

FEATURES OF ELECTRIC RANGES
NEEDED FOR OREGON FARM KITCHENS

by

MARGARET HUSTON TULLER

A THESIS

submitted to


OREGON STATE COLLEGE


in partial fulfillment of
the requirements for the
degree of


MASTER OF SCIENCE


June 1952

APPROVED:


Assistant Professor of Home Administration
In Charge of Major


Head of Department of Family Life and
Home Administration


Chairman of School Graduate Committee


Dean of Graduate School

Date thesis is presented May 16, 1952

Typed by Margaret Lieber

ACKNOWLEDGMENT

The writer wishes to express appreciation to Miss Maud Wilson, Professor Emeritus of Home Economics Research at Oregon State College, for her suggestions which led to the selection of the problem and for her generous assistance in directing this study in its early stages; to Dr. Vera H. Brandon, Professor of Child Development at Oregon State College, for her advice with the general organization of material for the thesis; to Mrs. Julianne Phinney, Assistant Professor of Home Administration at Oregon State College, for her constructive criticism and valuable help in the writing of the thesis; to Mrs. Azalea Sager, Oregon State Home Demonstration Leader, and the twenty-seven home demonstration agents of Oregon for their full cooperation in obtaining data; and to the Research Committee of the Oregon Home Economics Extension Council for the partial financing of the mimeographing of the questionnaire.

The writer also wishes to thank the electric range dealers of Portland and Corvallis for their aid in supplying detailed information relative to new electric ranges on the market.

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FEATURES OF ELECTRIC RANGES NEEDED FOR OREGON FARM KITCHENS

CHAPTER I

INTRODUCTION

In the past the farm homemaker suffered many inconveniences in her home, incident to the isolation of the farm and, in some instances, the lack of sufficient income for making improvements. Her kitchen was usually equipped with a wood or coal range, which was inconvenient to operate, undependable as to temperature, and a source of dust and dirt in the house. The stove gave the homemaker great discomfort during the summer season. It was then that canning and cooking for crews demanded long hours in the heat of the kitchen. The summertime also brought numerous relatives and friends from the nearby town or city to enjoy sumptuous Sunday dinners at the farm.

Fortunate was the farm woman who owned a kerosene or gasoline stove to supplement the usual range in summer. However, the second range was often located in another part of the kitchen from the coal or wood range, requiring many extra steps for its use.

Farm living has changed. Good roads and the automobile have reduced appreciably the isolation of the farm. Improved machinery has made unnecessary, in many areas, feeding crews of hired workers in the home. The tradition

of the Sunday gathering in the country has disappeared largely. In the house made comfortable by a central heating system, the wood range is no longer needed for warmth. Extension of electric lines to remote rural areas has brought to many farm families the same opportunity to enjoy the conveniences of living that have been afforded city families for many decades. Among these conveniences are running water, electric lights, and labor-saving equipment, including the electric range.

CHAPTER II

CHOICE OF PROBLEM

The rural women of Oregon requested a study of the adequacy of electric ranges for use in farm homes. The request was made at the time of the fourteenth annual meeting of the Oregon Home Economics Extension Council, held in Corvallis on June 10-12, 1946.

The council is composed of representatives of the home demonstration units¹ throughout Oregon.

Each year the members of the Research Committee of the Home Economics Extension Council study current needs of Oregon rural families and make suggestions for Station research to meet the more significant of these needs. Working closely with the Research Committee is the Legislative Committee of the State Council, the latter committee securing funds to assist with the research projects requested by the rural women. (See appendix)

¹A home demonstration unit in Oregon is a community organization of women participating in the educational program of the Home Economics Extension Service. For the period from September 1, 1946, to June 1, 1947, there were in Oregon 443 home demonstration units with an enrollment of 12,252 rural homemakers in 27 of the 36 counties.

-- Data from Oregon State Home Demonstration Leader's annual report for 1946.

The request for the electric range study followed a report by Maud Wilson, to the Research Committee, on the findings of her study on "The Use of Electricity in Oregon Rural Homes" (19, pp.1-220).

The study by Wilson was made in 1945 by means of three-hour interviews with two hundred rural homemakers in nineteen Oregon counties. These interviews were conducted by the Experiment Station, Department of Home Economics, in cooperation with the Home Economics Extension Service. A digest of the report, prepared by Wilson, was submitted for publication as a Station bulletin. The June, 1947, issue of the Journal of Home Economics carried an abstract of the study (20).

A primary incentive for pursuing the study of electric ranges was its contribution to the more general study by Wilson. The general study included two hundred cases, one hundred of which dealt with electric or combination ranges using electricity and wood or coal.

The present study, dealing exclusively with electric ranges, would be a logical outgrowth of the general study, supplying greater detail, a larger sample, and wider distribution on one segment of the larger study.

The importance of the problem concerned with electric ranges was patent, considering the possibility of accelerated purchase of electric ranges by farm families when manufacture of such equipment would have been resumed in

the postwar period.

Three factors thought to effect more widespread acquisition of electric ranges by Oregon farm families in the postwar years were: 1) extension of electric lines to a larger number of Oregon farm homes, 2) small number of electric ranges used in Oregon farm homes at the time, and 3) increased farm income, making possible the purchase of more electric ranges for farm houses.

1. Expansion of Electric Lines. The 1940 United States Census report set the percentage of Oregon's electrified farm homes at 59.7 per cent (17, p.813). A figure from the 1945 Agricultural Census for Washington and Oregon (16, p.100) showed that 76.6 per cent of Oregon farm homes were electrified. Information released by the Rural Electrification Administration of the United States Department of Agriculture at Washington, D. C., indicated a continued expansion of electric lines in Oregon, with electrified farm homes increasing to an estimated 92.2 per cent of the total number of farms in the state by June 30, 1947.

(See appendix)

2. Extent of Use of Electricity as Cooking Fuel.

The 5.7 per cent of homes in which electricity was used for cooking was in small proportion to the increase of electrified homes. The 1940 Census report gave the following percentages for the different cooking fuels used at that time in Oregon farm homes (17, p.815):

Fuel Wood	90.8%
Electricity	5.7%
Coal or Coke	1.2%
Fuel Gas	1.2%
Kerosene or Gasoline	0.5%
Other	0.2%
None	0.4%

3. Farm Income in Oregon, 1940-1950. As the electric range study was made in 1946-1947 and as data on farm income were available for 1940 and 1950 at the time this thesis was written, the trend in Oregon's farm income was shown to be increasing throughout the entire ten-year period. Estimated income from all farm marketings in Oregon² was \$116,500,000 in 1940 and \$399,328,000 in 1950. Rural farm population figures for the same years were 256,283 in 1940 (13, p.973) and 228,235 in 1950 (14, p.1). Per capita income, computed by dividing the amount of total farm marketings in a year by the figure representing farm population for the corresponding year, amounted to \$454.05 in 1940 and \$1,749.63 in 1950.

²Income figures are based on estimates from the Bureau of Agricultural Economics (at Washington, D.C.) with additions made by the Oregon State College Agricultural Economics Specialists to cover income from specialty products not included in the estimated figures from the Bureau of Agricultural Economics (15, p.1).

CHAPTER III

PURPOSE OF THE STUDY

The purpose of the study involved two considerations:

- 1) to obtain factual information for determining features of electric ranges desired by Oregon farm homemakers; and
- 2) to evaluate electric ranges on the market in terms of the expressed requirements of the majority of the homemakers cooperating with the study. It was hoped that the study might lead to a course of action consistent with the apparent needs of the homemakers. If the study showed that electric ranges for farm homes should be materially different from the new electric ranges on the market, this information would be made available to range manufacturers.

If the homemakers' charge of the inadequacy of electric ranges for farm homes should prove to stem from the women's mismanagement of their ranges, this information would be made available to the Oregon Extension Service for the possible development of an educational program on phases of selection, use and care of the electric range.

CHAPTER IV

REVIEW OF RELATED LITERATURE

A survey of literature was made to determine the extent to which research had included studies relative to features of electric ranges. Following are brief summaries of research studies per se and of professional writings based on research.

Theses

1. Wertz (18).

The study by Wertz dealt with kitchen ranges in general of which electric ranges were a part. Data were obtained through 1) personal interviews with one hundred forty-nine homemakers attending Farm and Home Week at the New York State College of Home Economics, 2) interviews with six local merchants, and 3) inspection of catalogs from twenty-five manufacturers of kitchen ranges. The factor used in classifying the homes for the study was the number of persons in the household to be served by the kitchen range. The major part of the thesis dealt with features of ranges in general. Three pages were devoted to selecting an electric range, including styles, general construction, working convenience, and features determining the cost of operation. No other master's thesis dealing with this subject was found.

State Experiment Station and
Regional Research Publications

2. Bargar (2).

The material contains five sections:

1) features determining quality, 2) features determining working convenience, 3) features determining cost of operation, 4) surface units and surface cooking, and 5) ovens.

The bulletin would be an excellent reference if the information it contains were brought up-to-date.

3. Beyer (4).

The report of the northeast regional housing project furnished recent information on fuels used in that area for cooking. Sixteen per cent of farm families in the region having only one cooking stove use electricity for fuel. The most common fuel for cooking is wood or coal, used by 43 per cent of the families. In relation to age of homemaker, a more significant percentage of homemakers over the age of 45 use wood or coal for cooking than below that age. There is a tendency for women under 45 years of age to use gas or electricity. A larger per cent (40.7 per cent) of women with four years of college training use electricity for cooking than do the women with less schooling.

4. Koeffler (7).

Contrast between the very early electric ranges and the modern models is apparent in this publication. A section on the ideal electric range states that the range

should contain three surface units, an oven, and a small fireless-cooker compartment. The oven should have a tight-fitting drop door as "side-swing doors soon get out of alignment and may swing back and burn the cook's arm". The ideal oven of that day was as small as possible to fill all needs, so that it might also serve as a fireless-cooker compartment. The report stated that the potential buyer of an electric range should have his attention called to the fact that "owing to the large number of range sales during the past year, there has been a tendency to put ranges together carelessly, omitting screws, etc.". The excellent report of experimentation and testing of the early electric range indicated a long step toward today's efficient range.

5. Wilson (21).

Wilson reported that Oregon farm homemakers spent (at the time of the study) one hour and fifty-one minutes each day preparing all three meals. The women found cooking more irksome than fatiguing.

6. Wilson (19).

By means of two hundred interviews with rural women, Wilson studied present status, requirements, and preferences of the families regarding wiring, lighting, large electrical equipment, small electrical appliances. The objective of the study was to determine standards for planning and equipping rural dwellings to permit and encourage the efficient utilization of electricity for saving

time and energy and for maximum contribution to family living. A large segment of the study dealt with electric ranges. The findings of this study have not been published in their entirety. A brief of the results was published in an issue of the Journal of Home Economics (20).

7. Wilson (20).

Wilson conducted two hundred interviews with rural homemakers in nineteen counties of Oregon. She found that more than 80 per cent of both the homemakers and their husbands had lived in electrified dwellings at least ten years, but that half of their dwellings had been electrified less than ten years. Nine-tenths of the homemakers interviewed did some outdoor work at home during the summer, and, for one-third of them, outdoor work was more than a half-time job. Half of the families had crews of hired help to feed a part of the year, but only half of the families had as many as seven men (in addition to the family) to feed at one time. The cooperators indicated what electric appliances they owned and which of these appliances they did not use, giving reasons for the lack of use. They indicated the appliances they contemplated buying in the succeeding five years, with only one of these appliances being a replacement or a duplication. Over a third of the range owners also used wood or coal stoves for cooking. Eighty-four per cent of the ranges were new when purchased, and 42 per cent had been purchased within the previous

five years. Of the 107 homemakers, 16 per cent reported that their electric ranges were inadequate for the preparation of family meals. Fifty-three per cent reported adequacy of the range for company meals, and 46 per cent for canning. Certain detailed information was obtained concerning a number of electric appliances (including the range) with the object of noting possible points of emphasis in subsequent studies and in consumer education programs.

Committee Reports

8. Churchill (5).

Findings of the committee of the American Public Health Association showed two results of mismanagement of ranges: 1) offensive odors which decrease the appetite for food, and 2) moisture in the air which condenses on windows and other cold surfaces. The committee believed that an essential requirement of satisfactory home design is the provision for a hood or at least an adequately designed exhaust duct to the outer air, but preferably equipped with an exhaust fan if such equipment is economically attainable. A section of the committee report dealing with selection of ranges listed as the desirable features of ranges, 1) efficiency, 2) convenience, and 3) safety. A range should have at least three surface units or burners to provide for cooking three different foods simultaneously. Four separate units are considered

more desirable from the standpoint of adequacy. The use of supplementary cooking equipment is considered less satisfactory for family meals than a range. A range should be chosen to satisfy greater than average demands. With the variations in arrangement, it should be possible for a family to select a range to fit its specific requirements.

9. McCracken (9).

On January 15-19, 1945, a committee of home economists met at Cornell University with design engineers and executives from representative manufacturing firms to pool their ideas, based on research, for the development of functional design of household equipment for possible adoption in the postwar period. Among the pieces of major equipment, kitchen ranges were selected for study. The slogan of the meeting was "The Woman and the Stove", implying consideration of the user in the performance of the equipment, as well as continuance of high mechanical performance. The manufacturers felt that research in household equipment could be conducted best by home economists in noncommercial fields. Manufacturers requested further research along functional lines.

10. Marlatt (8).

Early considerations of kitchen planning concerned the selection and use of equipment for the farm home. Six surface units for ranges were recommended for the country home in 1932, but three units would be

sufficient for small families, if the units were arranged properly. The oven was used for baking in nearly all rural homes, despite the trend toward the purchase of bread by rural families. With these considerations, a larger stove for rural homes was considered necessary. The forerunner of the cabinet range was indicated in the suggestion that the lower open portion of the stove be replaced with a cabinet base for storage of stove utensils.

Books

11. Agan (1)

In addition to general considerations for the selection of an electric range, Agan emphasized the importance of utensils of correct design and size for best utilization of electricity. One example cited was oven utensils of proper size and shape to make possible the filling of the oven to capacity. A second example concerned utensils for surface units, which utensils should be as large in diameter as the heating unit and not much larger. Pans with straight sides and flat bottoms were recommended for surface units to give maximum contact with the hot unit. Management considerations for economical use of electricity in cooking included use of a minimum amount of water, regulating heat after boiling temperature had been reached, and utilizing heat stored in an insulated unit.

12. Peet and Thye (11)

The 1949 revision of this authoritative reference on household equipment has included certain new features incorporated in the electric ranges manufactured in the early postwar years. Such features include 1) lengths of ranges to 60 inches, 2) insulated cookers on nearly all standard ranges, 3) pressure sauce pan that fits into insulated well, 4) well-cooker unit that can be raised from the bottom of the well to the surface to provide a fourth surface unit, 5) new methods of wiring well-cookers to make possible the use of the cooker for steaming, boiling, deep-fat frying and sterilizing, 6) in some models a safety switch to protect the well-cooker pan if the unit is turned on by mistake, 7) surface units with high power for quick cooking and for wide range of speeds, 8) separate units for range surface and for oven (the former to be built into the mixing center counter and the latter into a floor-to-ceiling cabinet near the mixing center, and 9) a functionally designed storage compartment under one side of the range surface and equipped with a swing-out door.

Extension Service Bulletins

13. Beard (3)

By means of pictorial sketches, certain features of the early postwar electric ranges on the market were displayed. These features included: 1) sizes of different

types of ranges; 2) heights of range surfaces; 3) arrangements of surface units; and 4) types of surface units. The text, generously illustrated, gave information on selection, location, use and care of the range. An item concerned with location recommended that, if the range must be in the corner of the room, the cooking units should be away from the wall for safety and convenience. It was advised that some work counter space be provided on each side of the range.

Magazine Articles by Home Economists

14. Shank (12).

Three, of many, recommendations for buying a new range were 1) look for a reliable dealer who will give correct information on cost of operation of the range and who will give good installation and long-time servicing, 2) look for a range manufactured by a long-established company which will stand behind its guarantee, and 3) in an electric range look for easily-cleaned surface heat units that provide fast heat and close contact with cooking utensils.

15. Younkin (22).

Certain features of postwar design for electric ranges included 1) models with six surface units and two ovens; 2) a variety of arrangements for surface units, one of which had all three units and the well-cooker

across the back of the range for convenience and safety; 3) some units raised $1/8$ inch above the range surface to prevent crazing of the finish when a utensil larger than the unit would be used; 4) a large oven which could be converted into a smaller, speedier oven by moving the bottom unit to a central position; 5) a large storage compartment with four half-shelves for six shelf positions; and 6) a different color for each switch position.

Commercial Publications by Home Economists

16. Howe (6).

The aim of this handbook is to instruct students and homemakers in the use of the electric range for the best results in cooking. By means of floor plans and elevations, desirable arrangements of kitchens are shown. Types of kitchens included in the sketches are: 1) the U-shaped kitchen, 2) the broken U kitchen, 3) the L-shaped kitchen, 4) the broken L kitchen, 5) the straight wall kitchen, 6) the two wall kitchen, 7) the problem kitchen, and 8) the rural kitchen. Recommendations for the farm kitchen pointed to a larger kitchen than that used by the urban homemaker. Space should be allowed for a living center for the entire family. The farm homemaker requires a time- and labor-saving kitchen. By freeing the farm homemaker's time for other needful tasks, the electric range can help increase profits of the average farm.

CHAPTER V

PROCEDURE

FIELD STUDY I - HOME MAKERS' QUESTIONNAIRE

A. Preparation of Questionnaire

As a large sample and a wide distribution of cases throughout the State were considered essential for this study, a questionnaire was chosen as the most feasible means of obtaining information from farm homemakers on their needs and preferences regarding electric ranges.

1. Personal Interviews to Determine Scope and Content of Questionnaire

Arrangements were made through the home demonstration agents of Benton and Linn Counties for the scheduling of personal interviews with farm homemakers owning and using electric ranges not more than ten years old. It was considered inadvisable to include, for the determination of the questionnaire, problems concerned with electric ranges older than ten years because many unsatisfactory features of older models had already been eliminated in ranges produced in the immediate pre-war years.

The interviews were deemed necessary for determining scope and content of the questionnaire. The plan was to terminate the interviews when no new problems

concerned with electric ranges were presented. For psychological reasons, the interviews were planned also to give the homemakers opportunity 1) to suggest advisable changes for electric ranges, and 2) to enumerate the good points in their ranges. Use of this additional information was not intended for developing the questionnaire unless it pointed indirectly to new problems.

Prior to the first home visit, an outline of areas to be covered in an interview was prepared (See appendix). The outline was not intended for reference during a home visit but rather for the insurance of better organization in obtaining information from the homemaker. A flexibility of form for the interviews was considered essential, as it was anticipated each case would present different situations requiring various avenues of approach.

Contacts with the homemakers were informal. During a home visit no notes were taken, except a record of range dimensions. Each interview required approximately one hour's time.

As soon as possible after leaving the home of a woman interviewed, information and opinions obtained from the homemaker were recorded. Examples of these records may be found in the appendix. Names of homemakers and makes of ranges have been deleted from the records.

As no new information or opinions appeared in the eighth interview, the series of interviews was

terminated with that number.

The problems expressed by the homemakers concerned surface units, ovens, broilers, switches, convenience outlets, lights, wiring system, storage compartments, "gadgets", related utilities in the house, and the dealer's training of the homemaker in the use of her range.

Using as a guide the information obtained in the personal interviews with homemakers, the questionnaire was prepared (See appendix). It was anticipated that many of the farm homemakers filling in the electric range questionnaire would have no assistance from a person trained for that purpose. Therefore, it was essential that the questionnaire be self-explanatory, simple, and as short as possible.

In place of the usual introductory section related to the individual filling in the questionnaire, items at the beginning of the electric range questionnaire dealt with the range itself. This sequence was employed to prevent any hesitancy on the part of the homemakers in giving the desired information. Personal data were reserved for sections in the latter part of the questionnaire.

Items concerning the range were organized in related order. Simple sketches for completion by the homemaker were included, in some cases, to substitute for lengthy descriptions. Reports on special features of the

homemakers' ranges were provided for in tabular form for checking. Instead of providing for direct statements by the homemakers regarding the adequacy of their electric ranges, it was anticipated that this information would be implied in sections of the questionnaire dealing with 1) numbers of persons served at meals, and 2) supplementary cooking equipment used in addition to the electric range.

Opportunity was given for the women to list the desirable and the undesirable features of their ranges. A section at the end of the questionnaire was designed to encourage original thinking by means of the question, "If you could talk to electric range manufacturers, what suggestions for change would you make?"

A test of the original draft of the questionnaire was made with a group of farm homemakers at the close of a home demonstration unit meeting in Benton County. The women were given no instructions prior to their filling in copies of the questionnaire.

Three factors were considered in the test:

- 1) time required for completing the questionnaire,
- 2) apparent difficulty with any section or sections, and
- 3) suggestions from the women for improving the questionnaire. Following are the results of the test:

1. Time for completing the questionnaire was approximately thirty minutes.

2. Sections offering difficulty to the women were
 - a) those containing long, unbroken lines of typing, and
 - b) tabular forms containing two or more sets of items.
3. Suggestions from the women for changes in the questionnaire included
 - a) provision for reporting different types of surface units in a given range
 - b) simplification of the tabular form for recording special features of electric ranges.

Changes were made to correct the difficulties.

B. Distribution of the Questionnaire

The Oregon Home Economics Extension Service offered its cooperation, through the county home demonstration agents, for the distribution of questionnaires in the twenty-five counties served by home agents.

The original plan was to distribute approximately one thousand questionnaires in the electric range study. To obtain comparable representation, the total number of electrified farm homes in the twenty-five counties, as given in the 1945 Agricultural Census Report (16, pp.108-113), was divided by one thousand. The questionnaires

were prorated originally on the basis of one to every forty-five electrified farm homes in the twenty-five counties. The sum of the allotment, determined in this manner, was one thousand eight questionnaires. The numbers of questionnaires per county ranged from six for Crook County to one hundred fifteen for Clackamas County.

After allotments of questionnaires had been sent to the twenty-five counties, two additional counties employed home demonstration agents. The two counties were sent questionnaires on the same basis as the original counties. This raised the total number of questionnaires to one thousand forty-one. In the course of filling in the questionnaires, five home demonstration agents requested a total of thirteen extra questionnaires for additional homemakers who wished to cooperate with the study. The final number of questionnaires distributed was one thousand fifty-four in twenty-seven counties. The two additions to the original number raised the allotment to one questionnaire to 44.1 electrified farm homes.

Statistical data on the allotment of questionnaires and instructions to home demonstration agents on procedures for filling in questionnaires may be found in the appendix.

C. Receipt of Completed Questionnaires

The total number of filled-in questionnaires returned was six hundred thirty-six. This figure represents 60.5 per cent of the one thousand fifty-four questionnaires distributed. Of the questionnaires received, five hundred thirty (or 83.3 per cent) were considered usable. The unusable questionnaires were removed from the study for the reasons and in the amounts given below:

Non-farm families	83
Families retired from farming	2
Families with no electric range	12
Questionnaires too incomplete to use	9
Total	106

Usable questionnaires were tabulated first according to the classification of ranges given in the questionnaire.

	<u>Number</u>	<u>Per Cent</u>
Table top ranges	367	69.2
Combination wood- or coal- and-electric ranges	47	8.9
Apartment ranges	28	5.3
High oven ranges	88	16.6

The above figures show that 1) table top ranges represented more than two-thirds of the ranges included in the usable questionnaires; 2) the next highest number of ranges had not been manufactured directly prior to the war;

and 3) the classes of combination ranges and apartment ranges each constituted a very small proportion of the total ranges. Therefore, it would seem important to consider only the data which dealt with table top ranges.

FIELD STUDY II - DEALER INTERVIEWS

During the latter part of World War II, manufacture of electric ranges in the United States was suspended. Resumption of such manufacture occurred following the cessation of fighting. Accordingly, new models of electric ranges were displayed in the retail stores of the larger Oregon cities in the spring of 1947. The majority of the first ranges produced at this time were DeLuxe models. It seemed advisable to obtain information concerning the features of the new ranges, in order to determine how closely these features might fit the expressed needs and desires of the Oregon farm homemakers participating in the electric range study.

Because many electric range manufacturers produced only DeLuxe models for the first ranges put on the market at the beginning of the postwar period, it was necessary to limit the field to these models if comparable data were to be obtained in the dealer interviews. One such range model was in each of two Corvallis stores at the time the interviews were initiated. Interviews were held with these dealers and with those in Portland carrying DeLuxe models

of sixteen different makes of electric ranges other than the makes represented in the Corvallis interviews. A total of eighteen makes of electric ranges represented the number of DeLuxe models of new electric ranges in Corvallis and Portland retail stores at the time when new electric ranges were put on the market following the close of World War II.

In each interview the dealer called attention to new features of his range. This information was supplemented by 1) the dealer's answers to questions, and 2) observations and 3) measurements of sizes of surface units, spaces between units, and oven dimensions. No attempt was made to obtain detailed information concerning the new ranges, as a complete tabulation of data on new models of electric ranges was not contemplated. Instead, a list of outstanding features was made, accompanied by the numbers of ranges in which these features were incorporated.

CHAPTER VI

RESULTS

A. FIELD STUDY I - HOMEMAKERS' QUESTIONNAIRE

The basis for results in this thesis is the composite of opinions of three hundred sixty-seven Oregon farm women regarding the features of electric ranges they consider necessary to meet the demands of the farm home. Each of these women owns and operates an electric range in her home. An equitable interpretation of these opinions is possible only through knowledge of 1) the women who expressed their opinions, and 2) the electric ranges currently used by the women.

The Homemakers

The three hundred sixty-seven homemakers, whose questionnaires provided the data for this study, furnished certain pertinent information concerning themselves and their activities affecting the use and care of their electric ranges.

Types of Farms on Which Homemakers Live

Two hundred twenty-eight (or 62.12 per cent) of the women submitting usable questionnaires on table top ranges

live on farms which are termed full-time farms.³ The remaining one hundred thirty-nine women (or 37.88 per cent) represent families which engage in part-time farming.⁴ In the case of part-time farming, the women often take care of the major demands of the small acreages, in addition to their regular housekeeping duties, while the men work full-time at other jobs than farming.

Farm Women's Work Outside the House

This type of work was divided into two classes:

- 1) Farm work, and 2) Work away from home.

³A full-time farming enterprise is considered as one in which the family produces on the farm the major part of its living, including cash and farm-furnished items for family consumption.

⁴"Part-time farming is a way of life in which the family lives on a small farm but derives its income from two sources, one of which is farming. Generally speaking, the income derived from the 'farm' is not sufficient to support the family, and 'outside' employment or some other source of income must be obtained". (10, p.3)

Table 1
FARM WOMEN'S WORK OUTSIDE THE HOUSE

Women Doing Outside Work	<u>Farm Work</u> As many as eight hours a day in the summer		<u>Work Away from Home</u> Full-time at least part of the year	
	Number	Per Cent	Number	Per Cent
Yes	180	49.05	44	12.00
No	174	47.41	285	77.64
No answer	13	3.54	38	10.36
Total	367	100.00	367	100.00

Approximately half the cooperators (180 women) reported spending as many as eight hours a day doing farm work in the summer months. Of this number, 91 (or 50.55 per cent) reported that they frequently gave this much time to farm work in the summer period; 63 (or 35.00 per cent) occasionally did such work, 5 (or 2.78 per cent) seldom engaged in farm work to this extent, and 21 (or 11.67 per cent) did not answer the question. The number of women devoting eight-hour days to farm work during at least one-fourth of the year represents a large enough proportion of the farm women apparently having little time for food preparation in the busy season that need for time and energy conservation in this household task could well be emphasized.

Forty-four farm women signified that they usually work full-time away from home for at least a part of the year. This figure represents 12.0 per cent of the total number of women included in the study. In response to an inquiry concerning the period of full-time work away from home, the women indicated a range from one week to twelve months. Results were so scattered that no pattern was apparent. Twenty-two different periods were indicated by the women. The largest numbers of similar cases were: 1) six women reporting three months; 2) five reporting eight months; 3) four reporting two months; and 4) four reporting twelve months. Slightly more than half of the women doing some work away from home (twenty-four) engaged in this type of work for three months or less in the year. Apparently, full-time work away from home, even for short periods, was not a significant factor affecting a large number of the cooperators.

Table 2

AGES OF HOMEMAKERS AND THEIR EXPERIENCE
WITH ELECTRIC RANGES

Years of Experience with Elec- tric Ranges	<u>Homemakers Classified According to Age Group</u>					Total	Per Cent
	Under 30	30-50	Over 50	Not Answered			
Less than 1 year	6	19	6			31	8.45
1-5 years	26	62	19	7		117	31.88
6-10 years	20	87	22	2		129	35.15
11-15 years	2	35	11	1		49	13.35
16-20 years	2	17	7			25	6.82
21-25 years		4	5			9	2.45
Over 25 years		1	1			2	0.54
Not answered		1	1	3		5	1.36
Total	54	226	73	14		367	
Per Cent	14.71	61.58	19.89	3.82			100.0

The majority of the women participating in the electric range study were mature homemakers. This fact is shown by the large proportion of the women in the 30-50 age group. Also, a slightly larger proportion was in the over-50 group than those in the under-30 group. The largest numbers of women in all age groups have had from one to nine years' experience with electric ranges. Highest use frequency for any age group indicated is that of

eighty-six women between the ages of 30 and 50 who have used electric ranges from five to nine years. A comparatively large number of women in the same age group have had from ten to fourteen years' experience with electric ranges. Curtailment of consumer production during World War II was reflected in the comparatively small number of women who had used electric ranges for less than one year to five years. The equally small number having used electric ranges for ten years or more seems consistent with the number of farm homes in Oregon having electricity for that period of time.

The number of years the homemakers had the ranges they were using at the time of the study was also determined.

Table 3

YEARS PRESENT RANGES HAD BEEN USED BY COOPERATORS

Period of Years	Homemakers Reporting	Per Cent
Less than 1 year	62	16.89
1-5 years	138	37.61
6-10 years	139	37.87
Over 10 years	27	7.36
Not answering	1	0.27
Total	367	100.0

These data are compatible with those regarding the years of experience of homemakers in use of electric ranges. The number of women reporting use of ranges over ten years was small. Those reporting use five to ten years (37.87 per cent) and one to five years (37.61 per cent) were about equal. The number of women reporting use for one year only was 16.89 per cent. The probability is that, in this regard also, limitation in long-time ownership of ranges was affected by relatively low farm incomes prior to the war, lack of rural electrification facilities, and restrictions in war time and early post-war production. Factors affecting the increases in use of electric ranges include rise in farm incomes, increased rural electrification, and farm family priorities for the purchase of electric ranges during the war years.

Use of Ranges in Meal Preparation

Homemakers cooperating with the study were asked to report on the usual and maximum numbers of persons for whom meals of three types were prepared in the home during the current year. The types of meals included 1) family meals, 2) company meals, and 3) meals for crews of hired help.

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Table 4

USUAL AND MAXIMUM NUMBERS OF PERSONS FOR WHOM
FAMILY MEALS WERE PREPARED IN THE HOME DURING THE YEAR

Number Persons Served	Homemakers Reporting					
	Usual Family Break- fast	Number Family Noon Meal	Served Family Evening Meal	Maximum Family Break- fast	Number Family Noon Meal	Served Family Evening Meal
1	4	19	3	1	4	
2	85	107	79	12	15	13
3	94	93	86	35	32	26
4	81	68	84	43	38	36
5	54	35	59	32	28	31
6	31	14	32	58	47	54
7	4	6	5	16	11	15
8	1	2	1	29	30	34
9	1	1	1	9	4	5
10		1	1	15	17	16
11-15	1		1	11	18	23
16-20				1	6	1
21-25					1	
Over 25						2
Not answering	11	21	15	105	116	111

Apparently, the average families participating in the study are not large. The majority of the homemakers reported that they usually prepare meals for two to four family members, including themselves. Adding the numbers of families concerned with each of the three usual numbers of persons served (namely, two, three, and four persons), the comparative figures for meals served in the entire day are as follows:

<u>Number of Persons Served</u>	<u>Sum of Homemakers' Reports for Usual Numbers of Family Members Served Breakfast, Noon Meal and Evening Meal</u>
2	271
3	273
4	233

The above figures indicate that the number of cases for two persons served and three persons served is almost identical, and that each of them is greater than the cases reported for four persons served.

The maximum number of family members served is "over 25" for the evening meal, reported by each of two women.

Table 5

USUAL AND MAXIMUM NUMBERS OF PERSONS FOR WHOM
COMPANY MEALS WERE PREPARED IN THE
HOME DURING THE YEAR

Number of Persons Served for Company Meals	<u>Homemakers Reporting</u>	
	Usual Number	Maximum Number
0-4	13	
5-9	169	36
10-14	88	131
15-19	8	46
20-24	9	48
25-29	3	11
30-34	2	11
35-39		1
40-44		2
45-49		
50 and over		1
Not answered	75	80
Total	367	367

Nearly twice as many women reported that they usually serve from five to nine persons at company meals as those who reported ten to fourteen persons served. These two groups together represent a large majority of the cases included in usual numbers of persons served at company

meals. For the maximum number of persons served at company meals, slightly more than one-third of the women indicated from ten to fourteen persons. The next highest numbers of cases fall in the classes of fifteen to nineteen and twenty to twenty-four persons, respectively. Together the cases for these two classes represent approximately one-fourth of the total cases. The largest number of persons served at company meals is in the class of thirty to thirty-four and was reported by two homemakers.

Table 6

USUAL AND MAXIMUM NUMBERS OF CREWS OF FARM HELP
FOR WHOM MEALS WERE PREPARED IN THE HOME
DURING THE YEAR

Number of Persons Served for Meals for Crews of Farm Help	<u>Homemakers Reporting</u>	
	Usual Number	Maximum Number
None	42	42
0-4	18	8
5-9	61	35
10-14	24	39
15-19	3	7
20-24	3	10
25-29	2	2
30-34	3	1
35-39		1
Not answered	211	222
Total	367	367

Of the three hundred sixty-seven cooperating homemakers, only one hundred fourteen reported on "usual number" and one hundred three on "maximum number" of persons served for meals for crews of farm help. These reports are compatible with the low density of farm population in Eastern Oregon, where the farming enterprises of wheat and livestock require the employment of crews of farm help. Such help is seldom needed in the thickly populated farm areas of Western Oregon, where diversified farming on comparatively small tracts of land is practiced.

More than half the women, reporting on the usual number of farm crew members served, cook for only five to nine persons. The total number of homemakers who usually serve from fifteen to thirty-four persons for meals for farm crews is eleven. Three women reported that the usual number they serve at meals for crew members is from thirty to thirty-four.

Considering the maximum number served for meals for crews of farm help, over two-thirds of the cases fell in the five to fourteen class. The largest maximum number served was in the class of thirty-five to thirty-nine, reported by one homemaker.

Table 7

EXTENT OF CANNING DONE BY HOMEMAKERS
IN ONE DAY ON ELECTRIC RANGE

Maximum Number of Quarts Canned on Surface of Electric Range in One Day During the Year 1946	Homemakers Reporting	Per Cent
0-9	37	10.08
10-19	33	8.99
20-29	75	20.44
30-39	63	17.17
40-49	40	10.90
50-59	21	5.72
60-69	8	2.18
70-79	5	1.36
80-89	5	1.36
90-Over 150	10	2.72
No answer	70	19.08
Total	367	100.00

The largest percentage of the homemakers canned, on their electric ranges, from twenty to forty quarts of food in one day. Ten women canned from ninety to over one hundred fifty quarts. Methods of canning indicated in the questionnaire were by pressure cooker or by water bath canner.

The Ranges

Included in this section of results are information pertaining to the ranges currently owned and used by the cooperating homemakers, facts pertaining to use of these ranges, and reactions of homemakers toward them.

New and Second-hand Ranges

Of the three hundred sixty-seven ranges considered in the study, two hundred ninety-nine (81.47 per cent) were purchased new by the homemakers, while sixty-five (17.72 per cent) were second-hand. One range was furnished with a rented house. Two homemakers did not answer.

Table 8

COMBINATIONS OF SURFACE UNITS ON RANGES INCLUDED IN STUDY

Combination of Units	Number	Per Cent
2S, 1L, W ⁵	284	77.39
2S, 2L	65	17.73
2S, 1L	10	2.72
All other	8	2.16
Total	367	100.00

⁵S indicates small unit, M medium unit, L large unit, and W well-cooker.

More than three-fourths of the ranges included in the study had the surface unit combination of two small units, one large unit, and a well-cooker. The combination second in frequency was two small units and two large units.

Table 9

HOMEMAKERS' PREFERENCES REGARDING
COMBINATIONS OF SURFACE UNITS

Combina- tions of Surface Units in Ranges Reported	Combinations Preferred by Homemakers							
	Same as Present Combina- tions	Per Cent	Same with Addi- tional Units	Per Cent	Diff- erent Com- bina- tions	Per Cent	Total	Per Cent
2S, 1L, W	30	10.57	191	67.25	63	22.18	284	100
2S, 2L	25	38.46	19	29.23	21	32.31	65	100
2S, 1L	2	20.00	8	8.00			10	100
All other	3	37.50	4	50.00	1	12.50	8	100
Total	60	16.35	222	60.49	85	23.16	367	100

Generally, the farm homemakers cooperating with this study did not like the combinations of surface units on their electric ranges. Three-fifths of the women would like the combinations on their ranges if one or more surface units might be added. It is interesting to note that the highest percentage of dissatisfaction expressed was with ranges having two small, one large, and a deep well unit, with 67.25 per cent wishing one additional unit and

22.18 per cent more wishing a different combination; a total of 89.43 per cent preferred a change. Need for an additional unit was felt by 80 per cent of the homemakers having two small and one large unit only. Those with two large and two small units were better satisfied, though when consideration is given to those wishing one more unit, 29.23 per cent, and those wishing a different combination, 32.31 per cent, here, too, a large proportion of the homemakers (61.54 per cent) indicated a need for a change.

Of the sixty ranges represented by the women who were satisfied with the combinations of surface units, two had three units, fifty-seven had four units, and one had five units.

Preferences for surface unit combinations were studied also in relation to the homemakers' experience with electric ranges: 1) their years' experience with their present ranges, and 2) their total years' experience with electric ranges.

Table 10

HOMEMAKERS' PREFERENCES FOR SURFACE UNIT
COMBINATIONS IN RELATION TO YEARS THEY
HAVE OWNED THEIR PRESENT RANGES

Home- makers' Exper- ience with Present Ranges	Preferences in Surface Unit Combinations							
	Same as Present Combina- tion	Per Cent	Same Plus More Units	Per Cent	Diff- erent Com- bina- tions	Per Cent	Total	Per Cent
Less than 1 year	9	14.52	42	67.74	11	17.74	62	16.89
1-5 years	21	15.22	81	58.70	36	26.09	138	37.61
6-10 years	23	16.55	82	58.99	34	24.46	139	37.87
Over 10 years	7	25.93	16	59.26	4	14.81	27	7.36
Not answering							1	0.27
Total								100.00

The addition of one or more surface units to their present combination of units is favored by consistently high percentages for all periods of homemakers' experience with their present ranges. These percentages range from 58.70 per cent for one to five years' experience to 67.74 per cent for less than one year's experience. The largest proportion of women satisfied with their present combination falls in the class of "Over 10 years". This datum may indicate that, through longer use of their ranges,

these women have become accustomed to their unit combinations and do not recognize the possibility of greater convenience. Comparably small proportions of women in all the experience brackets are interested in essentially different combinations. The smallest proportions occur 1) with the group using their ranges less than one year, and 2) with those having owned theirs more than ten years. Lack of experience in the one group and fixed habits of use in the other may account for their extremely small desire for essentially different combinations of units.

Table 11

HOMEMAKERS' PREFERENCES FOR SURFACE UNIT
COMBINATIONS IN RELATION TO TOTAL
YEARS' EXPERIENCE WITH ELECTRIC RANGES

Home- makers' Total Exper- ience with Electric Ranges	Preferences in Surface Unit Combinations							
	Same as Present Combina- tion	Per Cent	Same Plus Units	Per Cent	Diff- erent	Per Cent	Total	Per Cent
Less than 1 year	5	18.52	15	55.56	7	25.92	27	100
1-5 years	23	19.33	69	57.98	27	22.69	119	100
6-10 years	18	13.85	78	60.00	34	26.15	130	100
Over 10 years	12	16.44	46	63.01	15	20.55	73	100
Not answering	2	11.11	14	77.78	2	11.11	18	100

As might be expected, the results indicated in this table are comparable to those in the previous table. The addition of one or more units to their present combinations of surface units was favored by a large proportion of the homemakers in each period of total experience with electric ranges. As the number of years of such experience increased, the proportion of women desiring additional units also increased.

Table 12

ADDITIONAL SURFACE UNITS DESIRED BY HOMEMAKERS
WHO WOULD BE SATISFIED WITH PRESENT SURFACE
UNIT COMBINATIONS IF ONE OR MORE UNITS WERE ADDED

Additional Surface Unit or Units Desired	Number Units	Per Cent
Well-cooker	8	2.37
Raised Feature for Well-cooker	173	51.34
Pressure Cooker Lid for Well-cooker	14	4.15
One Extra-large Unit for Canning	71	21.07
Two Extra-large Units	1	0.30
One Extra-small Unit	27	8.01
Three Extra-small Units	1	0.30
One Additional Large Unit	15	4.45
Two Additional Large Units	1	0.30
One Additional Small Unit	15	4.45
Two Additional Small Units	3	0.89
Griddle	4	1.19
Two Units Not Specified	1	0.30
Extra Units Not Specified	3	0.89
Total Additional Units Desired	337	100.00

The raised feature for the well-cooker unit was indicated by more than half the homemakers who would be satisfied with their present combinations of surface units if one or more units were added. Slightly more than one-fifth of the women wanted, as an additional unit, an extra-large unit for canning. Other results were scattered.

Table 13

PREFERRED COMBINATIONS OF SURFACE UNITS
AS IN PRESENT RANGES PLUS DESIRED
ADDITIONAL UNITS

Present Combination	Additions Desired	Homemakers Reporting	Per Cent
2S, 1L, W	R for W ⁶	90	40.54
	R for W, pc lid	8	3.60
	R for W, 1S	6	2.70
	R for W, 1L, 1XL	4	1.80
	R for W, 1XS	6	2.70
	R for W, 1S, 1XL	6	2.70
	R for W, 1XL	33	14.86
	1XL	9	4.05
	1XS, 1XL	3	1.35
<u>Total</u>		(165)	(74.32)
2S, 2L	W	2	0.90
	W-R	3	1.35
	1XL	5	2.25
	1XL, 1XS	3	1.35
	1XS	3	1.35
	2S	2	0.90
<u>Total</u>		(18)	(8.11)
2S, 1L	W	2	0.90
	1L	2	0.90
<u>Total</u>		(4)	(1.84)
<u>All other</u>		35	(15.77)
<u>Total</u>		222	100.00

⁶S - small unit; L - large unit; W - Well-cooker;
R for W - raised feature for stationary well-cooker unit
already in range; pc lid - pressure cooker lid for well-
cooker; XL - extra large unit; XS - extra small unit;
W-R - well-cooker unit (not already in range) with raised
unit feature.

The pattern for the most desirable combination of surface units, set by the women who wish only additional units, was shown to be two small units, one large unit, and a well-cooker which can be raised. If the well-cooker unit could be raised to the surface to provide, in effect, an additional surface unit, ninety of the one hundred sixty-five homemakers concerned would be satisfied. A relatively significant number of these women (thirty-three) wanted also one additional unit. Of greatest interest is that all but twelve of these one hundred sixty-five women indicated the need for a raised feature in the deep well-cooker, permitting use for surface cooking regardless of additional desires. This group of one hundred fifty-one women represents 41.7 per cent of the total of three hundred sixty-seven homemakers included in the study.

Table 14

SURFACE UNITS DESIRED BY HOMEMAKERS WANTING
ONE OR MORE ADDITIONAL UNITS

Total Number	Specific Units Desired	Homemakers Reporting	Total Per Cent
4 units	2S, 1L, R for W	90	
	2S, 1L, R for W, pc lid	8	
	2S, 1LW	2	
	2S, 2L	2	
	Other	6	
<u>Total</u>		<u>(108)</u>	<u>(48.65)</u>
5 units	3S, 1L, R for W	6	
	2S, 1L, R for W, 1XS	6	
	2S, 1L, R for W, 1XL	33	
	2S, 1L, W, 1XL	9	
	2S, 2L, W	2	
	2S, 2L, W-R	3	
	2S, 2L, 1XL	5	
	2S, 2L, 1XS	3	
	Other	10	
<u>Total</u>		<u>(77)</u>	<u>(34.68)</u>
6 units	2S, 2L, 1XL, R for W	4	
	3S, 1L, 1XL, R for W	6	
	2S, 1L, W, 1XL, 1XS	3	
	2S, 2L, 1XL, 1XS	3	
	4S, 2L	2	
	Other	14	
<u>Total</u>		<u>(32)</u>	<u>(14.45)</u>
7 units		2	0.89
10 units		1	0.44
Units not specified		2	0.89
<u>Total</u>		<u>222</u>	<u>100.00</u>

A total of four surface units on the electric range was considered desirable by nearly half of the women who would be satisfied with their present combinations of units if one or more units were added. In this study the raised feature for the well-cooker was interpreted as an additional unit, as it actually made possible another surface unit. Well-cookers with units which can be raised to the surface appear, from these data, too, to be very desirable. Of the one hundred eighty-seven cases for which desired units were listed in the above table, one hundred fifty-six included this feature for well-cookers. Additional preferences for this feature were found in the scattered cases designated as "Other".

Table 15

COMBINATIONS OF SURFACE UNITS DESIRED BY HOMEMAKERS
WANTING DIFFERENT COMBINATIONS FROM
THEIR PRESENT COMBINATIONS

Combinations Desired	Present Combinations				Per Cent
	2S,1L,W	2S,2L	3S,1L	Total	
1S,1L,1XL,W-R	3	1		4	4.76
1S,2L,W-R	3			3	3.53
1S,2L,1XL,W	2			2	2.35
1S,3L		3		3	3.53
2S,1L,1XL	5	1	1	7	8.25
2S,1L,1XL,1XS	4	1		5	5.88
2S,1L,1XL,1XS,W-R		2		2	2.35
2S,1XL,W-R,Grill	2	1		3	3.53
2S,1XL,1XS,W-R	3			3	3.53
2S,2L	16			16	18.82
2S,2L,1XL	4			4	4.76
3S,1L	5			5	5.88
2S,1L,1XL,W-R		3		3	3.53
1S,2L,1XL	2			2	2.35
All other	14	9		23	27.05
Total	63	21	1	85	100.00
Per cent	74.12	24.70	1.18		100.00

There were three different combinations of surface units which were found so undesirable by eighty-five women that they preferred an entirely different combination. The three unsatisfactory combinations in this case were with ranges having two small, one large, and a deep well unit; two small and two large units; and three small and one large units. The largest number of women having any one of these combinations was sixty-three having the combination of two small, one large and a deep well unit. Of this number, sixteen women (18.82 per cent) preferred a combination which would substitute a second large unit for the well-cooker. As the proportion of women indicating this combination was very small, the combination could not be considered as generally desirable. These few cases did show, however, that each of the sixteen women did not like her well-cooker and preferred a large unit in its place. All other results were scattered.

Table 16

TOTAL NUMBERS OF SURFACE UNITS IN COMBINATIONS
DIFFERENT FROM THEIR PRESENT
COMBINATIONS, DESIRED BY HOMEMAKERS

Total Number	Specific Units Desired	Homemakers Reporting	Total Per Cent
4 units	1S, 1L, 1XL, W-R	4	
	1S, 2L, W-R	3	
	1S, 3L	3	
	2S, 1L, 1XL	7	
	2S, 2L	16	
	3S, 1L	5	
	1S, 2L, 1XL	2	
	Other	11	
<u>Total</u>		<u>(51)</u>	<u>(60.00)</u>
5 units	1S, 2L, 1XL, W	2	
	2S, 1L, 1XL, 1XS	5	
	2S, 1XL, W-R, Grill	3	
	2S, 1XL, 1XS, W-R	3	
	2S, 2L, 1XL	4	
	2S, 1L, 1XL, W-R	3	
	Other	7	
<u>Total</u>		<u>(27)</u>	<u>(31.77)</u>
6 units	2S, 1L, 1XL, 1XS, W-R	2	
	Other	3	
<u>Total</u>		<u>(5)</u>	<u>(5.88)</u>
8 units	Other	2	
<u>Total</u>		<u>85</u>	<u>100.00</u>

A majority (60.0 per cent) of the eighty-five women who would prefer an entirely different combination of surface units listed only four units for these combinations. This result is comparable to the total numbers of surface units indicated by the two hundred twenty-two women who desired additional units for their present combinations.

About half as many women wanted five units for their entirely different combinations as did those signifying four units. As was the case with the women desiring only additional units, the homemakers wanting essentially different combinations were conservative in the total numbers of units desired.

Summary of Combinations and Numbers
of Surface Unit Combinations

The women were divided in their preferences concerning the combinations of surface units on their present ranges:

- 1) about one-sixth of the total group of three hundred sixty-seven women preferred their present combinations;
- 2) slightly more than three-fifths of them would be satisfied if one or more units could be added to their present combinations; and 3) less than one-fourth wanted different combinations from their present ones.

More than three-fourths of the ranges in the study had the surface combination of two small, one large, and a well-cooker units. Only one-tenth of the women having this combination wanted it. However, more than two-thirds of them would prefer it if one or more units were added. The remainder (less than one-fourth) wanted a different combination. The predominant preference for change indicated a well-cooker unit which could be raised for surface cookery.

Table 17

TOTAL NUMBERS OF SURFACE UNITS DESIRED
BY 367 HOMEMAKERS

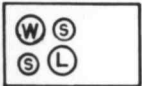
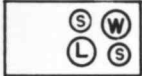
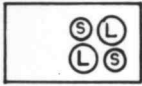
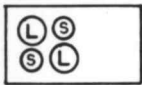
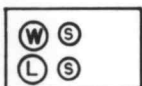
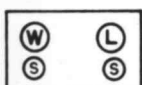
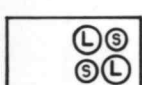
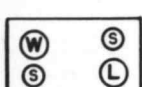
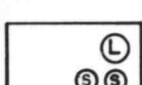
Number Units	Combinations Preferred				Per Cent
	Same as Present	Same Plus Units	Different	Total	
Three	2			2	0.54
Four	57	108	51	216	58.86
Five		77	27	105	28.61
Six		32	5	37	10.08
Seven		2		2	0.55
Eight			2	2	0.55
Ten		1		1	0.27
Not specified		2		2	0.54
Total	60	222	85	367	

A summary of the numbers of surface units desired by the women in all three preference classes shows a fairly strong trend toward the four unit range. The only other number of units large enough for consideration is five. The homemakers showed little tendency to be extreme in the numbers of surface units they desired.

TABLE 18

ARRANGEMENTS OF SURFACE UNITS

OPINIONS OF 362 HOMEMAKERS REPORTING ARRANGEMENTS OF
SURFACE UNITS ON THEIR PRESENT ELECTRIC RANGES

Arrangements of units on Present Ranges	Homemakers Opinions /Regarding Arrangements of Units							
	Satisfactory	%	Satisfactory with Reservations	%	Unsatisfactory	%	Total	%
1. 	122	61.62	38	19.19	38	19.19	198	54.70
2. 	29	74.36	4	10.26	6	15.38	39	10.17
3. 	17	62.96	5	18.52	5	18.52	27	7.46
4. 	10	58.82	2	11.76	5	29.41	17	4.70
5. 	9	69.23	3	23.08	1	7.69	13	3.59
6. 	8	61.54			5	38.46	13	3.59
7. 	8	80.0			2	20.0	10	2.76
8. 	5	55.56	3	33.33	1	11.1	9	2.49
9. 	3	50.0	1	16.67	2	33.33	6	1.66
ALL OTHER	19	63.34	7	23.33	4	13.33	30	8.28
TOTAL	230	63.54	63	17.40	69	19.06	362	100.0

Twenty-eight different arrangements of electric range surface units were reported by Oregon farm women. Despite the wide variety of patterns, all arrangements received approval from a majority of the homemakers having the respective arrangements. The largest number of cases with any one arrangement was found in Arrangement 1, with one hundred ninety-eight women having ranges with this surface unit pattern. Approximately three-fifths of the women having this arrangement were satisfied with it. The other two-fifths were divided equally between "Satisfactory with reservations" and "Unsatisfactory".

Arrangement 2, a surface unit pattern in use by thirty-nine homemakers, showed a high percentage of satisfaction. It is interesting to note that this arrangement is the exact reverse of Arrangement 1 and that these two patterns make up 64.87 per cent of the ranges used by the total group of cooperators. That there was slightly higher percentage of satisfaction expressed by homemakers having the second arrangement, with units to the left, is not significant, both because of the discrepancy in the total number having these two types of ranges and because satisfaction in this instance might readily be affected by relationship of range to kitchen arrangement or dining area.

Neither the arrangement showing the highest percentage of satisfaction (Arrangement 7) nor that showing the highest

percentage of dissatisfaction (Arrangement 6) show significant results, as there are only ten cases in the former and thirteen cases in the latter.

Table 19

REASONS FOR LACK OF SATISFACTION⁷ WITH
ARRANGEMENT OF SURFACE UNITS

Reasons Given by Homemakers	Homemakers Reporting	Per Cent
1) Units too close together	36	45.00
2) Want large unit in front row instead of back	8	10.00
3) Want large burners at back	3	3.75
4) Want units in one row at back	10	12.50
5) Have units on the left, but want them on the right	3	3.75
6) Have units on the right, but want them on the left	2	2.50
7) Want two burners at each end with space between	12	15.00
8) Want two burners at each end with griddle between	1	1.25
9) Want well-cooker changed from left back to right back	1	1.25
10) Want position of well-cooker changed	1	1.25
11) Want large unit changed to left front	1	1.25
12) Want two large units in front	1	1.25
13) Want units staggered	1	1.25
Total	80	100.00

⁷Including 1) "Satisfactory with Reservations" and
2) "Unsatisfactory".

Half the women stating reasons for their dissatisfaction with surface unit arrangements want more space between units. The next highest item suggests the advisability of two units at each end with space between, in actuality a means of obtaining more space between units. The third highest number of frequencies is found in the suggestion that all the units be in one row at the back. No one suggestion was offered by a majority of the women.

Individual differences in methods of work are apparent in opposite recommendations, as shown in items #2 and #3 concerning placement of large unit at front or at back, as well as in items #5 and #6 concerning placement of units on the left or on the right of the range. In the latter items cited the position of the range in relation to the dining area might have been a contributing factor in the suggestions.

Design and Placement of Switches

Table 20

OPINIONS OF HOMEMAKERS REGARDING THE NUMBERS OF
SPEEDS FOR ALL SURFACE UNITS⁸

Number of Speeds	Satis- factory		Satis- factory with Res- ervations		Unsatis- factory		Total	Per Cent
	Num- ber	Per Cent	Num- ber	Per Cent	Num- ber	Per Cent		
2 speeds on all units	3	28.6	0	0	11	71.4	14	3.89
3 speeds on all units	57	76.0	0	0	18	24.0	75	20.83
4 speeds on all units	15	8.33	1	5.6	2	11.1	18	5.00
5 speeds on all units	132	90.5	3	1.4	12	8.1	147	40.83
6 speeds on all units	17	94.4	0	0	1	5.6	18	5.00
7 speeds on all units	42	95.5	0	0	2	4.5	44	12.22
8 speeds on all units	2	100.0	0	0	0	0	2	0.56
Some 3, some 4	6	42.9	0	0	8	57.1	14	3.89
Some 3, some 5	5	71.4	0	0	2	28.6	7	1.94
All other ⁹	17	81.0	2	9.5	2	9.5	21	5.83
Total answering 360	296	82.22	6	1.66	58	16.12	360	100.00

⁸In no special surface units, as well-cooker, griddle, other.

⁹Including 6 scattered cases of various speed combinations and 15 cases in which speeds were not indicated but opinions regarding them were reported by the homemakers.

A majority of homemakers whose ranges have three or more speeds on surface units are satisfied, provided the number of speeds on all units for a given range are the same. As the number of speeds on all surface units increases, the degree of satisfaction on the part of homemakers increases to complete satisfaction expressed by the two homemakers having eight speeds on all surface units.

It would seem reasonable to assume that a combination of different speeds on a given range would be as acceptable to the homemaker as the lowest speed represented in the combination. However, a higher degree of satisfaction is shown by those with all units having three speeds than by the two women who have combinations of three speeds and higher numbers of speeds. Nearly three-fourths of the women who have only two speeds for surface units consider the speeds inadequate.

ADVANCE BOND

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Table 21

PREFERENCES OF HOMEMAKERS NOT SATISFIED
WITH SURFACE UNIT SPEEDS

Speeds in Present Range	Opinions Regarding Speeds	Homemakers Reporting	Per Cent
2	Needs more speeds (indefinite)	5	8.20
2	Needs more medium heat	4	6.56
3	Needs more speeds (indefinite)	13	21.31
3	Needs one speed lower than lowest on present range	12	19.66
3	Needs one speed higher than highest on present range	1	1.64
3	Needs speed between low and medium	1	1.64
3	Wants 5 speeds	2	3.28
3	Wants heat distributed more evenly throughout unit for each speed	1	1.64
4	Needs more speeds (indefinite)	2	3.28
4	Needs one speed lower than lowest on present range	1	1.64
4	Wants 5 speeds	1	1.64
5	Needs more speeds (indefinite)	4	6.56
5	Wants rheostat control for surface units	1	1.64
5	Needs speed between 4th and high	2	3.28
5	Wants 7 speeds	1	1.64
5	Wants heat distributed more evenly throughout unit for each speed	6	9.83
6	Wants rheostat control	1	1.64
7	Wants rheostat control for surface units	1	1.64
7	Wants heat distributed more evenly throughout unit for each speed	1	1.64
Not in- dicated	Need more speeds (indefinite)	1	1.64
Total		61 ¹⁰	100.00

¹⁰58 women gave reasons for dissatisfaction with the speeds of their surface units but 3 women each listed two reasons for dissatisfaction, hence the total of 61.

In their opinions regarding dissatisfaction of speeds of surface units on their ranges, fifty-four of the fifty-eight women not entirely satisfied with speeds on their electric ranges indicated they needed more speeds. Included in the above figure are thirteen cases suggesting one lower speed than the lowest on the range, one case indicating need for a higher speed than the highest on the range, and three suggesting rheostat control for units. More even distribution of heat for units was desired by eight homemakers.

Preferences for locations of switches on the range were indicated by all but ten of the three hundred seventy-six cooperating homemakers. Of that number, two hundred two women (55.04 per cent) preferred the switches on the front of the range. One hundred fifty-four (41.96 per cent) would find the back panel more satisfactory for the switches. One woman expressed a preference for the switches being divided, with part of them on the front of the range and part on the back panel. The reasons for this preference, stated in her questionnaire were: "Front for top burners and back for cooker and oven which are both time controlled. Time control dial and clock are very unhandy on front of the range I have now". Two other individuals registered "no preference" and "no opinion", respectively. Eight women (2.20 per cent) did not answer the question.

The women who preferred switches on the front of their ranges gave the following reasons for their preferences.

Table 22

PREFERENCE FOR SWITCHES ON THE FRONT OF RANGES

Reasons for Preferring Switches on Front of Range	Homemakers Reporting	Per Cent
1) Easy to reach	93	42.66
2) Less danger of burns from reaching over hot kettles	86	39.45
3) Easy to see	13	5.96
4) "What I am accustomed to"	12	5.50
5) Stays cleaner	3	1.38
6) No small children, so fine where located	2	0.92
7) Out of way of children	2	0.92
8) Looks better	1	0.46
9) Not apt to leave units turned on	1	0.46
All other	5	2.29

Convenience and safety characterized the reasons given for the preference of the front of the range for switches. It is probable that the two women who gave as their reasons "Out of the way of children" checked the wrong position of switches on the questionnaire.

In like manner, the women who preferred the back panel

of the range for the location of switches gave their reasons for this preference.

Table 23

PREFERENCE FOR SWITCHES ON THE BACK PANEL OF RANGES

Reasons for Preferring Switches on Back Panel of Range	Homemakers Reporting	Per Cent
1) Out of reach of children	95	50.26
2) Easier to see without stooping	40	21.16
3) More convenient	12	6.35
4) Easier to clean -- spilled food does not get on them	10	5.29
5) Out of the way	10	5.29
6) Less apt to catch on clothing, cause wear to clothing, or to bump	6	3.17
7) Better appearance	5	2.65
8) Easy to reach	4	2.12
9) "Used to it"	3	1.59
10) "Not so liable to get burned accidentally"	2	1.06
11) Less wiring to go wrong	1	0.53
12) Leaves front of range free	1	0.53
Total	189	100.00

Slightly more than half of the women preferring the back panel of the range for the location of switches (95) gave as the reason for their preference "out of reach of children". The next largest group of women (40) indicated the back panel gave better opportunity to see the switches without stooping.

Table 24

TYPES OF SURFACE UNITS ON COOPERATORS' RANGES

Units on Home- makers' Ranges	Homemakers Reporting Types of Units										Per Cent
	Tubular	Ring	Open Coil	Cast Metal	Type Not Spec- ified	To- tal					
1st small unit	246	70.69	80	22.99	20	57.47	2	0.57	17	366	26.97
2nd small unit	247	71.18	81	23.34	16	4.61	3	0.86	18	365	26.90
3rd small unit			1	0					1	1	0.07
1st large unit	141	56.63	77	30.92	28	11.24	3	1.20	18	267	19.68
2nd large unit	31	46.97	27	40.91	7	10.61	1	1.52		66	4.86
3rd large unit					1					1	0.07
Cooker	55	23.95	15	9.26	91	56.75			125	286	71.08
Grill							1	0.62	2	3	0.22
1st medium unit					1					1	0.07
2nd medium unit					1					1	0.07
Total	720		281		165		10		181	1357	
Per cent		53.06		20.71		12.16		0.74		13.34	100.00

A majority of the surface units on the homemakers' ranges was of the tubular type. The ring type unit was found in slightly over one-fifth and the open coil type in less than one-eighth of the ranges. Cast metal units were in too small numbers for consideration. More than 70 per cent of the small surface units were of the tubular type. Approximately 50 per cent of the large units were tubular also. A high percentage of well-cooker units were of the open coil type, with the next highest being tubular. Only three ranges had grills as additional units. These were of cast metal.

Convenience of Outlets

Table 25

HOMEMAKERS' OPINIONS REGARDING LOCATION OF CONVENIENCE OUTLETS ON ELECTRIC RANGES

Location of Outlet			Location		No		Total	
	Num- ber	Per Cent	Num- ber	Per Cent	Num- ber	Per Cent	Num- ber	Per Cent
Back	257	70.03	221	85.99	36	14.01	257	100.00
Front	53	14.44	45	84.02	8	15.98	53	100.00
Side	13	3.54	8	61.54	5	38.46	13	100.00
¹¹ All other	44	11.99						
Total	367	100.00						100.00

¹¹Including "Location Not Clear", none, and no answer.

A majority of the women found the location of their convenience outlets satisfactory, whether the outlets were on the back, the front, or the side of the range. The proportion of women satisfied with the location at the back of the range was almost identical with that for the front of the range. Proportionately fewer were satisfied with outlets at the side of the range.

In answering the question, "How do you use the convenience outlet on your range?", the women listed twenty-seven different electric appliances which they attach to the range outlets. Below is the list of these appliances with the numbers of women who reported using each appliance.

Table 26

HOMEMAKERS' USE OF ELECTRIC APPLIANCES IN RELATION TO
LOCATIONS OF CONVENIENCE OUTLETS ON RANGES

Appliances	Locations of Convenience Outlets			
	Back	Front	Side	Total
Coffee maker	75	12	5	92
Toaster	100	17	9	126
Iron	81	27	8	116
Mixer	68	11	2	81
Waffle iron	85	8	2	95
Radio	10	0	1	11
Mangle	4	0	0	4
Tea kettle	1	0	0	1
Griddle	2	0	0	2
Roaster	7	1	1	9
Electric heater	10	3	0	13
Corn popper	4	1	0	5
Vacuum cleaner	9	0	0	9
Soldering iron	2	0	0	2
Washing machine	2	1	0	3
Cooker-pot	4	0	0	4
Sandwich grill	6	1	0	7
Electric churn	1	0	0	1
Fan	3	0	0	3
Electric clipper	0	1	0	1
Clock	7	0	0	7
Egg cleaner	1	0	0	1
Refrigerator	7	0	0	7
Pin-up lamp	2	0	0	2
Timer	1	0	0	1
Oven	1	0	0	1
Hot plate	7	1	0	8
All appliances	6	2		8

The convenience outlets on the electric ranges were used more with coffee makers, toasters, irons, mixers, and waffle irons than all the other appliances combined.

Well-Cookers

All three hundred sixty-seven homemakers reported on whether or not they had well-cookers in their ranges. Of that number, two hundred eighty-nine (78.75 per cent) did have well-cookers¹², and seventy-eight (21.25 per cent) did not. With so large a proportion of the women having well-cookers, the uses they make of them and their attitudes toward them are important. If the farm homemaker who considers she has too few surface units uses her well-cooker seldom, she may feel that the electric range is inadequate for the farm kitchen.

Table 27

EXTENT OF USE OF WELL-COOKERS BY COOPERATORS

Extent of Use of Well-cookers	<u>Homemakers Reporting</u>	
	Number	Per Cent
Often	154	53.29
Occasionally	96	33.22
Seldom	32	11.07
Never	7	2.42
Total	289	100.00

¹²One woman had a separate well-cooker which was included in the study for this section of the report.

The above figures show that more than half the farm homemakers use their well-cookers often and a third use them occasionally. The percentage of women never using their well-cookers is very small (2.42 per cent). The women who did not use their well-cookers often were requested to state their reasons for not doing so. The following table includes a listing of those reasons and relates them to the degree of failure to use the well-cooker.

Table 28

HOMEMAKERS' REASONS FOR NOT USING WELL-COOKER OFTEN

Reasons for not using well-cooker often (154)	Homemakers reporting according to extent of use of well-cooker			
	Occasionally (96)	Seldom (32)	Never (7)	Total
1) Because I have pressure sauce pan or pressure cooker which takes its place	14	9	2	25
2) Too large	15		1	16
3) Too slow	7	4		11
4) Too small	3	2		5
5) Has not learned to use	3	1	1	5
6) Does not like it	4			4
7) Has waterless cooking utensil which takes place of well-cooker	3		1	4
8) Has not formed the habit	3			3
9) "Hard to get at"	1		2	3
10) Open coil unit not satisfactory	4			4
11) Does not like texture of food	3			3
12) Does not like flavor of food		2		2
13) Does not like quality of aluminum pan	1	2		3
14) Does not like quality of enamel pan	2	2		4
15) Thinks aluminum injurious to health		2		2
16) Hard to clean	1	1		2
17) Has separate electric cooker with tight lid which takes its place	1			1
Total	65	27	5	97

The reasons most commonly given by the women for not using their well-cookers more often were concerned with

1) substitute equipment (with thirty persons reporting)

and 2) size of well-cooker (with twenty-one persons reporting). Higher proportions of the women using their well-cookers seldom or never gave reasons for the lack of use than was the case with the women who use the well-cooker occasionally.

In response to the request that foods cooked in the well-cooker be listed, 93.08 per cent of the two hundred eighty-nine women who have well-cookers submitted such lists, summarized below. A number of items was named by each woman reporting.

Meats	278
Meat combinations	19
Dried foods	147
Soups	80
Vegetables	78
Puddings	23
Potatoes	18
Spaghetti, macaroni, and noodles	10
Steamed breads	7
Beverages	4
Milk pasteurization	2
Jellies	2
Sauces	3
"Everything"	2
"Many things"	7
All other	2

The list of foods cooked in the well-cooker by co-operating homemakers included great variety. Significant numbers were shown for meats and for dried foods.

In their lists of foods cooked in the well-cooker, a small number of women indicated specific methods of cookery used with the well-cooker. These methods are listed below

with the numbers of women reporting each method.

1. Slow steaming cookery	15
2. Canning	15
3. Food warming	8
4. Baking	3
5. Deep fat frying	2
6. Large quantity cookery	2

To determine attitudes of the homemakers toward certain features of well-cookers, they were asked three questions.

Table 29

HOMEMAKERS' ATTITUDES REGARDING CERTAIN
FEATURES OF WELL-COOKERS

Questions asked	Yes	Homemakers Reporting		Total
		No	No Answer	
1. If given a choice between well-cooker and large surface unit, would you keep well-cooker?	155 53.63%	119 41.18%	15 5.19%	289(13) 100.00%
2. Would you be interested in a well-cooker unit which could be raised to the surface for use there?	197 68.17%	73 25.26%	18 6.123%	289(14) 100.00%
3. Do you think it is important to have a distinguishing mark on the well-cooker switch?	176 60.09%	88 30.45%	25 8.65%	289 100.00%

¹³One woman had a separate well-cooker which was added to the 288 conventional well-cooker units for this section of data.

¹⁴This number includes one homemaker who has a well-cooker unit which may be raised to the surface for use there, but did not answer the question.

The three questions on special features of well-cookers were directed to women who own and operate well-cookers. The purpose of the questions was to determine the attitudes of this small group of women toward their well-cookers. All three features were considered desirable by a majority of the two hundred eighty-nine women reporting. The item receiving the highest proportion of approval (68.17 per cent) was the well-cooker unit which could be raised to the range surface for use there. A distinguishing mark on the well-cooker switch was deemed important by three-fifths of these women, some of whom might have had dire results from turning on the well-cooker unit by mistake. As to a choice of the well-cooker or another large surface unit, there were nearly as many who would prefer to give up their well-cookers as those who wished to keep them. Possibly the group wishing they might trade their well-cookers for surface units included many of those who indicated earlier a desire for more surface units.

Ovens

The oven in the farm homemaker's range is important. It is presumed that farm women do considerably more baking than do city women. An adequate oven can relieve the peak load of cooking for crews of hired help and for company meals.

Table 30

OPINIONS OF OREGON FARM WOMEN CONCERNING
ADEQUACY OF OVEN SIZE

Homemakers Reporting Oven Is Large Enough				
Yes	No	No Answer	Total	Per Cent
272	94	1	367	
74.11%	25.61%	0.27%		100.00

Approximately three-fourths of the women considered their ovens adequate. Those who considered them inadequate indicated the specific dimensions¹⁵, of their ranges which they judged inadequate.

¹⁵The term dimensions used in this case signified length, width and height rather than actual measurements.

Table 31

DIMENSIONS OF ELECTRIC RANGE OVENS CONSIDERED
INADEQUATE BY FARM HOMEMAKERS

Dimension	Homemakers Reporting on Each Dimension	
Width	56	42.75%
Depth	39	29.77%
Height	33	25.19%
Dimensions not specified	3	2.29%
Total ¹⁶	131	100.00%

Although the results indicated in this table show the relative inadequacy of the oven dimensions, the largest proportion of the women found the width of their ovens inadequate. Lesser and nearly equal proportions considered depth and height inadequate.

As a check of the oven dimensions the women considered inadequate, they were asked to list purposes for which they needed a larger oven. This information was compared with the data concerning oven dimensions the women considered inadequate.

¹⁶The total here is greater than the number of women indicating inadequate ovens in Table 30 because some homemakers objected to more than one dimension.

Table 32

PURPOSES FOR WHICH THE HOMEMAKERS CONSIDER THEY NEED
LARGER OVENS IN THEIR ELECTRIC RANGES

Purposes	Homemakers Reporting Dimension Should Be Larger			Dimentions not Specified	Total	Per Cent
	Width	Depth	Height			
Baking	4	3	4		11	6.29
Baking bread	3	2	2		7	4.00
More than one pie on a rack		1			1	
More pies on a rack		1		1	2	1.14
Two large or medium pies on a rack	8	9	3	1	21	12.00
More than one cake pan on a rack	1	1	1		3	1.71
Three cake pans on a rack	2	1			3	1.71
Larger cookie sheet	2		1		3	1.71
Bake more things at a time	4	1			5	3.45
Roasting turkey or meat in covered roaster	19	13	16		48	27.42
25 pound turkey	1	1		1	3	1.71
Roasting and bak- ing at same time	4	2	4	1	11	6.29
Roasting and cas- serole at same time	1	1	3		5	2.86
Oven dinners	2	3	1		6	3.43
Cooking for large groups	6	3	3	1	13	7.43
Canning		1			1	
Not specified	16	4	10		30	17.41
Total	73	47	50	5	175	100.00

A larger oven in the electric range for the farm home would appear to be desirable. However, an increase in size of the oven might not offer complete satisfaction if consideration were not given to the specific dimensions of the oven which need to be larger. The greatest need for expansion indicated is for a wider oven. The reasons for needing greater width is divided among a wide variety of foods commonly prepared and the preparation of a turkey or meats in a covered roaster. For the latter purpose, considerable need was shown for both a higher and a wider oven. With the exception of this use, and perhaps that of placing "two pies on a rack", the evidences of need for expanding these dimensions was scattered.

The women were asked to measure and record the oven dimensions they considered too small. Only forty-five of the three hundred sixty-seven cooperating homemakers supplied this information. Cases were too scattered to be of any value in the study.

Broilers

Table 33

EXTENT OF USE OF BROILERS IN
ELECTRIC RANGES STUDIED

Use of Broilers	Homemakers Reporting	Per Cent
Often	100	27.25
Occasionally	134	36.51
Seldom	78	21.25
Never	39	10.63
Not yet	1	0.27
Not answering	15	4.09
Total	367	100.00

It was evident that Oregon farm women did not use their broilers extensively. Slightly more than one-fourth of them used their broilers often and approximately one-third gave their broilers occasional use. The remainder used theirs seldom or never. The women indicating they did not use their broilers often were asked to state their reasons for not doing so. A total of one hundred eighty-nine women submitted reasons.

Table 34

REASONS GIVEN BY WOMEN FOR NOT USING
THEIR BROILERS OFTEN

Reasons	Homemakers Classified According to Broiler Use				Per Cent
	Occas- ionally	Seldom	Never	Total	
Not learned to use it	13	12	13	38	20.11
Grease spatters; hard to clean	19	17	2	38	20.11
Haven't formed the habit	12	13	6	31	16.40
Family does not like broiled food	7	11	7	25	13.23
Don't often have food for broiling	11	3	0	14	7.41
Prefer fried or roasted meats	5	4	1	10	5.29
Causes odor and smoke in kitchen	3	2	2	7	3.70
Unsatisfactory heat regulation	4	2	0	6	3.17
Slower	0	3	0	3	1.59
Don't have broiler	0	0	3	3	1.59
Inconvenient; too low	1	1	1	3	1.59
Pressure cooker takes its place	2	0	0	2	1.06
Don't like to broil	0	0	2	2	1.06
Too small for large numbers	0	2	0	2	1.06
All others	2	3	0	5	3.65
Total	79	73	37	189	100.00

The above table shows that sixty-nine of the one hundred eighty-nine women reporting (36.40 per cent) stated they have not learned to use their broilers or have not formed the habit, which may imply lack of knowledge. Implication of lack of knowledge in the management of the broiler is found in such items as 1) "grease spatters - hard to clean", 2) "causes odor and smoke in the kitchen",

and 3) "slower". As for the items dealing with preferences for other methods of cooking, shown in thirty-seven cases (19.58 per cent), it is possible that improper use of the broiler might have been responsible to some extent. Even "don't often have food for broiling" may indicate lack of familiarity with the process. It would appear desirable for the Oregon Extension Service to offer instruction in the use of the broiler¹⁷ to make possible greater and more satisfying utilization of this feature of the electric range.

¹⁷After compilation of data for this thesis was completed, the apparent need for instruction of farm women in better use of both broilers and ovens was brought to the attention of the Oregon Home Economics Extension Service. As a result, during the period from the fall of 1949 through the spring of 1952, a series of demonstrations on "Broiled Dinners" was conducted by the Extension Nutrition Specialist and the county home agents in 15 of the 36 Oregon counties, reaching 7,942 rural homemakers; and, in the same period, a series of demonstrations on "Oven Meals" was conducted in 22 Oregon counties, reaching 16,105 rural women. (See appendix)

Storage Drawers

Table 35

OPINIONS OF WOMEN REGARDING CONVENIENCE OF STORAGE
DRAWERS FOR UTENSILS AND EQUIPMENT
USED AT RANGE

Drawers convenient for storage of utensils and equipment used at the range	Homemakers Reporting	
	Number	Per Cent
Yes	305	83.10
Yes with reservations	11	3.00
No	29	7.90
No opinion	0	
Not answering	22	6.00
Total	367	100.00

A significant number of homemakers were satisfied with the storage drawers of their ranges for storing utensils and equipment used at the range. Considering the large percentage of the women favoring their present storage drawers, it would appear that few of them would comply with the request that they make suggestions for the improvement of storage drawers. Only forty-five women made such suggestions. These suggestions are listed below with the numbers of women offering each suggestion:

1)	Provide more drawers	5
2)	Provide racks or dividers for separating utensils	5
3)	Eliminate storage drawers (prefer storing pots and pans in cupboard)	5
4)	Provide larger drawers	3
5)	Provide additional storage drawers by utilizing dead space in lower part of range	2
6)	Make them noiseless	2
7)	Have space for hanging utensils in lower part of range instead of drawers	2
8)	Place drawers higher to make them easier to get at	2
9)	Eliminate broiler in storage drawer - makes useless for storage	1
10)	Equip with better glides	2
11)	Make dust-proof by closing back	1
12)	Make drawer deeper for coffee pot	1
13)	Organize space to avoid waste	1
14)	Have another drawer in place of compartment	1
15)	Use space for assorted heating units	1
16)	Have additional unit in place of one drawer	1
17)	Provide warming oven in place of drawers	1
18)	No suggestion - just don't find the drawers convenient	1

It would appear from these scattered results that no one or two faults of storage drawers were of concern to many farm women.

Care of the Electric Range

Two series of questions relative to care of the electric range were included in the questionnaire. The first of these dealt with possible harm to the range surface from the use of a pressure cooker or a water bath canner on a surface unit. The second provided for reports on ease of cleaning the range and a listing of parts difficult to clean.

Table 36

HOMEMAKERS' HESITANCY TO USE PRESSURE COOKER OR
WATER BATH CANNER ON RANGE SURFACE IN
RELATION TO EXTENT OF CANNING

Maximum quarts canned in one day	Yes	Per Cent	No	Homemakers Reporting			Total	Per Cent
				Per Cent	No Answer	Per Cent		
0-19	18	26.10	50	72.45	1	1.45	69	18.80
20-39	33	24.45	99	73.33	3	2.22	135	36.76
40-59	8	13.11	53	86.89			61	16.63
60-79	5	38.46	8	61.54			13	3.54
80-99	1	20.00	4	80.00			5	1.36
100-119	1	25.00	3	75.00			4	1.09
120-139	1	33.33	2	66.67			3	0.82
140-159	1	33.33	2	66.67			3	0.82
No answer	21	28.39	43	58.11	10	13.51	74	20.19
Total	89		264		14		367	
Per Cent		23.20		75.44		1.36		100.00

Three-fourths of the women were not hesitant to use the surface units of their electric ranges for canning. The numbers of quarts of food canned in a day apparently had little effect upon the attitude of the women in this regard.

Table 37

HOMEMAKERS REPORTING HARM TO RANGE SURFACE
FROM CANNING - IN RELATION
TO EXTENT OF CANNING

Maximum quarts canned in one day	Yes	Per Cent	Homemakers Reporting				Total	Per Cent
			No	Per Cent	No Answer	Per Cent		
0-19	8	11.59	55	79.72	6	8.70	69	18.81
20-39	27	20.00	104	77.04	4	2.96	135	36.79
40-59	10	15.87	53	84.13	0	0	63	17.16
60-79	4	33.33	6	50.00	2	16.67	12	3.27
80-99	4	50.00	3	37.50	1	12.50	8	2.18
100-119	0	0	0	0	0	0	0	0
120-139	0	0	3	100.00	0	0	3	0.82
140-159	1	33.33	2	66.67	0	0	3	0.82
No answer	12	16.18	43	58.12	19	25.69	74	20.16
Total	66	18.36	269	77.22	32	4.42	367	100.00

There were fifty-four women of a total of three hundred sixty-seven, who reported that harm to their ranges had been done by using the surface units for canning.

It would appear from these data that the majority of electric ranges could be used for canning without harm to the range surface. It was not known whether those ranges which were harmed by canning had a surface finish, as resistant to prolonged heat, as did the ranges which were

were not harmed. Neither was it known whether as great care was taken by these women in handling the large and heavy utensils used for canning. Furthermore, there was a pressure cooker of wartime design which directed heat downward onto the enamel about the surface unit, and did cause crazing of the finish. Homemakers having had experience with this piece of equipment might well have remained fearful to use a large pressure cooker on an electric range.

Table 38

EASE OF CLEANING THE ELECTRIC RANGE

Ranges Considered Easy to Clean	Homemakers Reporting Number Per Cent	
Yes	264	70.84
Yes, except for specified features	41	12.26
No	60	16.36
No answer	2	0.54
Total	367	100.00

A large majority of the cooperators found their electric ranges easy to clean. The sixty women who found theirs not easy to clean were asked to list the parts of their ranges which caused difficulty. Below is a list of these parts with the numbers of women naming each of them:

Surface unit pans	34
Chrome around surface units	16
Surface units	20
Well-cooker	5
Bottom of well-cooker	3
Oven	31
Lining of oven	4
Oven racks	2
Top of lower oven element	3
Broiler	3
Steam vent from oven	1
Switches	4
Lights	4
Seams and trim (outer covering)	4
All other	4

Surface units and ovens were found by these women to offer some difficulty in cleaning.

Rating of Special Features

Homemakers were requested to evaluate specific features which ranges might or might not have as to their feeling of need for each of them. The rating "Important" implied that the homemaker considered the feature to be one she would surely wish included on her range. The second rating, "Desirable but not important", implied interest in the feature. "Not desired" is self-explanatory.

**Table 39: SPECIFIC FEATURES OF ELECTRIC RANGES REPORTED BY OREGON FARM WOMEN
AS IN THEIR PRESENT RANGES AND RANKED AS TO DESIRABILITY**

Features	Have						Do not have						Number failing to check						TOTAL
	Opinions of homemakers who have features					Feat-ure	Opinions of homemakers who do not have features					Feat-ure	Opinions of homemakers failing to check features					Feat-ure	
	Important	Desirable but not important	Not desired	No opinion	No answer	Total	Important	Desirable but not important	Not desired	No opinion	No answer	Total	Important	Desirable but not important	Not desired	No opinion	No answer	Total	
<i>Utensil Storage drawer</i>	209	84	5	2	17	317	10	9	1	3	6	29	15	3			3	21	367
<i>Oven thermometer</i>	168	4			13	185	60	47	14	11	29	161	15	4			2	21	367
<i>Automatic oven temperature control</i>	293	11		1	17	322	17	2	1	1	3	24	17	2			2	21	367
<i>Automatic timer</i>	155	29				194	57	66	1	6	22	152	10	7		1	3	21	367
<i>Reminder clock</i>	120	37	3	2	10	172	58	79	1	11	25	174	9	8		1	3	21	367
<i>Automatic time and temperature switch for surface burners</i>	19	17	2	1	7	46	71	125	26	30	48	300	4	7	2	2	6	21	367
<i>Convenience outlet</i>	250	44	4	1	23	322	11	4	1	3	5	24	13	3	1	1	3	21	367
<i>Oven light</i>	183	19	1	1	11	215	72	43	1	1	14	131	19	1			1	21	367
<i>Glass in oven door</i>	5	3				8	61	126	86	15	50	338	9	5	4		3	21	367
<i>Warming oven</i>	41	41	13	2	7	104	54	101	33	21	33	242	8	4	4		5	21	367
<i>Two ovens</i>	10	2	2	1	1	16	32	92	97	48	61	330	2		13	1	5	21	367
<i>Broiler separate from oven</i>	9	4	3	1	3	20	60	70	84	52	60	326	5	3	6	2	5	21	367

A majority of the women who had a specific feature considered it important, with the exceptions of 1) the warming oven and 2) the automatic time and temperature switch for a surface burner. A majority of the women who did not have a specific feature were as likely to consider it as "Desirable but not important" as to consider it "Important". It is interesting to note that, for the warming oven and the time and temperature switch for surface burners, homemakers who did not have the feature were in agreement with those who did, as they showed less interest in them than in many other features. One feature, the automatic oven temperature control, was omitted on few of the ranges studied. A very high proportion of the women having them and those few not having them considered them important.

Three features infrequently found in these ranges, 1) glass in oven door, 2) two ovens, and 3) broiler separate from the oven, tended to be of less concern to homemakers than those features more commonly used. A larger group reported each to be both "desirable" and "not desirable" than those who indicated them as "important".

Supplementary Heating and
Cooking Equipment

Many farm homemakers in Oregon have used the large wood range to provide heat in the kitchen and to furnish an ample cooking surface. With the advent of the electric range in the farm kitchen, it would seem reasonable to assume that the homemaker might feel the need of supplementary heating equipment. Also, she had formed the habit of utilizing this heat source for cooking, making the heat out-put serve two purposes. Thus many homemakers continued to be interested in supplementary cooking equipment.

Table 40

AMOUNT OF USE OF HEATERS IN ADDITION
TO THE ELECTRIC RANGE

Type of Heating Equipment	Often Occas- ionally		Homemakers' Use			Total	Per Cent
			Seldom	Never	No Answer		
Trash burner	19	25	16	25	2	87	23.39
Other small heater			3	25	4	32	8.60
Wood or coal range	32	10	1	4	2	49	13.17
Oil range	2	0	0	2		4	1.08
Not answered					167	167	44.89
None				33		33	8.87
Total	53	35	20	89	115		
Per Cent	44.25	9.41	5.38	23.92	47.04	372	100 ⁽¹⁸⁾

¹⁸Each of five women reported one additional stove.

Of the homemakers studied, fifty-three reported use of supplementary heating and cooking units. The types most commonly owned and used were trash burners and wood or coal ranges.

Table 41

ELECTRIC APPLIANCES OWNED AND USED IN THE
HOMES OF COOPERATING HOMEMAKERS

Electrical Appliances	Homemakers Own and Use	Per Cent of 367
Toaster	312	85.01
Roaster	38	10.35
Hot plate	109	29.70
Waffle baker	306	83.38
Sandwich grill	154	41.96
Coffee maker	178	48.50
Mixer	1	0.27
Egg cooker	1	0.27

A very large proportion of the cooperating homemakers owned and used toasters. Nearly as many families had waffle bakers. Approximately half the families had coffee makers and nearly as many had sandwich grills. It was surprising that hot plates were owned by little more than one-fourth of the families and roasters by approximately one-tenth, as homemakers' expressed need for more surface

units and larger ovens would tend to give the impression that both these appliances might have been needed.

The two tables following show in greater detail the extent to which the homemakers studied used hot plates and electric ovens.

Table 42

EXTENT OF USE OF ELECTRIC HOT PLATES TO SUPPLEMENT
ELECTRIC RANGES IN COOKING MEALS

Extent of Use	Homemakers Reporting				Total	
	1-unit Hot Plates	2-unit Hot Plates	3-unit Hot Plates	Number Not Specified	Num- ber	Per Cent
Daily	6 75%	0	0	2 25%	8	7.34
Once a week	0	0	0	0	0	0
Less often	8 30.77%	16 61.54%	2 7.69%	0	26	23.85
Never	15 20.83%	52 72.22%	2 2.78%	3 4.17%	72	66.06
Use not indicated		3 100%			3	2.75
Total owning	29	71	4	5	109	100.00
Per Cent owning	26.61	65.14	3.67	4.59		
Total owning hot plates					109	29.70
Total not answering					258	70.30
Total homemakers					367	100.00

Two-thirds of the women who owned electric hot plates never used this equipment to supplement their electric ranges. Nearly one-fourth of them used hot plates less often than once a week. Apparently, farm women have not relied upon hot plates to give them the additional cooking surface which they have indicated they needed.

Of the hot plates owned by the women a majority had two units.

Table 43

EXTENT OF USE OF ELECTRIC ROASTERS

Extent of Use of Roasters	Homemakers Reporting	
	Number	Per Cent
Frequently	13	34.21
Occasionally	17	44.74
Seldom	3	7.89
Never	2	5.26
Total owning	38	100.00
Total families having roasters	38	10.35
No answer on roaster	329	89.65
Total	367	100.00

Approximately one-tenth of the three hundred sixty-seven farm women owned electric roasters. Use of the roasters by the women was not extensive, as slightly more than one-third of them used their roasters frequently and less than one-half used theirs occasionally. It was evident that the women did not consider the roaster an important supplement.

HOMEMAKERS' IDEAS CONCERNING RANGES

In order to be sure that homemakers might adequately express their ideas about electric ranges, these three questions were asked:

- 1) "What features of your range do you not like?"
- 2) "If you could talk to range manufacturers, what suggestions for changes would you make?"
- 3) "What features of your range do you especially appreciate?"

Results have been screened to eliminate concepts already covered in the questionnaire. All ideas which were considered to be contributions have been listed. After each idea is the number of women who made the comment.

Features Oregon Farm Women Did Not
Like in Their Electric Ranges

<u>Item</u>	<u>Number Reporting</u>
1. <u>Clock</u>	
Difficult to clean under	1
In middle near burner	1
Unsatisfactory location	1
"My clock is no good"	1
Clock face is too small and indistinct	1
2. <u>Timer</u>	
Does not work	2
Seldom use oven timer	1
3. <u>Switches</u>	
Location of switches not consistent with location of units	1
Unit not indicated on switch	2
Can't tell easily when all burners are off	1
Oven switches so close to surface unit heat that switches turn yellow	1
4. <u>Units</u>	
Raised units hard to clean	1
Trays under units too low	1
Large ring unit burned out too fast	1
Have to reach over one unit to take care of food on back units	1
5. <u>Convenience Outlets</u>	
Convenience outlet in middle of panel - cord lies across stove	1
Have no convenience outlet	2
6. <u>Wiring</u>	
Need wiring - there is no light near range	1
Have had short circuits	1
7. <u>Range Light</u>	
Not adequate - too low	1

<u>Item</u>	<u>Number Reporting</u>
8. <u>Well-Cooker</u>	
Enamel on well-cooker broken	2
Deep well is open when the pan is out	1
9. <u>Oven</u>	
Not enough heat in element	1
With broiler in top of oven, can't use both at once	3
Prefer additional oven to a warming oven	2
Oven vent drips on top of stove - turns it brown	1
No steam outlet in oven	2
Do not like oven temperature control on top of range	1
Rack in oven is not sturdy	1
Screws that hold door hinges work loose	1
10. <u>Range Itself</u>	
Expensive to operate	1
Too small for farm cooking - keep wood range	1
Console range takes up too much space	1
"Stands up from the floor"	2

Suggestions from the Farm Women
for Improving Electric Ranges

Suggestions for Change
 (Not covered in questionnaire)

	<u>Number Reporting</u>
1. <u>Clock</u>	
Wants clock on back panel	1
2. <u>Timer</u>	
Connect automatic timer with outlet switch	3
Provide timer on deep well cooker	6
Want oven and cooker pot time controlled	1
3. <u>Switches</u>	
Provide smooth surfaces on light switch buttons	1
Want sectional switches on 3-ring burners	1
Have switches to replace those gone out at once	1
4. <u>Units</u>	
Provide automatic turn off on burners to avoid burning food if forgotten	1
Provide smooth surfaces on burners	5
Larger burner which could be adjusted to three sizes from very small to size for hot cake griddle	1
Provide units not so close to end and front to protect small children	1
Provide lights to go on while burners are on	3
Instead of one red light showing burners <u>on</u> there should be a light for each burner	1
Drip pans under burners should be raised	1
Cone shaped pan under units	1
Wants large center unit with covered lid to use for wash boiler or roaster and wants controls for each half	1
Wants canning unit - something that can be used when cooking for large groups	1
Provide covers for burners not in use to facilitate cleanliness	2

5. Convenience Outlets

A side outlet switch	1
Want 2 convenience outlets	2

6. Wiring

Make wiring to plates longer	1
Wiring heavy enough to carry load	2
Side connection for wiring of units	1

7. Light

Provide better light for surface use	5
--------------------------------------	---

8. Range Itself

Provide extra table top	1
Provide lower working surface	1
Make stove flush with floor	1
Need way of leveling range on an unlevel floor	1
A separate base that would adjust height of range or different height bases	2
Provide ranges with steel tops for making not cakes or toasting sandwiches	1
Provide stainless steel tops for all ranges	2
Provide more cooking surface - less waste top space	1

9. Finish

Back panel should be chrome	1
Want better surface, material; enamel has cracked around all units	1
Want black base instead of white	1
Non-scratch top enamel	1
Stainless steel or monel metal top instead of porcelain	4
Solid surfaces	1

10. Oven

More insulation around oven	1
Stainless vapor vent and device to clean vent	1
Provide lower heat for oven	1
Provide sufficient light for oven	1
Want light to indicate when oven is on	1
Heat too high in warming oven	1
Provide smooth surfaced oven bottom for easier cleaning	1

10. Oven (Continued)

More efficient broiler	1
Broiler unit be made so only half could be heated if so desired	1
Provide triple oven	1
Provide solid handles on oven doors	1
Provide high oven range	1
Provide high broiler	1
Provide oven thermometer that works efficiently for longer life	1
Like idea of G.E. triple oven and calrod units in oven	1
Provide two ovens instead of a separate warmer	2
Provide removable drip pan in bottom of oven	1
Meat oven should be added	1
Provide oven that can be made smaller when large one isn't needed	3
Want calrod units in oven	1
Provide one large and one smaller oven	2
Provide removable oven sides to make cleaning easier	1
Need deeper broiler pan	1

11. Storage Drawers

Provide solid handles on storage drawers	1
Dust proof storage drawers	1
Provide more storage space	1
Provide storage space <u>divided</u> for utensils	1

12. Well-Cooker

Place well-cooker in warming oven space and have another unit in its place	1
Make deep well-cooker to be pressure cooker also	6
Deep fry and cook racks in deep well	1
Provide aluminum or stainless steel well-cooker, not granite	3
Light on cooker unit	1
Provide lid that fits tightly	1

Features Homemakers Appreciate

<u>Item</u>	<u>Number Reporting</u>
1. <u>Clock and Timer</u>	
Clock	18
Minute-minder or reminder clock	46
Automatic timer	81
2. <u>Switches</u>	
Light or lights to indicate when units are on	9
3. <u>Units</u>	
Fast units	9
Closed units	4
Tubular type units	13
Large surface units	4
Raised cooking units	1
Units at each end with center work space	5
Only center of unit heats on low and second	1
3-ring burners providing partial and economical replacement	2
Removable trays under burners	5
Elements across back	1
Stainless rims on units	1
Retention of heat after turned off	2
One burner and switch automatically turns to low	1
4. <u>Convenience Outlets</u>	
Convenience outlet	14
Clock controlled outlet on back panel	1
Two outlets	1
Timer for outlet	1
5. <u>Light on Back of Stove</u>	
Light on stove	16
Flourescent light	1

6. Range Itself

Cleanliness of electricity	33
Range easy to clean	26
Quick	50
Cool to use	10
Appearance of range	9
Automatic features	7
Uniform heat	2
Convenient and dependable	14
Economical to use	3
Table top style	1
Work space on top	5
Control of heat	3

7. Finish

Stain resistant finish	1
No seams to collect dirt	1
Hard surface of porcelain which does not mar easily	1
Smooth surfaces	5
Plain without chrome trim	1
Black enamel around units; rest white	1

8. Oven

Large oven	13
Lighted oven	18
Even heat for baking	5
Fast heating	4
Double element oven	1
Well regulated	2
Enamel, easy to clean	1
Lower unit enclosed	1
Semi-rounded knobs for oven racks	1
Flexibility in placement of racks	1
Having two ovens	2
Glass in oven door	5
Triple oven	1
Two switches controlling oven	1
Broiler	9
Broiler with smokeless deep pan, bottom of which fits surface unit	1
Broiler and baking in same oven	4
Separate broiler	1
Oven high	1
Oven on top of stove	1
Sectional or adjustable oven	3
Warming oven	6

8. Oven (Continued)

Oven pilot light	3
Extra oven shelf	1

12. Storage Drawers

Storage space	9
Adequate storage space	4
Warming oven used for storage	1
Roller drawers	2

13. Well-Cooker

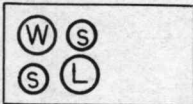
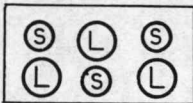
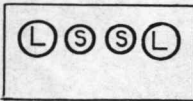
Well-Cooker	36
Low temperature cooking of deep well	1
Can be raised for surface unit	2
Timer for cooker	3
Top level so can set things on it	1
Side heat unit in deep well cooker	2
Switch automatically turns to low on well-cooker	1

14. Speeds

Number of speeds	12
7-speed units	4
5-speed units	3
4-speed units	1
High heat	3
Slow cooking	3

FIELD STUDY II - DEALER INTERVIEWS

Below is a list of certain features found in the eighteen post-war ranges, which features were shown in many of the results of the questionnaire to be desirable to farm homemakers.

<u>Feature</u>	<u>Numbers of Ranges Having Feature</u>
<u>Combination of units:</u>	
1 large unit, 2 small units, well-cooker	14
2 large and 2 small units	1
3 large units and 3 small units	1
<u>Arrangement of units:</u>	
	12
Reverse of above arrangement	2
	1
	1
Well-cooker units with raised feature	3
Well-cooker units with pressure lid	1
Exchange well-cooker for large unit at no extra cost	5
Well-cooker kettle flush with surface	8
Fast speeds surface units	16
Removable drip pans under units	14
Switches with indications of "on" for individual surface units	4

One light for switches	11
Oven switch and temperature control combined	12

Measurements of oven widths:

15"	1
15-3/4"	1
16"	7
17"	6
17-1/4"	1
17-3/4"	1
19"	1

Ranges with six surface units, nineteen-inch wide ovens, in addition to many other features of the post-war ranges, should provide the farm homemaker with convenient and adequate equipment for the cooking demands in the farm home.

CHAPTER VII

SUMMARY AND CONCLUSIONS

Summary

The study of electric range features was undertaken for the purpose of determining the adequacy of such ranges for farm homes. A questionnaire was used to obtain data. A total of three hundred sixty-seven Oregon farm homemakers owning and using table-top electric ranges not more than ten years old cooperated in the study. Of that number of women 61.58 per cent were between the ages of 30 and 50, 62.12 per cent lived on full-time farms, 49.05 per cent spent as many as eight hours a day doing farm work in the summer months, and 75.48 per cent had used electric ranges from one to ten years.

Demands on the electric range varied with the individual families as it was shown that four to fifty persons were served company meals, four to thirty-nine members of crews of hired help were fed at one time, and from nine to over one hundred fifty quarts of food were canned in a day.

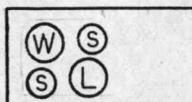
The women were divided in their preferences concerning combinations of surface units on their ranges:

- 1) about one-sixth of the group preferred their present combinations; 2) slightly more than three-fifths would

be satisfied if one or more units were added to their present combinations; and 3) less than one-fourth wanted a different combination from their present one. The desire for additional units was not supported, however, by evidence concerning actual use of additional hot plate units.

More than three-fourths of the ranges in the study had the combination of two small units, one large unit, and a well-cooker unit. Only one-tenth of the women having this combination wanted it. However, approximately two-thirds of them would prefer it if one or more units were added. In specifying additional units desired, over half of all cooperators wishing additions wanted a well-cooker unit which could be used for surface cookery. When the well-cooker itself was considered, an even greater proportion of homemakers expressed preference for one which could be raised for surface cookery.

Twenty-eight different arrangements of range surface units were reported. Despite the wide variety of patterns, eleven arrangements received approval from a majority of the women having them. The arrangement found most frequently was this:



Approximately three-fifths of the women having this arrangement were satisfied with it. Half the women stating reasons for their dissatisfaction with surface unit arrangements wanted more space between units. A majority of the homemakers who had three or more speeds on surface units were satisfied, provided the speeds on all units for a given range were the same.

In regard to the location of unit switches, over half preferred them on the front of the range. Considering the different types of units, a majority were tubular units, with ring units in second place.

Location of the convenience outlet at the back of the range surface was found in over seventy per cent of the cases. Whether the outlet was at the back, the front, or the side of the range, the women tended to be satisfied. The women listed twenty-seven different appliances they attach to their convenience outlets.

Over three-fourths of the women reported they had well-cooker units on their ranges. More than half of these homemakers used their well-cookers often and one-third reported occasional use.

Approximately three-fourths of the women considered their electric range ovens adequate. However, when considering dimensions and uses of ovens, substantial interest was indicated in a wider oven, and some interest in a higher one. Only 27.25 per cent of the homemakers

reported using their ovens often and 36.51 per cent occasionally.

Half of the women did not use their broilers often, and gave as their most commonly stated reason that they had not learned to use them or had not formed the habit.

Most of the women, over four-fifths, considered the range drawers convenient for utensils and equipment used at the range. However, when they were asked to offer suggestions for improving range drawers, they gave nineteen different suggestions, including dividers in the drawers and storage base cabinets next to the range.

Conclusions

Electric ranges tend to fit requirements for use in farm kitchens if one more unit is provided on the range surface. A raised unit for the well-cooker would meet this need in most cases. Larger ovens are desired for bulky foods. Greater space between units would be appreciated. While many suggestions on design of ranges for use in the farm home have come out in the study, general satisfaction with ranges was evident.

As a result of the electric range study, it is recommended that the Extension Service conduct with rural women two series of demonstrations on 1) convenient storage at the range center, and 2) care of the electric range. These demonstrations would be in addition to the two

series on oven meals and broiled dinners, already begun. It is recommended also that attention be given, by Extension specialists concerned, to the relationship of the range design to kitchen arrangement.

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APPENDICES

APPENDIX A

OREGON STATE COLLEGE
EXTENSION SERVICE
HOME ECONOMICSFOURTEENTH ANNUAL MEETING

of

OREGON HOME ECONOMICS EXTENSION COUNCILOregon State College
Corvallis, Oregon
June 10, 11, 12, 1946

REPORT OF RESEARCH COMMITTEE

The research committee reviewed the work of last year and found that prefabricated houses were not available therefore, Miss Wilson could not do any work on this project. However, she has been called to help with the housing project at Madras. A report was made on the study of the use of electricity in rural homes, which study was completed last April by Miss Maud Wilson. Part of this information will be tabulated in a hand book to be published late this year for our use.

Manufacturers of electrical equipment have catered more to urban users. It is important to collect information from rural women on the kind of electrical equipment that will best help them, and get manufacturers to realize the needs of rural users of these appliances.

It is also hoped to further promote this work by securing a person for additional research on the use of electrical equipment for rural homes. To aid this research, more facts will be necessary. To get specific details from homemakers as to the need of improvements in equipment, this committee recommends that the county research chairman be responsible for securing the needed information from unit members and others. It was decided to make the electric range the subject of first investigation. The survey to secure facts of the following nature:*

*Order of items reorganized to be in logical groupings

Larger burners

Burners farther apart

2 burners on ends with space between

1 very small burner on spot cooking

Deep-well cooker

Burner to keep pressure cooker at even pressure

Could a whole top be heated like wood range top

Warming oven space

2 ovens or one broiler

Oven lining removable for cleaning

High or low oven

Glass oven door

Shape of stove

Legs or not

Toe space

Oven lights

Better stove lights

How much automatic control

Tops of monel metal or stainless steel

Storage space for kettles

APPENDIX B

UNITED STATES DEPARTMENT OF AGRICULTURE
Rural Electrification Administration
Washington 25, D. C.

September 9, 1948

Mrs. Margaret H. Tuller
Extension Specialist in Housing
Oregon State College
Corvallis, Oregon

Dear Mrs. Tuller:

We do not have any statistics showing monthly changes in number of farms with electric service. We estimated that on June 30, 1947, 58,226 Oregon farms, or 92.2 per cent of the total number of farms in the State, had service. The Edison Electric Institute estimated that on December 31, 1947, 59,600 or 94.4 per cent of the total, were served.

If we can help you further, please let us know.

Very truly yours,

Robert H. Ingram
Acting Chief, Information
Services Division

APPENDIX C

OUTLINE OF PERSONAL INTERVIEWS FOR
DEVELOPING QUESTIONNAIRE

I. OBSERVATION

A. Electric Range

1. Make
2. Serial number and model
3. Surface
 - a. Type of finish
 - b. Condition of finish
4. Surface units
 - a. Type
 - b. Number of each size
 - c. Arrangement
 - d. Ease of cleaning
5. Switches
 - a. Location
 - b. Number of speeds
6. Oven
 - a. Location of oven
 - b. Condition of interior
 - c. Location of oven vent
 - d. Units
 - e. Heat regulation
7. Storage compartments
 - a. Number
 - b. Location
 - c. Ease of operation
 - d. Use made by homemaker

8. Features

- a. Clock
- b. Automatic timer
- c. Reminder clock
- d. Light for range surface
- e. Oven light
- f. Convenience outlet
- g. Well-cooker
- h. Warming oven

B. Utensils

1. Types
2. Materials
3. Sizes and shapes in relation to units

C. Arrangement of other kitchen units in relation to electric range.

D. Natural and artificial lighting of kitchen.
(exclusive of range lights)

E. Heating system for house.

F. Auxiliary heater and/or range.

1. Trash burner
2. Coal or wood range

II. INFORMATION AND OPINIONS FROM HOMEMAKER

- A. Name
- B. Address
- C. Number in family
- D. Hired help fed in home
- E. Purchase of range

1. Year bought
2. New or second-hand

F. Adequacy of electric range as to size

1. Surface
2. Height
3. Oven

- a. Convenient for working
- b. Affecting possible use of space overhead

G. Opinion of units

1. Surface units

- a. Ease of control
- b. Number and type of units desired
- c. Opinion regarding location of switches

2. Oven

- 1. Accuracy of heat regulation
- 2. Quality of cooking (even browning)

H. Use of broiler

I. Use of well-cooker (if range equipped with well-cooker)

J. Other cooking practices

K. Use of trash burner

L. Other electrical appliances to supplement range

- 1. Hot plate
- 2. Roaster
- 3. Coffee maker
- 4. Toaster

M. Desirable supplementary equipment

N. Adequacy of utensils

O. Opinion of storage drawers in range

P. Use of features on range

Q. Canning on electric range

- 1. Extent of practice
- 2. Adequacy of range for canning

R. Ease of cleaning range

S. Suggestions for changes in electric ranges

T. Good points of the individual's electric range

Dimensions

Surface: Width
Depth

Face of range: Top of oven to surface
Inside height of oven
Top of toe space to bottom
of oven
Toe space

Total (height of surface from floor)

Oven: Depth
Width
Inside height (same as above)

APPENDIX D

PROBLEMS CONCERNED WITH ELECTRIC RANGES

Obtained in Personal Interviews to Determine
Scope and Content of Questionnaire

I. Components of Range	Problems
A. Surface units	<ol style="list-style-type: none">1. Number of surface units is inadequate (range has four units)2. Combination of two small units, one large unit and a well-cooker is not liked.3. Grouping of four units at one end of the range surface makes cooking a meal impossible while the range is being used for canning.4. No unit on the present range is large enough for a pressure cooker.5. Fear of harming the porcelain enamel surface prevents use of range for canning.6. Porcelain enamel around the large unit has been crazed by use of pressure cooker for canning.7. Regulating heat when using pressure cooker is difficult with present number of speeds (three speeds).8. Drip pans attached to surface units are difficult to clean.
B. Well-cooker	<ol style="list-style-type: none">9. No choice between a well-cooker and a second large surface unit was given when range was purchased.

9. (Continued)

Well-cookers are not used for these reasons:

10. Too slow
 11. Inconvenient to lift
 12. Too large
 13. Unnecessary after acquisition of pressure saucepan
 14. Quality of food cooked in well-cooker
 15. Little or no knowledge of how to use
 16. Open-coil unit for well-cooker is unsatisfactory because the wire breaks.
 17. Stationary well-cooker unit gives inefficient use of range surface space.
 18. Coils around the sides of the well-cooker pan cause the burning of food unless the pan is fairly full.
 19. Pan for well-cooker is considered unsatisfactory. (The pan to which this comment referred is of war-time enamel).
- C. Oven and Broiler
20. Oven is not large enough. (Inside dimensions of this oven are $16\frac{1}{4}$ inches high, 16 inches wide and $18\text{-}\frac{3}{4}$ inches deep)
 21. Heating the entire oven for baking biscuits or other small amounts of food is wasteful of electric current.

22. Separate warming oven is needed.
23. Automatic clock, for turning the oven on and off, adds to cost and is not used.
24. Oven is difficult to clean.
25. Oven vent at back of range causes discoloration of wall.
26. Oven vent is difficult to clean.
27. No glass in oven door makes necessary frequent opening of door to see how food is cooking.

Broilers are not used for these reasons:

28. Little or no knowledge of how to use
29. Cause of having to clean oven more often
30. Dislike of family for broiled foods.
31. Broiler pan is difficult to clean.
32. Broiler separate from oven is needed for simultaneous use.
33. Switches on front of range are inadvisable in home with small children.
34. Well-cooker switch occasionally turned on by mistake because there is no distinguishing mark for this switch.

D. Switches

- | | |
|-------------------------|---|
| | 35. Two separate switches for turning on oven and for setting temperature gauge are not as convenient as one switch for oven. |
| E. Convenience Outlets | 36. Convenience outlet is located in back panel above units, presenting danger of cord coming in contact with heated unit. |
| F. Lights | 37. Range lamp is too low. |
| | 38. Oven is not equipped with a light. |
| G. Wiring System | 39. Short in wiring system is difficult to find. |
| | 40. Wires below units are not well protected against wear caused by lifting units for cleaning. |
| H. Storage Compartments | 41. Storage compartments are too deep for storing range utensils conveniently. |
| | 42. Storage drawers are difficult to open and close. |
| | 43. Metal storage drawers are noisy to use. |
| I. "Gadgets" | 44. "Gadgets" on the range cost extra money and some are never used. |

II. Related Utilities in the House

45. As the house is not equipped with a central heating system, it is necessary for a trash burner to be used in cold weather.

III. Training of the Homemaker in the Use of Her Range

46. No instruction in the use of her range was given the homemaker by the dealer. In this case, the automatic clock sold the range, but it was never used because the homemaker could not discover how to operate it.

Name _____

Community _____

County _____

May I introduce myself to you? I am the Home Management Specialist with the Montana Extension Service, on leave for a year to do advanced work in housing at Oregon State College. My research problem is one that you Oregon Home Extension Unit members requested at the June State Council Meeting — "Features of Electric Ranges Needed for Oregon Farm Kitchens". May I have your help with this study?

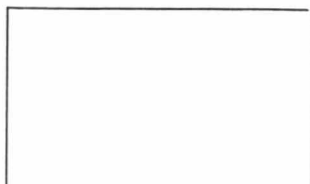
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THERE ARE A FEW THINGS I SHOULD LIKE FOR YOU TO TELL ME ABOUT YOUR ELECTRIC RANGE

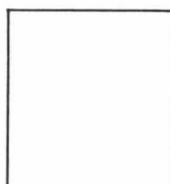
1. How many years have you had your present range? _____.
2. Did you get it: a. New _____ b. Second-hand _____.
3. Is your range: a. Entirely electric? _____ b. Combination wood- (or coal-) and electric? _____.

On the blank below, which represents the surface of your range, draw circles to indicate the number, arrangement and position of the units. Mark with a W the circle representing the well-cooker, an L for a large unit and an S for a small unit.

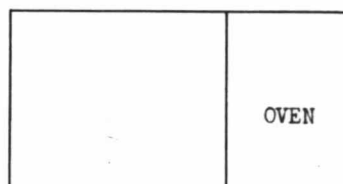
TO ONE OF THESE SURFACES



4. Table Top Range



5. Apartment Range

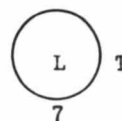


6. High Oven Range

ADD THESE UNITS



A. Now place one of the following letters to the right of each unit you have drawn on the surface above to show the type of unit: a. OC-open coil unit, b. T-tubular unit, c. R-ring unit. B. Next put below each unit a small figure to indicate the number of speeds for that unit. If your range has a large tubular unit with 7 speeds, your drawing for that unit will look like this:



7. Do you like the arrangement of units on your range? a. Yes _____ b. No _____.
8. If not, what would you like to have different about the arrangement? _____

9. How many of the following units do you wish your range had: a. Small units _____
b. Large units (for frying pan or large kettle) _____
c. Extra large units (for canning) _____ d. Extra small units _____.
 10. Do you find the control of your surface units satisfactory? a. Yes _____ b. No _____
 11. If not, when do you have difficulty? _____
-

12. Where would you prefer to have switches located? a. Front of range____
b. Back panel____
13. For what reasons do you have this preference?

14. Do you hesitate to use a pressure cooker or water bath canner on a surface unit
for fear of harming the range surface? a. Yes____ b. No____.
15. Has the surface of your range been harmed from this cause? a. Yes____ b. No____.
16. How many quarts as a maximum did you can on your electric range in any one day
during the past year? ____.
17. How do you use the convenience outlet on your range?

18. Is the convenience outlet on your range located in a good place? a. Yes____
b. No____
19. Where is it located? _____
20. If your present range has a well-cooker, please answer questions 21 through 26.

21. Do you use your well-cooker: a. Often____ b. Occasionally____ c. Seldom____
d. Never____
22. For what foods do you use your well-cooker?

23. If you do not use your well-cooker often, why don't you?

24. If you had a choice, would you take: a. Well-cooker____ b. Large surface
unit____.
25. Would you be interested in a well-cooker unit which could be raised to
the surface for use there? a. Yes____ b. No____.
26. Do you think it is important to have a distinguishing mark on the well-
cooker switch? a. Yes____ b. No____.

27. Is your oven large enough? a. Yes____ b. No____.
28. If not, for what purposes do you need a larger one?

29. Which dimensions of your oven do you wish were larger? a. Length____
b. Depth____ c. Height____.
30. If it is possible for you to measure the inside of your oven, please write in
dimensions: a. Side to side____ b. Front to back____ c. Top to bottom____
31. Do you broil foods: a. Often____ b. Occasionally____ c. Seldom____ d. Never____
32. If you do not use your broiler often, why not?

33. Is your range easy to clean? a. Yes____ b. No____.
34. If not, what parts are difficult to clean?

SPECIAL FEATURES OF ELECTRIC RANGES

CHECK

CHECK

a. Check Features of your range.	Features of Range	Please give your opinion of all features listed, whether in your range or not.			
		b. Important	c. Desirable but not important	d. Not Desired	e. No Opinion
	35. Utensil storage drawers				
	36. Oven thermometer				
	37. Automatic oven temperature control				
	38. Automatic timer				
	39. Reminder clock				
	40. Automatic time and temperature switch for surface burners				
	41. Convenience outlet				
	42. Oven light				
	43. Glass in oven door				
	44. Warming oven				
	45. Two ovens				
	46. Broiler separate from oven				

47. Do you find storage drawers in your range convenient for storing utensils and equipment used at the range? a. Yes ___ b. No ___.
48. If not, what suggestions can you make for their improvement?
-

AND NOW WILL YOU TELL ME ABOUT YOURSELF AND HOW YOU USE YOUR RANGE?

49. For how many years have you used an electric range? ____.
50. Please check your age group: Under 30 years ___, 30 to 50 ___, Over 50 ____.
51. Were you one of the homemakers interviewed in the summer of 1945 as to the use of electricity in the home? a. Yes ___ b. No ___.
52. Are you and your family engaged in: a. Full-time farming ___.
b. Part-time farming ____.
53. Do you individually spend as many as eight hours a day doing farm work in the summer? a. Yes ___ b. No ___.
54. If so, how often? a. Frequently ___ b. Occasionally ___ c. Seldom ____.
55. Do you usually work full-time away from home at least a part of the year? a. Yes ___ b. No ___.
56. If so, how many: a. Weeks in the year ___ b. Months in the year ____.

In the table to the right, please enter figures to show for each type of meal

1) the usual number of persons for whom meals were prepared in your home during the past year, and

2) the maximum number.



Type of meal	Usual number served	Maximum number served
65. Family breakfasts		
66. Family noon meals		
67. Family evening meals		
68. Company dinners		
69. Meals for crews of farm help		

I NEED TO KNOW ABOUT OTHER COOKING APPLIANCES AND CERTAIN EQUIPMENT YOU HAVE

57. What electrical appliances do you own and use? a. Toaster ___ b. Roaster ___
 c. Hot plate ___ d. Waffle baker ___ e. Sandwich grill ___ f. Coffee maker ___
58. If you own a hot plate, indicate how many units it has: 1 ___ 2 ___ 3 ___.
59. Do you use a hot plate to supplement your range in getting meals? a. Yes ___
 b. No ___
60. If so, how often? a. Daily ___ b. Once a week ___ c. Less often ___.
61. Do you use a roaster? a. Yes ___ b. No ___.
62. If so, how often? a. Frequently ___ b. Occasionally ___ c. Seldom ___.
63. Do you use in your kitchen in addition to your electric range:
 a. Trash burner ___ b. Other small heater ___ c. Wood or coal range ___.
64. If so, do you use it for cooking? a. Often ___ b. Occasionally ___
 c. Seldom ___ d. Never ___.

IMPORTANT

THINK OF THE VARIOUS PARTS OF YOUR ELECTRIC RANGE
 AND OF HOW THEY FIT YOUR NEEDS

What features of your range do you not like?

If you could talk to electric range manufacturers, what suggestions for changes
 would you make?

What features of your range do you especially appreciate?

APPENDIX F

COOPERATIVE EXTENSION WORK
in
AGRICULTURE AND HOME ECONOMICSState of Oregon
Corvallis

March 20, 1947

Dear Home Demonstration Agent:

You remember that the State Home Economics Extension Council in its meeting last June requested a research study on electric ranges for farm homes. Many of you know that I have undertaken this study as a part of my graduate work at Oregon State College. The work is being done under the direction of Miss Maud Wilson and in cooperation with both the Oregon Extension Service and the State Research Committee of the Council. For an adequate study we shall need 1000 returns.

Mrs. Sager, your State Home Demonstration Leader, is writing you in regard to your part in the study, which she has defined as:

- I. Determine distribution in county
- II. Supervise filling out of questionnaire
- III. Check for completeness and accuracy
- IV. Collect questionnaires
- V. Return questionnaires to Mrs. Sager

She has asked me to discuss with you (in this letter) the details of the above responsibilities from the standpoint of the study.

I. Distribution of questionnaires

1. The number of questionnaires sent each county is based on the proportionate number of farms having electricity, as shown in the 1945 Agricultural Census. Your quota of the 1000 questionnaires is _____.

2. Distribution of the questionnaire should be made so that all sections within your county are represented.

II. By means of two test cases we have determined that the filling out of a questionnaire requires about half an hour. Filling out of questionnaires in your county may be accomplished by one or more of the following methods:

1. By home demonstration agent at unit meetings or in home visits.

The questionnaire was prepared to be self-explanatory. However, the women will do a better job if you can supervise the filling out of the questionnaires at your project meetings or in home visits -- and you will gain some information which may be of value to you.

2. By project leaders trained to supervise work with questionnaires.

If you are training project leaders to give subject-matter demonstrations at unit meetings, in lieu of your attendance at these meetings, you might find it advisable also to give the leaders training in the questionnaire, so that they can supervise this work at their meetings.

3. By County Research Chairman

If you have an active County Research Chairman, you might get her to help you contact women for the filling out of questionnaires, through group meetings or by making home visits in communities which will not be reached by either you or project leaders. Perhaps she might also like to take charge of checking questionnaires for accuracy at some of your meetings.

4. As a last resort, letters of instruction can accompany questionnaires which you might mail to individuals. This method would undoubtedly result in many "casualties", but you may have to use it in a very few cases.

III. Checking of questionnaires

In a meeting or a home visit, questionnaires should be checked for accuracy immediately after they are completed, so that the women may make additions or corrections at the time. (See instruction sheet for details). Either you or someone you have trained may do this at your meetings or home visits.

IV. Collection of Questionnaires

1. Questionnaires filled out at unit meetings are collected immediately. Project leaders who have charge of such meetings or anyone who assists you by making home visits should be instructed to send all their questionnaires to you for final checking and forwarding to Mrs. Sager.

V. Return of questionnaires

As questionnaires are completed, will you please mail them to Mrs. Sager from time to time for the work of compilation to progress in orderly fashion? If possible, we should have all questionnaires in Mrs. Sager's office by April 15. We shall need that much time to compile summaries for a report to the Annual Meeting of the Oregon Home Economics Extension Council in June.

It will be interesting to see the results which we shall obtain from this study. The women will be indicating changes in electric ranges, which information we shall pass on to manufacturers through articles in the trade journals. The questionnaire should bring out the need for training meetings on proper selection, use and care of electric ranges, which can be a vital part of your program planning.

Yours very sincerely,

(Mrs.) Margaret H. Tuller

SPECIAL INSTRUCTIONS FOR SUPERVISING THE
FILLING OUT OF THE QUESTIONNAIRE PREPARED
FOR OWNERS AND USERS OF ELECTRIC RANGES

In a meeting:

1. If possible, have the women fill out the questionnaire during the first half hour of the meeting -- to give opportunity for checking and correcting while the women are still present.
2. Instruct the women:
 - a. To fill out the questionnaire without discussing or commenting among themselves on any of the points until all have finished.
 - b. To ask you, or whoever is in charge, if they do not understand a question.
3. Watch them as they are working to discover if they need help. Make sure that they do not overlook checking tables which may seem less apparent to the women than do direct questions.
4. Edit returns carefully yourself -- or instruct a woman to do this while you are conducting your project demonstration. Mark with red pencil all omissions or errors; give back the papers to the women for correcting at the time; and be sure all the women have turned in their questionnaires to you before they leave the meeting.
5. In checking the questionnaires, you will find that all blanks, with a very few exceptions should be marked with checks or numbers, and that spaces have been left for writing opinions, suggestions, and other similar information. Those few exceptions may include (1) Alternate choices of which one has been marked, (2) Related questions following one which was answered by a "Yes" or "No", and (3) Questions which relate to equipment certain women may not have (such as questions 21 through 26 on well-cookers).
6. The two tables on Page 3 are very important. Be sure that they are completed. The upper table should have a check in the left-hand column for each item the woman has on her range; and on the right-hand side there should be one check for each item in the column

in each case which indicates her opinion of the feature. The lower table should have a check for each type of meal in each of the two columns, with the possible exception of #69 for those families who do not hire crews. Both "Usual Number Served" and "Maximum Number Served" include help, boarders or any others in addition to the family for whom the homemaker prepares meals.

7. Encourage the listing of reasons, preferences, opinions, suggestions, etc., for which lines or large blank spaces are provided.
8. Make sure that all questions which should be answered, including Name, Community, and County, are complete.

In a home visit:

The same procedure should be followed in getting the information from an individual in her home. Checking for errors and having corrections made at the time are important here also. In the informality of a home visit, it may seem difficult to avoid discussion of the questionnaire, but this procedure should be followed regardless of the place or the number filling out the questionnaire.

APPENDIX G

Reports of Agnes Kolshorn, Extension Nutrition Specialist, regarding demonstrations on "oven meals" and "broiled dinners" included in the Home Economics Extension Programs, as a result of findings in the electric range study.

<u>Demonstrations</u>	<u>County</u>	<u>Time Given</u>	<u>Homemakers Enrolled</u>
Broiled Dinners	Marion	Fall 1949	1000
	Coos	Fall 1949	500
	*Josephine	Spring 1950	550
	*Jackson	Spring 1950	550
	*Klamath	Spring 1950	430
	*Umatilla	Spring 1950	650
	*Yamhill	Spring 1950	635
	*Lane	Spring 1950	852
	*Linn	Spring 1950	900
	Benton	March 1951	300
	Clackamas	January 1951	500
	Hood River	February 1952	250
	Tillamook	April-May 1952	275
	Deschutes	Dec.-Jan. 1951-52	350
	Morros	April-May 1952	200
Total			7942
Oven Meals	Wasco	Spring 1948	350
	Marion	Spring 1948	1000
	Benton	Fall 1948	566
	Klamath	Fall 1948	430
	Washington	Fall 1948	550
	Clatsop	Spring 1949	297
	Lincoln	Spring 1949	349
	Malheur	Fall 1949	425
	*Crook	Spring 1950	95
	*Deschutes	Spring 1950	377
	*Hood River	Spring 1950	145

*These demonstrations on both "Broiled Dinners" and "Oven Meals" to be given by the Nutrition Specialist in the spring of 1950 include "Care of Ovens and Broilers" based on information contained in a publication prepared by the Home Management Specialist. The total number to homemakers to be reached with phase of the care of ranges will be approximately 5,180.

<u>Demonstrations</u>	<u>County</u>	<u>Time Given</u>	<u>Homemakers Enrolled</u>
Oven Meals	Clackamas	November 1950	500
(Continued)	Hood River	December 1950	250
	Jackson	March 1951	650
	Lane	December 1950	1200
	Tillamook	March 1951	275
	Umatilla	Jan.-Feb. 1951	500
	Yamhill	March 1951	550
	Douglas	Jan.-Feb. 1952	300
	Harney	February 1952	200
	Polk	February 1952	250
	Linn	Feb.-March 1952	750
	OSC Campus:		
	Home Ec. Class (1951)		14
	Home Ec. Class (1952)		<u>16</u>
	Total		10039
	Grand Total		17981