents to examine five different color shades of butter and tasting five samples of butter containing different percentages of salt.

One portion of the questionnaire consisted of questions to determine the consumers' opinions for butter or oleomargarine based on appearance, taste, spreadability, food value, digestibility, uniformity of quality, keeping quality, and cooking quality. The other portion of the questionnaire consisted of questions to determine the respondents' average consumption of the two products and the influence of price on the purchase of butter.

In the consumer preference for flavor, 27 of 216 respondents refused to taste the samples. The remaining 189 respondents ranked the samples on flavor in the following order of preference: Grades A, AA, and B of butter, oleomargarine, and Grade C butter. The respondents showed a definite dislike for the Grade C butter. Grade A butter was ranked first by the urban and the rural-non-farm groups while Grade AA butter was ranked first by the farm group. From the results obtained it appeared that, for butter to compete successfully with oleomargarine, it should be Grade B or better. The respondents showed a definite liking for the stronger flavor of the Grades A and B butter than for the Grade AA butter which was characterized as "flat," "lacking in flavor." For this reason butter made with culture to impart a distinct flavor might have a favorable consumer acceptance.

The preference for spreadability was as follows: oleomargarine, Grades A, AA, B, and C of butter. The respondents showed a definite preference for the oleomargarine over the four butter samples. Many of the respondents remarked that the oleomargarine spread smoothly and evenly.

A total of 206 of the 216 respondents examined the samples for general appearance. The ranking was as follows: Grades B, A, and AA, of butter, oleomargarine, and Grade C butter. An attempt was made to select five samples which had the same shade of color, but there was some variation in the color of the samples and many of the respondents placed the samples entirely on color. It was interesting to note that the two lightest colored samples were ranked fourth or fifth by many of the of the respondents while the darker colored samples were ranked higher.

A total of 189 respondents tasted the samples, with various concentrations of salt added to determine their preference for the amount of salt in butter. The samples were ranked by the entire group as follows: 1.5%, 1.0%, 2.0%, 0.5%, and unsalted. The results showed that the salt content of butter could be varied a great deal before the average consumer would object to the amount of salt. There was no majority in any group preferring any of the samples.

All the 216 respondents examined the samples with various shades of color. A strong majority in each group showed a preference for the normal shade of color in butter, indicating that the color of butter now on the market is suitable to most of the consumers in Oklahoma.

The 216 respondents displayed a rather poor ability to distinguish oleomargarine from butter. Only 17.14% of the entire group of respondents correctly identified the oleomargarine sample. The results indicated that oleomargarine may be substituted for butter without it being detected readily by the average consumer.

The respondents were asked their opinions concerning their preference for butter or for oleomargarine on several characteristics. A majority of the respondents preferred butter over oleomargarine for taste, appearance, food value, and cooking quality. Oleomargarine was preferred by a majority for keeping quality. There was a slight preference for oleomargarine for uniformity of quality and spreadability. It appeared that if the keeping quality of butter could be improved more consumers would purchase butter.

The mean weekly per capita consumption of butter and/or

oleomargarine was as follows: 0.424 pounds for butter, 0.397 pounds for oleomargarine, and 0.355 pounds for butter and 0.389 pounds of oleomargarine for the consumers of both products. These consumption figures are rather higher than the national average per capita consumption which is approximately .18 of a pound per week for each product or .36 of a pound for both products.

A total of 65.27% of the entire group of respondents said they would use less oleomargarine, if oleomargarine were the same price as butter, while 30.55% said they would not, and 4.18% did not know. A total of 72.22% of the entire group of respondents would use more butter, if butter were the same price as oleomargarine, while only 22.68% said they would not, and 5.10% did not know. From these results it appeared that the price spread between butter and oleomargarine was the most important determining factor in the purchase of butter or oleomargarine.

There appeared to be no correlation between annual income and the price that the consumers were willing to pay for butter. The lowest average price (41.6¢) per pound was the mean price set by the highest income level (over $8,400 per year). The highest mean price (60¢) was the price set by the income level of $7,800 to $8,400 per year. The lowest income level (under $1,200 per year) was willing to pay 49.7¢ for butter if all oleomargarine were priced at 30¢ a pound.

If all oleomargarine were 30¢ a pound, 70.14% of the total respondents were willing to pay 40¢ or more for butter and 41.23% were willing to pay over 50¢ for the kind of butter they wanted. These results indicate that the average consumer is willing to pay

between 40 and 50¢ a pound for butter if all oleomargarine were 30¢ a pound.

The usage of butter by income levels showed that as the income level rose the usage of butter declined and the usage of oleomargarine increased. The two highest income levels did not report using any butter.

A summation of the results showed that the average consumer in Oklahoma preferred Grade A butter, which spreads like oleomargarine, has the normal shade of butter color, contains between 1 and 2% salt, and sells between 40 and 50¢ a pound.

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