

PLANS FOR THE SCHOOL LAUNDRY LABORATORY
BASED ON FAMILY NEEDS

by

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ADVANCE BOOK

WILSON'S

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PLANS FOR THE SCHOOL LAUNDRY LABORATORY BASED ON FAMILY NEEDS

CHAPTER I

THE PROBLEM

A major objective of home economics teaching is to improve living and working conditions in the home. One way to help accomplish this objective is to plan home economics laboratories that are adequate for the needs of the students while in school and that will serve as guides for planning future home situations. In order to do effective teaching, the home economics teacher must have a laboratory suitably planned and equipped for adapting the results of research to the conditions and needs of the families represented by her students.

The problem in this study was to plan a laundry laboratory for the home economics department of a junior college. This school like many others has opportunity for bringing information to more homes than are represented by the number of students in the home economics classes alone. This opportunity occurs when the living and serving areas are used, as frequently happens, not only by school clubs and faculty, but also for meetings of out-of-school groups.

To be of real value to students and to others who may use it, the new laundry area should be equipped on a scale in keeping with the home laundry needs of families in the

community and at the same time serve as an example of good standards in laundry planning.

Since no space was allowed for a laundry laboratory in the original building plans, part of the problem consisted of deciding where it could be located. Of the limited possibilities, the one most feasible was to remodel a storeroom and family-type kitchen. By removing the central portion of a partition between the two rooms and eliminating one door, it would be possible to: 1) improve the kitchen arrangement, 2) make more floor space usable, 3) incorporate laundry facilities in part of the space being used as a storeroom.

Careful planning was needed in order to decide on the completeness with which this area should be furnished, the kind of equipment to purchase and the best arrangement to use in the limited space available. When adding new areas to old buildings, care must be taken to avoid the mistakes frequently made in remodeling. Perkins (12, p.66) reported that her observations of remodeled home laundry areas showed insufficient working surfaces and inconvenient arrangements due to short-plan improvements made hurriedly at a time to meet a specific need.

The home economics teacher is the person best fitted to do the careful preliminary planning of laboratories where research findings are applied to home problems. The

results of this study should be of real value to the administrators, building committee and architect when plans for new laboratories or the remodeling of old ones are being made.

CHAPTER II

REVIEW OF LITERATURE

In reviewing the literature of functional housing requirements the purpose was to note references to standards for space, equipment and arrangements that were needed in meeting the objectives of this study.

In a cooperative study reported in 1937, Roberts, Wilson and Thayer (18, pp.14,20,30,32) set up standards for the working surface heights and other space units of the parts of the house that are used mainly by women. These standards were based on the heights chosen by the 562 Oregon-Washington women who cooperated in the study and on their physical requirements. (Appendix, Table 1)

These investigators found that an adjustable ironing board for a standing worker would come within an inch of meeting the requirements of the heights chosen by 97 per cent of the cooperators if it could be set within a range of 30 to 35 inches. The height of the ironing board for a seated worker should not be less than that of the top of the thighs plus an allowance for the thickness of the board and clearance for movement. The requirements of 97 per cent of the Oregon-Washington cooperators would be met by a board adjustable from 31 inches to 26 inches. These measurements allowed two inches for thickness of the board

and clearance over the thighs.

For sitting to iron the height of the chair seat should permit the occupant's feet to rest on the floor with no pressure under the knees. A stool for working at a higher surface should have a footrest. The Oregon-Washington study showed that an adjustable work chair should have a range of 14 inches to 17 inches.

In a study published in 1946, Knowles (7, pp.5-52) investigated the effects of the height of the ironing board on the worker. Using the camera, mechanical platform and equipment to register the rates of metabolism, heart beat and respiration, she found that the angle of bend, pressure on board and physiological responses of the worker all increased while ironing at boards of lower heights.

After working on boards of different heights the co-operators chose as desirable boards averaging 34 to 35 inches high, three to four inches higher than the boards they were using at home. The findings showed that the physiological responses of the subjects, while ironing, were mostly within range of that of light or moderate work; however, the total amount of additional effort required at a work surface that is too low for the worker contributes to unnecessary fatigue. Knowles says:

"There is no satisfactory way to prescribe a desirable working height for a person except by individual experimentation. The more important

problem is that of creating an awareness on the part of the individual of the need for suitable heights. Because people of different proportions use the same equipment in a home, there is need on the market for boards of adjustable heights."

Roberts (17, p.21) found that the average height of laundry tray preferred by students was 35.5 inches, and by homemakers was 35.2 inches. If standardized at one height, the laundry tray rim should be set at 35 or 35.5 inches. If two standards are set they should be 34 and 37 inches.

According to Mundel (9, p.3) in any activity or occupation, motion and time study can help find an easier way. Motion study helps find the easiest and least tiring way of accomplishing the job we have to do so that we may get more done with our limited energy. Mundel recommends the following steps for work simplification:

1. Eliminate unnecessary steps of a job.
2. Arrange the necessary steps in the best order.
3. Arrange work so that movement is in one direction.
 - a. Keep everything within reach by arrangement of work place and storage locations.
 - b. Use the best tool for the job.
 - c. Make the steps of the job safer.
 - d. Use both hands to work; this can be encouraged by proper arrangement of work place and storage location.
4. Determine the easiest way to do the whole job.

The results of a study made by Wilson and Shively (24, pp.3,7,9) indicate that ironing in a well-planned work center is one of the best ways to reduce the time and fatigue connected with that activity. They recommend first placing the board in the best possible location for

ironing, then grouping the other equipment in a convenient arrangement within the area of the maximum reach of the user whenever possible. The location of the convenience outlet should be selected after the organization of the equipment has been determined. The outlet should be placed 36 to 48 inches above the board. (Appendix, Table 2)

In her study on sitting to work while ironing, Muse (10, pp.11,16) found that comfort while ironing in a seated position depends first on being correctly seated, then on adjusting the board to fit the individual in that position. The chair should have a seat with a moderate backward slope and the front edge should be well-rounded and at least an inch lower than the under-knee measure. The ideal seat shape is saddle or form-fitting, permitting the body weight to be evenly distributed.

A chair mounted on good casters with a swivel seat is the most efficient for ironing. The chair should have no arms and the back should be shaped so that the worker's elbows will not strike it.

In 1934, Perkins, Beyer, and Bane (12, pp.5,17,55) investigated working conditions of rural homemakers in Illinois to determine the causes of fatigue while laundering. Through interviews and home visits they found that the natural fatigue of working is greatly increased not only by lack of suitable equipment but also by inefficient

management. Their observations showed a great deal of lifting, stooping and stretching. Most women were unaware of the amount of energy that could be saved by having washer, tubs and basket raised to a comfortable height. Of the 66 women who admitted disliking to wash, 38 attributed this dislike to lack of modern conveniences; 29, to the fact that washing is hard work; and 18 to the fact that it is a messy job. The investigators also found that:

"The space problem was not so much a matter of amount but the relative position of the space to the water supply, heat, source of light and the drain. The shape of the space is also important. A small space of the right shape and near water, the water heater, and to the drain is much better than a large space in a room where there is a clutter of other equipment and where working units are too scattered."

Swartz (21, pp.4,14,18,21,40) reported the energy cost of doing specific laundry jobs with different equipment. By means of a Benedict knapsack apparatus, the oxygen consumption of women doing household tasks was measured. This gave a measure of total body activity and not fatigue, which is more difficult to measure. Swartz reports that "Fatigue is probably roughly proportional to energy expenditure but cannot be said to be in direct ratio."

She found that the energy cost of laundry tasks is two to three times that of resting. Putting up and removing clotheslines takes 135 per cent more energy than resting. Hanging up clothes when the basket is on the floor or

ground takes 189 per cent more energy than resting, but the expenditure can be reduced to 118 per cent by using a raised clothes basket on wheels. (Appendix, Table 3)

Bratton (1, pp.5,6) studied the energy expenditure in activities common to the performance of household tasks by measuring the oxygen consumed in movements involving reaching upward, reaching and trunk bend, reaching and knee bend and stepping up on a stool. It was found that a difference of only 10 inches in the upper vertical distance through which the arms were lifted resulted in a statistically significant difference in the amount of oxygen consumed. (Appendix, Table 4)

Bratton concluded that energy cost is an important factor worthy of consideration in the design of work spaces and appliances and in planning the arrangement of frequently used household storage.

For minimizing the cost of provisions for storage, Wilson (23, p.5) recommends: first, planning counter space to provide the minimum adequate amount of work surface needed at each work center; then, utilizing the available storage space above and below each surface; and finally, providing for remaining storage by means of floor-to-ceiling cabinets.

Gross and Crandall (4, pp.167,187) agree with Knowles (7, p.54) in saying that most of the work performed in the

home is not much more strenuous physically than walking at a moderate pace. They found that repetitive jobs like ironing, being semi-automatic, require some attention but not enough to keep one absorbed and are the ones most conducive to boredom.

Fewer women object to washing even though it is done standing, because the frequent changes in motions and posture are restful. The writers made the suggestion that workers do household tasks in groups to avoid boredom. Disorder and confusion in the work place, lack of skill and lack of satisfaction in the job were given as intangible psychological factors in reduced energy output.

In a study on human factors in planning climate control, Herrington (5, p.85) found that deviation from the ideal climate of 70 degrees produces disturbances in the individual, calling for sub-conscious adjustments affecting the sense of well-being and the ability to continue a type of work for any length of time. Herrington states that if we could grade or evaluate human activity as positively as we can measure accident and error experience in industry, we would be astonished at the waste in energy that we pay for work under unfavorable climatic conditions.

CHAPTER III

SCOPE AND PROCEDURE

The goal for this study was to plan a laundry laboratory based on family needs for the home economics department of a junior college. The purposes for having this laboratory were: 1) to provide facilities for doing the laundry for the home economics department; 2) to provide the students with experiences which would help them with some of their present and future problems related to selection of equipment, laundry procedures and organization of work areas; 3) to offer suggestions to others who use the home economics department, which will encourage them to do more thoughtful planning of home laundry areas.

Hartnell Junior College, for which this study was made, is located in Salinas, California. The students who attend the college come from the surrounding cities. The community is mainly agricultural and is situated in one of the large produce areas of the West Coast.

As a background for the planning project of this study it was necessary to become familiar with good standards for planning home laundry areas and with the laundry practices of families of the community and their needs for handling laundry at home.

Good mechanical equipment reduces the drudgery of

laundrying; however, a review of research findings shows that time and energy can be saved also by providing work surfaces that are adequate in size and of the right height for the worker, by having storage facilities suited to their uses and by a step-saving arrangement of the laundry area. With this information as a guide, laundry plans were developed for five different home situations.

In preparation for making a survey of family home laundry needs, observations were made of five women doing their washing and ironing at home. No notes were taken during these very informal visits, but soon after leaving the home the information obtained was recorded under these headings: 1) location of laundry area, 2) equipment used and its arrangement, 3) means of storing of soiled clothes, 4) method of sorting, 5) procedures for washing and ironing, 6) type of ironing board being used, 7) adequacy of equipment, 8) attitude of homemaker toward laundrying as a household task and toward efficient work methods.

On the basis of the information obtained during these observations, an interview form was developed. (See Appendix) Most of the questions were arranged so that they could be answered by checking items. Brief statements could be made where opinions were requested.

Phone calls were made to homemakers asking their cooperation in this study. Favorable responses were received

in all cases. The number of interviews was not predetermined but it was sufficient to provide a pattern for laundry practices in the homes. The data gathered which were pertinent to the planning of the school laundry laboratory correlated with those found in two other surveys carried out on a larger scale.

The selection of the groups interviewed was made from homes from which children would enter junior college and on those with dwellings suitable for the various stages of family life.¹ Four types of families were included in this study: young couples without children, families with children under six years, families with children from six to 18 years and adults only. All the families were of average or higher than average income level.

Interviews were held in the homes of the cooperators, each lasted about an hour. Information was obtained regarding the amount and frequency of laundering done in the homes; the present and preferred place for doing the family wash and for occasional hand washing and ironing; equipment now in use and preferred for laundering; present facilities and those needed for storing and for sorting of soiled clothes; and adequacy of the laundry area in

¹Adapted from U.S. Bureau of Census. Current Population Reports. Characteristics of Families by Types for U.S. Urban and Rural, April 1951.

relation to age of dwelling, whether the house was owned or not and whether it was built by the present owner occupant.

The cooperator was given a copy of the interview form to follow, except for the last page. This page, which was filled in by the interviewer after leaving the home, supplied the information used for appraising the homemakers' attitudes and practices relative to home laundering.

The information obtained showed that over half the families did all their laundering at home. Three-fourths of the homes had automatic washers. Two-thirds of the homemakers would prefer washing in a utility room, and a fourth of them indicated a preference for ironing in the same place. Over three-fourths were ironing at boards which were too low, and half used boards too narrow for efficiency in ironing. In the majority of laundries there was little or no work surface which, no doubt, accounted in part for the fact that 80 per cent of the women sorted clothes on the floor. Over half the homemakers expressed the need for better facilities for storing and for sorting soiled clothes.

From information gathered pertaining to laundry needs in representative homes in this study, a plan was developed for the school laundry laboratory based on one of the plans made for home situations.

CHAPTER IV

STANDARDS FOR PLANNING HOME LAUNDRY AREAS
BASED ON WORK SIMPLIFICATION PRINCIPLES

Laundry planning is an important aspect of home planning. The amount of energy required to do work is greatly influenced by where it is done, by having work surfaces that are adequate in size and of the right height for the worker, by having storage facilities suited to their uses and by a step-saving arrangement of the laundry area.

Location

A place for doing washing on the first floor convenient to the kitchen offers one important advantage. The homemaker can carry on with kitchen tasks between laundering operations since washing is not a continuous activity. The kitchen laundry works out better when the washing equipment is arranged along one wall or around a corner away from the meal preparation center.

More items to be washed come from the bedrooms and bathroom than from other rooms in the house. If the laundry area can be situated so that there is easy access to it from the bedrooms and bath, there will be a minimum of carrying necessary in assembling soiled articles and in returning them washed and ironed.

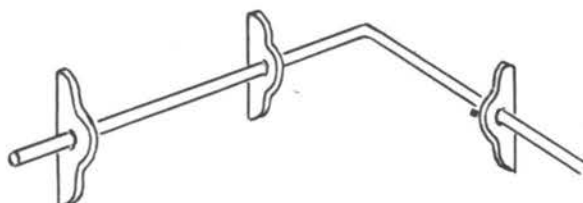
Some hand washing is done in all homes, usually

lingerie or fine linens. If the main laundry area is conveniently located, many homemakers prefer doing hand washing there. If hand washing is done in the bathroom, then adequate provision should be made for drying it there also. (Fig. 1, Plate 1)

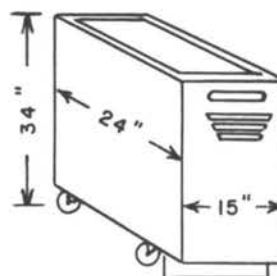
Automatic laundry equipment may be installed in an all-purpose or family room. (Fig. 4, Plate 2) If the equipment is enclosed by cabinets it can be very attractive in appearance. This plan is advantageous in that washing and ironing may be done with other persons around, which helps prevent the boredom frequently associated with tasks performed alone. However, this will not be the best arrangement for time and energy-saving if storing and the sorting of soiled clothes, removal of stains and hand washing must be done elsewhere.

A combination bathroom and laundry may be a desirable arrangement in a small house. Cabinets built along one wall may include automatic washer, automatic dryer and storage facilities for soiled clothes, small equipment and washing supplies. (Fig. 2, Plate 2) If the laundry area is some distance from the bedrooms and bath, movable or pull-out bins are a good means of transporting soiled clothes to the place where they are to be prepared for washing. (Fig. 2, Plate 1)

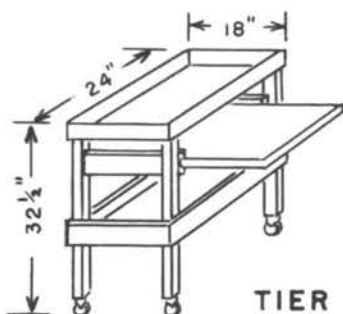
Plate I Laundry Aids



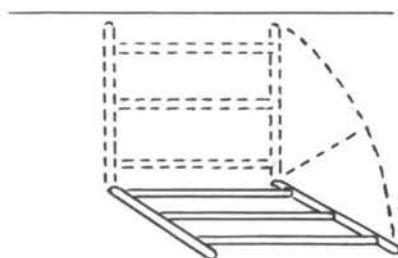
BATHROOM DRYING ROD
Fig. 1



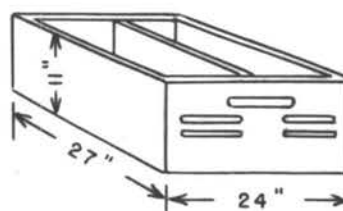
PULL OUT CLOTHES BIN
Fig. 2



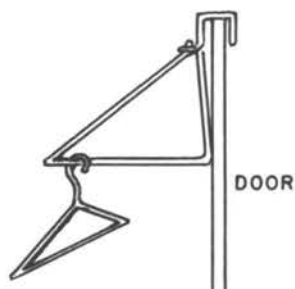
TIER CART
Fig. 3



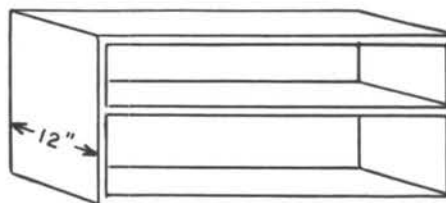
PULL UP DRYING RACK
Fig. 5



DIVIDED DRAWER
Fig. 4



CLOTHES HANGER HOLDER
Fig. 7



OPEN SHELVES
Fig. 6

Steps in Planning

The first step in planning is to make a list of all the activities to be carried on in the laundry area. This list may include several or all of the laundering procedures and a number of other activities, such as flower arrangement and food preservation, for which the laundry may be the best location available.

Using the prepared list, the next step is to make charts showing the equipment and storage needed for each activity. (Charts 1 and 2) These charts are used as guides in the detailed planning of the laundry area to make sure that adequate provision is made for every function.

The third step is to assign every one of the listed activities to one of the work centers. The activities connected with laundering--assembling and sorting soiled clothes, mending, stain removal, washing, rinsing, drying, dampening and ironing--may be assigned to four work centers:

Preparation (for washing)

Washing

Drying

Ironing

Each center is then planned to provide adequately for the functions assigned to it. A "center" may not

necessarily mean a separate area; the same part of the room for example can be fitted up for certain washing activities and also for parts of the ironing process.

The final step is to develop a step-saving arrangement of the centers and to include space for doors and passages. The laundry plan is then ready for incorporation in the plan for the entire house, or for use as a guide in remodeling a structure.

Planning Work Centers

Work centers should be adequately planned so that work can be done with the least amount of stooping, stretching, reaching and walking. Whether standing or sitting, a worker should be able to maintain a good posture without strain.

Preparation Center. The preferred place for the preparation center is near the entrance to the laundry area. This is where the soiled clothes are received, stored, sorted, mended and given special treatment when necessary, before washing.

No one today would think of planning a kitchen without including cabinets which provide work surface and storage facilities. These are needed also for the laundering process. The counter space should provide an

adequate amount of work surface required for the handling of clothes before and after washing. (Plate 3) A counter 24 inches deep and at least 42 inches long is desirable. A pull-out board adds extra work surface, and additional space may be provided where needed by means of a tier cart with pull-out shelves. (Fig. 3, Plate 1) If the top pull-out shelf of the tier cart measures about two feet from the floor it may serve as a lap board.

A work counter 37 to 38 inches from the floor will be comfortable for the average homemaker for handling soiled clothes. If a five-inch sink is installed in the work counter, the bottom of it will then be 32 to 33 inches from the floor, which is a convenient height for the average homemaker. The rim of the sink should be kept close to the front of the counter to avoid unnecessary reaching and bending.

Drawers, rather than tilt bins, make it easier to see and remove soiled clothes which are to be sorted on the counter. Eleven inches is a good depth for these drawers. If they are made 24 inches wide with dividers in the middle from front to back, it is possible to store soiled clothes by washer loads. (Fig. 4, Plate 1)

The space above and below the counter should be utilized to the best advantage for the storage of all the small items necessary for the activities to be carried on

in the laundry area. The list might include the following:

Stain removers	Flower containers and
Mending supplies	accessories
Soap	Wrapping paper
Bleach	String
Bluing	Gift wrapping
Starch and utensils	Scissors
for making	Pen, ink, pencil
Scouring powder	Food freezing supplies
Cleaning cloths	Paper towels
Sponges	

Supplies and small equipment should be stored near the place where they will be first used. Energy will be saved if the items most frequently used are stored near counter height where they are easy to see and to grasp.

Storage places should be designed for the articles kept in them. Cabinets should be of simple design with durable work surfaces easy to keep clean. Knobs and handles on cabinet doors are more easily reached if placed low on the upper cabinets and high on the lower ones. Touch catches make it easy to open doors.

Washing Center. The wash center follows the preparation center. With the automatic washer no other equipment is required; however, in most homes it is desirable to have one tray or a small sink for washing by hand and for soaking clothes, as well as for arranging flowers, washing up after gardening, preparing food for freezing, and the like.

Two trays are usually used with the non-automatic machine. For the average homemaker the rim of the trays should be set at a height of $35\frac{1}{2}$ inches from the floor.

A rack over the sink or tubs provides a convenient place to dry a small amount of hand wash. (Fig. 5, Plate 1)

Washing supplies may be stored in a closed cabinet or on open shelves. (Fig. 6, Plate 1)

An adequate supply of hot water, maintained at a temperature of 140 to 150 degrees, produces the best results when washing white clothes. For colored clothes, a temperature of 100 to 120 degrees is best.

The water heater may be placed at the end of the line of equipment to be out of the way. A table top water heater may be placed to add work surface or may be placed under the counter. A good location is in the corner joining the preparation and washing centers. The electric outlet should be located above the top of the washing machine in a place where it can be easily reached.

Drying Center. The automatic dryer is a great convenience in that it not only saves extra handling of wet clothes, but also permits the completion of the washing process in any weather. Clothes may be dried completely or to the dampness required for ironing. The initial

cost of the automatic dryer is less than that of the additional floor space required to dry clothes indoors.

Ideally, the dryer will be placed near the washer so the clothes need to be handled only once. The electric outlet should be conveniently located above the dryer.

Without an automatic dryer, easy access to the drying yard is essential. An unobstructed passage for moving a basket of wet clothes should be at least three feet wide.

A four-person family for whom all laundry is done at home requires at least 100 feet of outdoor drying lines, and 20 feet more are necessary for each additional family member. Parallel lines should be 14 inches apart and six feet from the ground. Permanent, rust-proof lines stretched taut over a grassy area, clothespins in a bag which slides along the lines and a raised clothes basket on wheels, are all energy-savers when hanging clothes.

A folding clothes rack is a space-saving device useful for occasional indoor and outdoor drying. A hanger holder is useful indoors for garments that must be dried on hangers. (Fig. 7, Plate 1)

Ironing Center. When organizing the ironing center, the ironing board should be placed in the best possible position for ironing. Then the other necessary equipment, clothes basket and clothes rack, should be conveniently

arranged to be within reach of the worker. The electric outlet should be 36 to 48 inches above the board and the location for it should be selected after the organization of the equipment has been determined. (Appendix, Table 2) This convenient ironing center arrangement in the laundry area helps prevent the clutter and confusion of ironing in a place where other activities like meal preparation have to go on at the same time.

Household ironing may be facilitated by having two boards. One that is 14 or 15 inches wide by 54 inches long and tapered at one end is needed for ironing most garments, while a board that measures 22 inches by 54 inches and with parallel sides is best for shirts and flat work. The wider board may fit on top of the narrower one. If a single board is to be used, it should measure 18 by 54 inches and have one end tapered. This width board makes it possible to iron many items with less handling and shifting of material than would be the case with a narrower one.

The average height preferred for ironing boards for the worker standing is 34 to 35 inches. A homemaker may either stand or sit to iron, with improved types of movable and built-in boards. An adjustable board of either type is advantageous in any household where it will be used by more than one person.

Comfort while ironing in a seated position depends first on being correctly seated, then the board height should be made to fit the individual in that position. For the average seated worker, adjustable boards need to be able to be set as low as 24 inches from the floor.

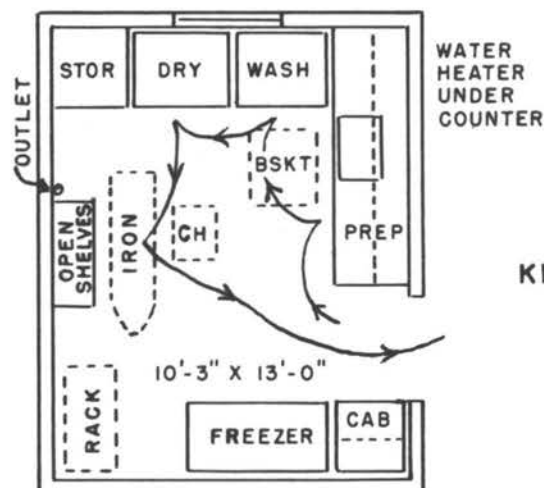
The chair seat should be of a height that permits the worker to sit with feet on the floor. A stool for working at a higher surface should have a footrest.

Clothes hangers, which may be suspended from a rack on a door, keep ironed blouses and dresses in good condition. Other accessories which make ironing easier are well-padded sleeve board, pads for ironing shaped parts of garments and sponge and bowl for dampening on the board.

The preparation counter, tier cart or open shelves may be used for stacking the ironed and folded articles. If they are placed together in like kinds, the putting-away process is simplified.

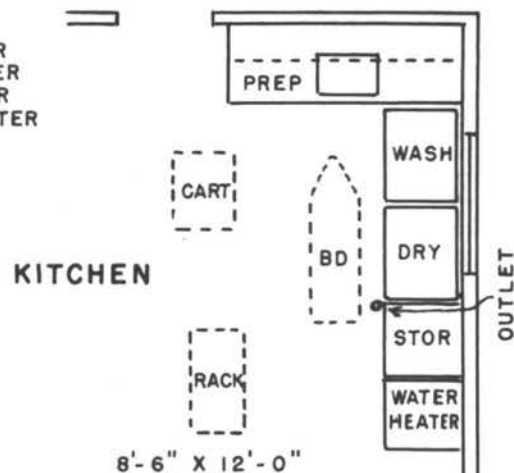
The ironing equipment may all be stored in a floor-to-ceiling cabinet measuring 24 inches in width and 27 inches in depth. (Plate 3)

Plate 2 Laundry Plans



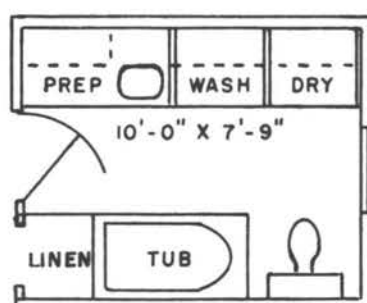
U SHAPE
Fig. 1

Separate Room

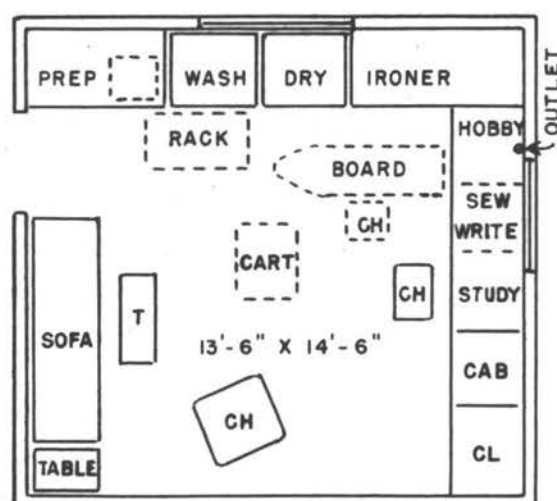


L SHAPE
Fig. 2

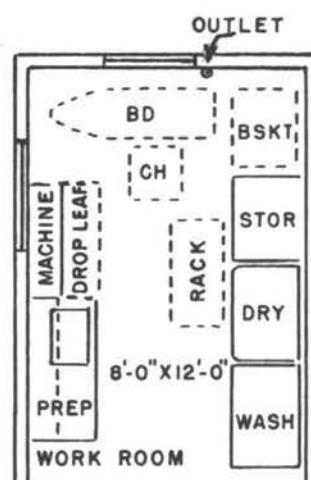
Part of Kitchen



ONE WALL
IN BATH
Fig. 3



ALL PURPOSE ROOM
Fig. 4



KITCHEN

Two Wall Adjoining Dinnette
Fig. 5

Arrangement of Laundry Area

The equipment for the work centers should be arranged in sequence so that work can proceed through the processes of preparation, washing, drying and ironing, with minimum steps and handling of clothes.

In developing a laundry area plan for a particular location the shape of the space available may dictate the arrangement of the major equipment. Arrangements may be in the form of a U, L, one-wall, or variation of these plans. The U-shape is a good step-saving arrangement. In it the preparation center is placed on the side near the entrance, the ironing center on the opposite side with the washer and dryer in the center. (Fig. 1, Plate 2) An L-shape is good in a large room and is desirable when a corner is available. (Fig. 2 and 4, Plate 2) A one-wall arrangement is necessary in a narrow space (Fig. 3, Plate 2), while a two-wall type is good for a small area or to make a compact arrangement in a large room. (Fig. 5, Plate 3)

In any arrangement the important consideration is to have work progress in a continuous uninterrupted path from the time the clothes are sorted until the finished laundry is put away. The doors and windows should be placed so as not to break up this sequence.

CHAPTER V

INFORMATION OBTAINED FROM PARTICIPANTS

The information obtained during the interviews with the 33 participants in this study is presented under the headings of: the families and their dwellings, laundry done at home, present and needed facilities for laundering, present and desired location for doing washing and ironing, adequacy of laundry area in present dwelling and attitude of homemaker toward laundering and efficiency methods.

The Families and Their Dwellings

Table 1 gives the distribution of the families studied with respect to family type.

Table 1
Distribution of Families by Family Type

<u>Family type</u>	<u>Number</u>
Young couples without children	6
Families with children under 6 years	12
Families with children 6 to 18 years	10
Adults only.	5
Total	33

Two-thirds of the families owned their homes and of that number, over half of the houses were built by owner. The families were distributed about equally with respect to age of dwelling.

Table 2

Number in Each Family Type Group Where Dwelling Is Owned by Occupant, and Number Where it was Built by Occupant; and Distribution of Family Type Groups as to Age of Dwelling

Family type group	Number of families				
	Owned by occupant	Built by occupant	Age of House		
			5 yrs. or less	6 to 20yrs.	Over 20yrs.
Young couples without children	1	0	3	1	2
Families with children under 6 years. . . .	11	7	6	6	0
Families with children 6 to 18 years . . .	8	3	0	5	5
Adults only. .	2	2	1	1	3
Total . .	22	12	10	13	10

Laundry Done at Home

Washing is a home activity for the majority of families participating in this study. None of the families reported sending all washing out, while 58 per cent said that they do all of the family wash at home. In this respect the participants in this study apparently do not differ from American families in general, judging from the results obtained in two nation-wide surveys made relative to the amounts of washing done at home and sent out.

Table 3

Portion of Washing Done at Home and Sent Out by Participants in This Study, in the Consumer Panel Survey Report, and in the Survey Made by the American Institute of Laundering

Report	All wash done at home	All wash sent out	Part wash sent out
This study	58	0	42
Consumer Panel Survey. .	54 ¹	3	--
American Institute of Laundering	--	10 ²	36 ²

¹Home Laundry, p.15

²The Laundry Industry, p.23. Data applies to Far West region.

A check on how laundry is brought back shows that "all finished," was the most common practice. It was the method used in over half of the cases for which this information was available.

Table 4

How Laundry is Brought Back
When Laundered Away From Home

Type of finish	Number of families responding
All finished	7
Dry, not ironed.	2
Part ironed, part dry but not ironed	2
Wet.	1

Families with young children washed more frequently than those of other groups. A survey reported by Lindquist (8, p.34) shows that care of children and laundering are the two main causes of fatigue among young homemakers. For this group, therefore, completeness of laundry facilities is especially important.

Table 5

Frequency of Doing Washing at Home by Family Type

Family type	Number indicating specified interval				
	Every 2 weeks	Weekly	Twice weekly	Daily	Other
Young couples without children	0	4	0	2	0
Families with children under 6 years .	1	2	4	3	2
Families with children 6 to 18 years .	1	6	2	1	0
Adults only.	0	3	2	0	0
Total	2	15	8	6	2

Present and Needed Facilities for Laundering

Automatic washers were being used in three-fourths of the homes. With automatic washers, the common practice was the use of one tray or none at all. Two trays were usually found in homes having non-automatic machines.

Table 6

Type of Washer and Number of Laundry Trays

Type of washer and number of trays	Number of homes
Automatic washer and two trays	5
Automatic washer and one tray.	10
Automatic washer without tray.	9
Total using automatic washer.	24
Non-automatic washer and two trays	5
Non-automatic washer and one tray.	2
Non-automatic washer without tray.	0
Total using non-automatic washer.	7
No machine and one tray.	2

Almost one-half of the homemakers ironed with the hand iron only. Seven had ironers. When asked what they liked about this appliance, 36 per cent of the total who had ever used an ironer said that it took less energy and 21 per cent said it was because they could sit at work. Three-fourths of the latter group, however, had made no attempt to make arrangements to sit while doing hand ironing in their present homes.

Table 7
Type of Ironing Equipment Being Used

Type of equipment	Number of homemakers
Hand iron only	16
Steam iron and hand iron	9
Hand iron and ironer	5
Steam iron, ironer and hand iron . .	2
Steam iron only.	1
Total	33

The choice of two-thirds of the homemakers was for a movable ironing board. The reasons given were that they are usable in different rooms, wider and more sturdy than the built-in boards and do not take up wall space needed for other purposes. A third of the women favored the built-in board, some on condition that it would be as large and as sturdy as the movable board. These homemakers said that they liked having a board ready to use and a type that is easy to handle.

Table 8

Type of Ironing Board Now Used and Preferred

Board type	Number of homemakers	
	Now used	Prefer
Movable	19	17
Built-in.	12	12
Both.	2	4

Only five of the homemakers had been using adjustable boards. The most common height of ironing board in present use was 32 inches. Over three-fourths of the homemakers were using boards lower than the average height of 34 to 35 inches chosen as most desirable by cooperators in the Knowles study after participation in laboratory tests.

Opinions were not asked of the cooperators in this study regarding their preference for board height; however, it was noted that the 30-inch board was being used by a woman of short stature and the 36-inch board by a tall homemaker.

Table 9
Height of Ironing Board Now in Use

Board height	Number of homemakers
30 inches	1
31 inches	2
32 inches	14
33 inches	9
34 inches	1
35 inches	0
36 inches	1
Adjustable.	5
Total.	33

Less than half of the women were using a board at least 14 inches wide, the minimum width for efficiency in ironing. Only one homemaker had a second board wide enough to use time-saving methods in ironing flat pieces and shirts.

Table 10
Width of Board Now in Use

Width of board	Number of homemakers
11 inches	9
12 inches	6
13 inches	4
14 inches	4
15 inches	10
Total.	33

Three-fourths of the women interviewed stood to do all their ironing. The reasons given for not sitting were: board not adjustable, no accommodations to sit, no room for stool, and stool not high enough. Two homemakers said they could move about quicker when standing and three said they had never tried sitting to iron.

Table 11

Way of Doing Ironing by Family Type

Family type	Total	Number of homemakers		
		Sit to do all	Stand to do all	Both sit and stand
Young couples without children	6	0	6	0
Families with children under 6 years.	12	0	8	4
Families with children 6 to 18 years.	10	0	7	3
Adults only.	5	0	4	1
Total	33	0	25	8

Over 50 per cent of the homemakers said that they needed better facilities for storing soiled clothes.

In slightly less than half the homes, hampers were used to store soiled clothes. Boxes or baskets on the floor were common and many families used more than one storage place.

Two homes had tilt bins but none had movable bins which simplify transporting the wash to the laundry area. One had a tiered table on wheels on which to transport soiled and clean clothes.

Table 12
Present Method of Storing Soiled Clothes

Method	Number of dwellings
Hamper	16
Basket or box on floor	9
Bags	3
Hamper and washing machine	3
Tilt bins.	2
Total	33

In two-thirds of the laundry areas there were no work surfaces. The average size of the work surfaces found was 24 by 36 inches. Noyes and Smith (11, p.25) suggest a counter six to eight feet long and Home Laundering (6, p.33) recommends 42 inches as a good length.

Seventy per cent of the women expressed a need for more work surface. Not being aware of the convenience of adequate work surface, a few homemakers were satisfied with such places as the top of the automatic washer and the top of trunks. Over 80 per cent of the homemakers reported sorting soiled clothes on the floor.

Table 13
Present Work Surface for Handling Clothes

Surface	Number of dwellings
None	22
Table.	3
Cabinet.	3
Shelf.	1
Other.	4
Total	33

Present and Desired Location for Doing Washing and Ironing

Two out of three families favored having a place to wash on the first floor near the kitchen. One-fourth of the group studied wished also to iron in this area, while a third preferred the kitchen itself and another third a bedroom. Home visits showed that these were the rooms in the present dwellings best suited to ironing. In only two homes had space been planned for ironing in the laundry area.

Some homemakers said that they liked to iron in different places so as to work in good light or to be with the family. One woman preferred ironing in a bedroom for convenience in putting away the finished items, most of which are stored in the bedroom, linen closet or bathroom. No one had considered the convenience of locating the washing area near the bedroom and bath.

Table 14

Preferred Location for Doing
Family Washing and Ironing

Location	Number of homes	
	Washing	Ironing ¹
First floor near kitchen	22	8
In kitchen	6	11
Separate building.	2	0
Garage	2	0
Basement	1	0
Near bedroom	0	0
In bathroom.	0	0
In bedroom	0	12
Living room.	0	1
Other.	0	1

¹When homemakers mentioned more than one location, the place usually used was recorded.

All of the families dry their clothes outdoors except the four who had automatic dryers. A third also dry on indoor lines. Although the question was not asked regarding the purchase of an automatic dryer, many families volunteered the information that they planned to buy one as soon as possible. The four families who had dryers said that they valued them more than any other major piece of electric equipment.

Table 15

Present Place of Drying Family Wash

Location	Number of families
Dry on lines	
Outdoors only	18
Both indoors and outdoors . . .	11
Indoors only.	0
Use dryer.	4
Total	33

All families do some hand washing and in two out of three cases it was done in the bathroom. If hand washing is to be done there, facilities should be provided for hanging garments to dry that are more convenient than those usually found in homes. Table 17 shows that 21 per cent would like to dry hand washing in the utility room.

Table 16

Present Place for Doing Hand Wash

Location	Number of dwellings
Bathroom	16
Kitchen.	8
Kitchen and bathroom	5
Other.	4
None	0
Total	33

Table 17
Present and Preferred Place
For Drying Hand Washing

Location	Number of dwellings	
	Present	Preferred
Bathroom	22	16
Combination of places.	11	8
Outdoors	4	0
Utility room	3	7
Garage	2	4
Back porch	2	0
Furnace room	1	0
Dryer.	0	1
Kitchen.	0	1

Adequacy of Laundry Area in Present Dwelling

The rating of good, fair and poor were given to home laundry areas based on: arrangement of laundry equipment; facilities for storing and for sorting soiled clothes; adequacy of work surface with regard to amount, height and location, and accommodations for storing laundry supplies. Consideration was given to the fact that in some cases there had been limited possibilities for the installation of new equipment.

Three of the 33 home laundry areas were given the rating of "good," 18 areas "fair," and 12 areas "poor." The three that were rated good were in owner-built homes less than five years old.

Laundries rated fair were found the same number of times in the rented, used as purchased, and owner-built homes. While the houses under five years old had the three good laundries, they also had an equal number of fair and of poor ones. Relatively more poor laundries were found in the rented and in the older dwellings. Only three of the laundry areas in the 24 homes that had automatic washers were rated good.

Table 18

Adequacy of 33 Laundry Areas in Relation to Age,
Tenancy of Dwelling, and Use of Automatic Washer

Classification	Number of dwellings		
	Rated good	Rated fair	Rated poor
Tenancy of dwelling			
Owner-built	3	6	3
Used as purchased	0	6	4
Rented.	0	6	5
Total.	3	18	12
Age of dwelling			
Less than 5 years	3	3	4
6 to 20 years	0	8	6
Over 20 years	0	7	2
Total.	3	18	12
Use of automatic washer			
Have automatic washer	3	11	10
Do not have automatic washer	0	6	3
Total.	3	17	13

Attitude of Homemaker Toward Laundering and Efficiency Methods

Responses of the homemakers indicate that 15 per cent disliked washing and twice that number disliked ironing.

The most common annoyances indicated by the homemakers were: electric outlets in the wrong place, reported in 45 per cent of the cases; traffic through work area; telephone, front door and drying lines too far away; too many doors; wrong swing of doors and doors in wrong places.

Many of the annoyances could have been avoided by better location of the laundry area in relation to the rest of the house and better planned arrangements of the laundry equipment, particularly before details of structural features of the dwelling were completed.

Certain simple energy-saving devices were being used in over half the homes. These included the raised clothes basket on wheels, stationary lines and clothespin bag that was suspended from the clothesline. Observations showed that 21 per cent of the homes had possibilities for simple improvements which had not been made, such as: open shelves above the tray or washer to hold laundry supplies, a drop shelf to serve as a temporary counter next to the washer or tray, a movable table to use where needed, or blocks for raising the legs of a too low table. Lack of

facilities for hanging ironed dresses or blouses could be remedied by the use of an inexpensive device which fits on any door and holds a number of hangers.

In only one home had a long-term plan been made for the development of the laundry area. In this plan space had been allowed for the placement of new equipment when purchased.

CHAPTER VI

PLANS FOR A SCHOOL LAUNDRY LABORATORY
BASED ON FAMILY NEEDSGoals in Planning

A major goal in this study was that of developing a plan for a school laundry laboratory at Hartnell Junior College based on family needs. It should be one that would serve not only as a place where students are taught good laundering practices but it would also serve as an example of the application of good principles and practices in laundry planning.

Improved working centers and storage facilities developed in recent years in the home economics department of this school for meal preparation, meal service and for sewing have promoted better student work habits and have offered suggestions to all who used these facilities that could be applied to home situations.

The girls who attend junior colleges are of an age when they take more interest than do younger ones in their present homes. Many of them marry soon after leaving school, and their school training can prepare them to solve their future problems relative to homekeeping and home planning.

Information obtained through interviews with selected

homemakers in the community in which this school is located indicated that the school laundry area should be equipped with complete facilities for doing home laundering. That it takes more than automatic equipment to make a convenient laundry area was shown by observation in the homes at the time of the interviews. Only three laundry areas were rated "good" in the 24 homes where there were automatic washers. Over half of the 33 homemakers interviewed expressed a need for more work surface and for better facilities for storing and for sorting soiled clothes.

Space Available for the Laboratory

The most feasible location for the laundry area in the school home economics department was found to be the space that would result from remodeling a storeroom and a family-type kitchen. The rooms are adjacent but at present do not have an opening between them. (Plate 4)

The kitchen needs remodeling because doors cutting into the work sequence make working in it very inconvenient, due largely to traffic interference. If one door were closed, more wall space would be available and the kitchen equipment could then be placed in a more convenient arrangement.

The storeroom has open shelves on two adjoining

walls, a closet and a niche used for storage of folding screens, and it contains the water heater. All items now stored on the open shelves in the storeroom could be placed in the existing floor-to-ceiling cabinet.

This cabinet and a part of the wall on the opposite side of the room, which contains the chimney, are structural features which may not be changed. The water heater also must remain in its present location. The central portion of the partition between the storeroom and family kitchen could be removed to provide more usable floor space in these two rooms.

By removing the open shelves from the storeroom, there would be made available space along two adjacent walls that would be adequate for the desired laundry area.

Planning Procedures

The activities to be carried on in the school laundry area were listed and charts were made showing: 1) the equipment and work surface needed for the activities (Chart 1), and 2) storage requirements for the equipment and supplies. (Chart 2)

The activities were then assigned to three work centers: for preparation, washing and drying, and ironing.

Chart 1

Equipment Needed for School Laundry Area Activities

Activity	Process	Requirements
A. Laundering		
1. Preparation	a. Sort	Work surface, drawers, Roll-out bins, Clothes basket on wheels, waste basket
	b. Remove stains	Work surface, standing height, sink
	c. Mend by hand	Work surface, seated height, stool
	d. Soak	Work surface, standing height, sink
2. Machine washing and drying		
	a. Weigh load	Scale
	b. Wash	Hot water 140° to 150° Washer
	c. Dry	Dryer
3. Hand washing and drying		
	a. Sort	Work surface
	b. Wash	Sink
	c. Dry	Rack
4. Starching		
	a. Make starch	Range in kitchen
	b. Dip garments	Sink basin with built-in outlet closure
5. Preparation for ironing		
	a. Dampen	Work surface, container for damp clothes
6. Ironing		
	a. Dresses and blouses	Board, standing and sitting heights, place for hanger holder
	b. Flat pieces	Large board, surface for folded items, rack
7. Putting away clothes		
	a. Move items	Basket on wheels, Cart
B. Other uses of school laundry areas		
1. Arranging flowers	a. Place in water	Work surface, sink, waste basket
	b. Arrange	
2. Wrap packages		
	a. Wrap	Work surface
3. Dishwash after parties		
	a. Scrape, stack	Work surface
	b. Wash	Garbage container
	c. Dry	Sink

Chart 2

Storage Facilities Required in Laundry Area

Activity	Supplies	Storage Requirement
A. Laundering	Mending	Rack, inside door
	Paper towels	Rack, shelf
	Stain removers,	
	1. Preperation	Shelf
	Soap, sponge, brush	
	Stain removal chart	Inside door
	Stool	Under counter
	2. Machine washing and drying	
	Soap, bleach, bluing	Shelves
	Sponge, cloth,	Rod
	Scouring powder	
	3. Hand washing and drying	
	Soap	Shelf
	Rack, hangers	Tall cabinet
B. Other uses of laundry area	4. Starching	
	Starch, pan	Shelf
	Spoon	Drawer
	5. Preparation for ironing	
	Dampening bottle,	Shelves
	Damp clothes container	
	6. Ironing	
	Large board	No requirement
	Sponge, bowel, brush	Shelf
	Standard board,	
	Sleeve board, pads,	Floor to ceiling
	Hangers, holder,	cabinet
	Cloth, basket on wheels, rack	
	Chair	No requirement
7. Putting clothes away		Under kitchen work counter
	Tier cart	As above
	Tier cart	As above
B. Other uses of laundry area	Basket on wheels	As above
	1. Arranging flowers	
	Pin holders, clay,	Racks, inside door
	Wire, scissors	
	Vases	Shelves
	2. Wrap packages	
	Paper, string, knife,	
	Ribbon, cards, labels,	Drawer
	Pen, ink, pencil	
	3. Dishwash after parties	
	Soap, towels,	Shelves
	Dishcloths	

Preparation Center (Plates 3 and 5). The preparation center required a work surface for handling clothes and for the other activities to be carried on there. The best location for this center was found to be at the left of the corner where it would be possible to have a counter space six feet long. In the plan developed, two feet of this space at the right is in the corner itself. A small sink in the preparation center requires a space of 13 by 17 inches. This leaves 30 inches to the left of the sink for a work surface. This length is less than the 36 inches found to be the minimum desirable by this investigator for dampening clothes, which requires more space than any of the other activities. Additional work surface is provided by having a pull-out board, by planning the counter 27 inches deep and by having a tier cart which could be used where needed. A counter height of 37 inches would be comfortable for the type of work generally done here and permits the bottom of a five-inch sink to measure 32 inches from the floor.

Planning Storage (Plate 3). The space above and below the counter was utilized for storing supplies needed for the activities to be carried on at the preparation center. Below the counter to the left a space 24 inches wide was planned to contain a pull-out board and drawers.

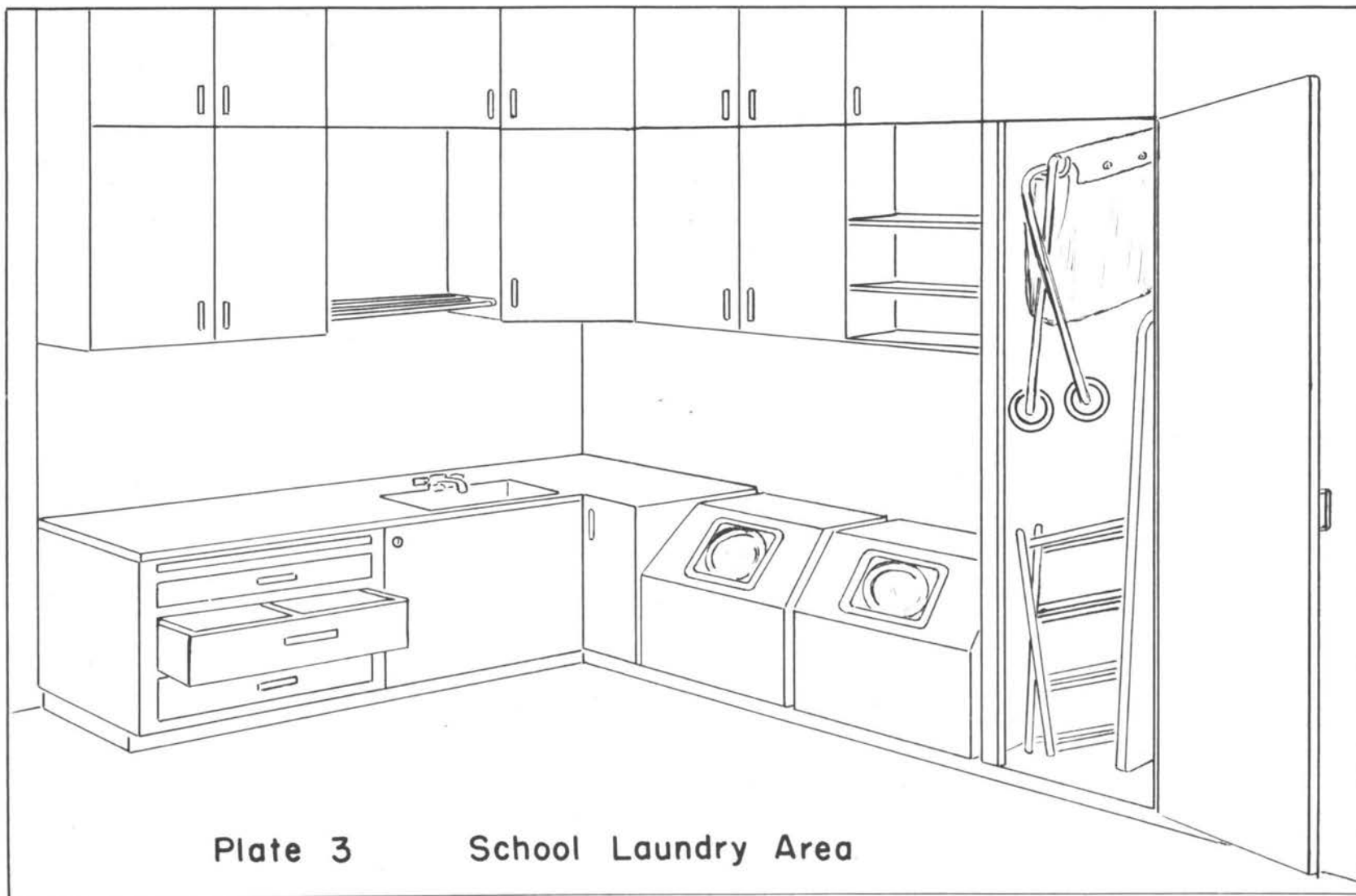
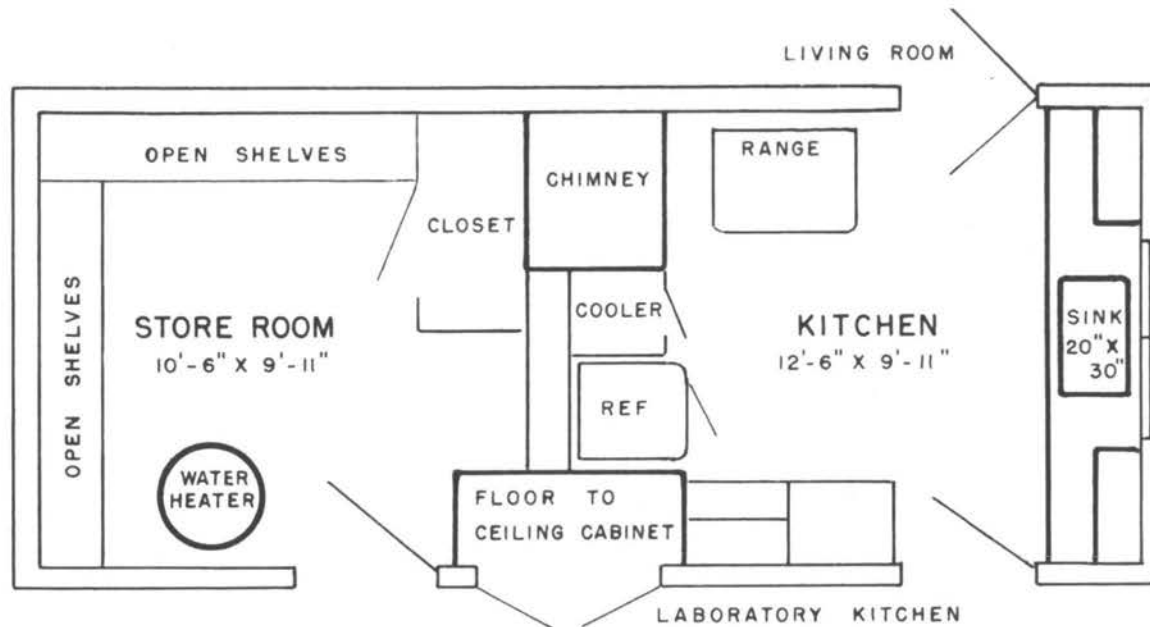


Plate 3

School Laundry Area

Plate 4 SCHOOL ROOM PLANS

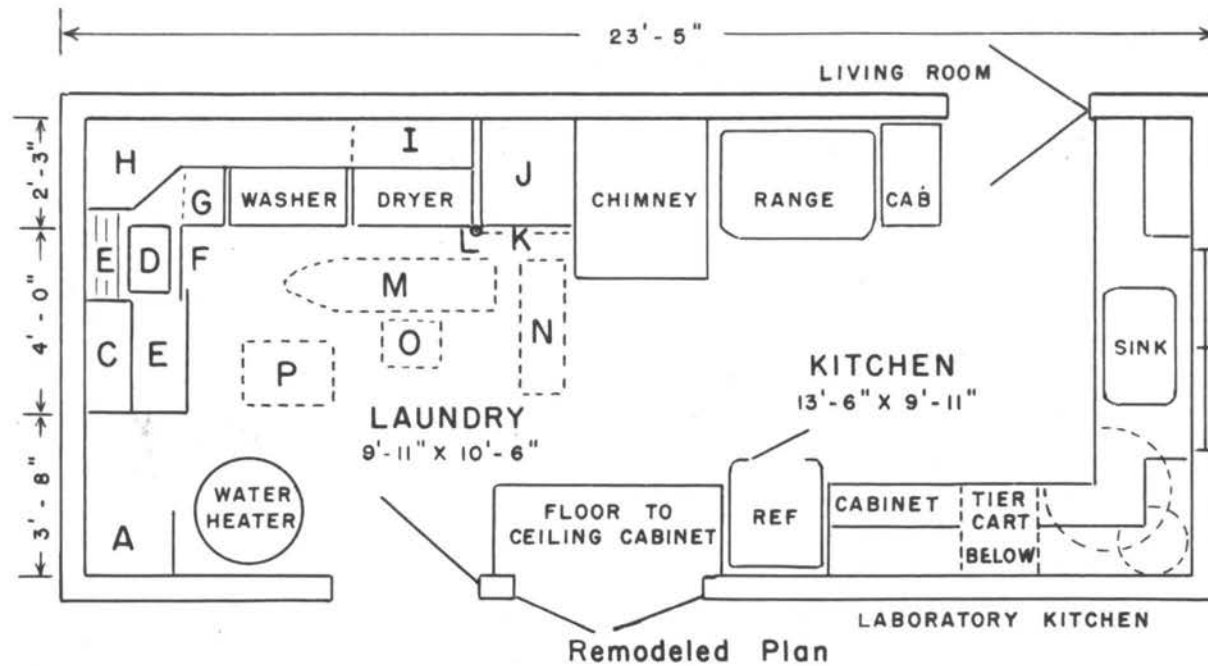


Original Plan

Heavy lined items not movable

Plate 5

SCHOOL ROOM PLANS



- A. SCREEN STORAGE
- B. PREPARATION CENTER PL. 3
- C. STAIN REM. AND MEND. STORAGE
- D. SINK
- E. DRYING RODS PL. 1, FIG. 5
- F. SLIDING DOOR
- G. TOWEL ROD
- H. FLOWER ARRANGEMENT

- I. OPEN SHELVES PL. 1, FIG. 6
- J. FLOOR TO CEILING CABINET PL. 3
- K. HANGERS PL. 1, FIG. 7
- L. ELECTRIC OUTLET
- M. BOARD
- N. RACK
- O. CHAIR
- P. BASKET

SCALE $\frac{1}{4}" = 1'$

The top drawer, four and a half inches deep was planned mainly for the storage of materials for wrapping packages. The two lower drawers are 11 inches deep and have central dividers running from front to back. Each compartment in these drawers would hold a washer load of soiled clothes.

The space under the sink and under the corner counter was planned for storing large items such as the stool with footrest for sitting to work at counter height, waste basket and the dish drying rack.

The wall cabinet above the counter on the left has adjustable shelves of different widths. These shelves were assigned to extra rolls of paper towels and equipment for stain removal, for making starch, and for dampening clothes. The inside of one of the doors of this wall cabinet is equipped with racks to hold mending supplies. A chart of directions for stain removal could be posted on the inside of the other door.

The corner cabinet has adjustable shelves. It has one door which is placed diagonally across the corner. All supplies for flower arrangement were allocated to be stored in the corner cabinet. The racks on the inside of the door were planned to hold pin-type flower holders, florist clay, wire and shears.

Pull-up rods for drying occasional hand wash are fastened to the wall over the sink. Pull-out rods,

planned for the narrow space in the base cabinet to the right of the corner, are intended for drying dish towels. Additional drying rods could be fastened to the end of the cabinet on the left.

Washing Center (Plates 3 and 5). Placing the washer to the right of the corner simplifies the transfer of soiled clothes from the open drawers or from the sorting counter to the open door of the washer where they are automatically weighed to get correct washer load. The dryer is next in line.

Completely dried clothes may be folded and placed on the open shelves above the dryer or in the raised clothes basket on wheels. The damp clothes from the dryer or those dampened later at the adjacent preparation center may be placed in moisture-proof bags or in the clothes basket.

Planning Storage. The cabinet above the washer has adjustable shelves for storing all the supplies needed for washing clothes and for dishwashing. There are open shelves above the dryer for temporary storage.

Ironing Center. A convenient arrangement of the ironing equipment is shown in dotted lines on the remodeled plan. (Plate 5) The board, basket and rack are

all placed within easy reach of the worker. The holder for hangers could be hung on the outside of the door of the floor-to-ceiling cabinet. After placing the ironing equipment, the electric outlet was located at the left corner of the floor-to-ceiling cabinet, 36 inches above the board.

A comfortable chair is provided so that the worker could sit to iron at the adjustable board. No built-in board was provided because of limited wall space. The board measured 15 by 54 inches and is large enough to iron most items without frequent shifting of material. When needed, a wide board is available from the clothing laboratory.

Planning Storage. As the wide board is kept in the clothing laboratory, storage space was not provided for it here. The floor-to-ceiling cabinet (Plates 3 and 5) located next to the chimney wall is adequate for storing all the remaining ironing equipment.

Results

The result of following the procedures in the foregoing section was a workable scheme for a school laundry laboratory in the Hartnell Junior College Home Economics Department that would require little expensive construction. The scheme meets all of the more important

specifications for a laboratory needed in training the future homemakers of the country in modern and efficient home laundry practices.

CHAPTER VII

SUMMARY AND CONCLUSIONS

The problem in this study was to plan a school laundry laboratory for the home economics department of a junior college. This laboratory is intended to provide students with experiences that will help them with present and future laundry problems, and it will offer suggestions to others who use the home economics department that will be helpful in improving the efficiency of their home laundry areas.

The most feasible arrangement for adding a laundry laboratory in the home economics department of Hartnell Junior College is to remodel an existing storeroom and adjoining family-type kitchen. The space thus made available is small and there are certain structural features that cannot be changed. Hence, the problem was not that of making a laboratory plan that would incorporate all of the features desirable in it, but rather, that of making the most of the space, arrangement and present equipment in the location available.

Reports of research were examined that deal with home laundry planning and with the application of work simplification principles to laundry work. From these sources there were obtained standards for space,

equipment and arrangement that insure efficiency in the use of time and energy spent on this household task.

Plans for laundry areas were then developed for five different home situations that meet the need for time and energy-saving by providing adequate work surface, suitable storage facilities and step-saving arrangement of equipment.

A second basis for the standards used in planning the school laundry laboratory was information obtained in visits to 33 representative homes situated in the community served by the junior college. Average and higher than average income level families were included in this group. Six of the families were young couples without children; 12 of them had only pre-school age children and 10 families, children of school age. The other five families interviewed consisted of adults only.

The form used in recording data obtained in these visits was developed after observing five homemakers doing their laundry at home. Information was obtained from all of the 33 participants in the study concerning the amount of laundry done at home, present and needed laundry facilities, present and desired location for doing washing and ironing, adequacy of present home laundry and the homemaker's attitude toward laundering and energy-saving methods.

A summary of the information obtained during these interviews showed that all of the families did some of their laundry at home, and that over half of them do not send any of it out. Furthermore, in all cases it was found that family members do the laundry work.

Although three-fourths of the laundry areas were equipped with automatic washers, only three of the entire group could be rated "good" while 12 of them could not even be considered as "fair," when judged by work simplification standards. Over three-fourths of the homemakers were ironing on boards which were too low, and half of them used boards too narrow for efficiency in ironing. The majority had little or no work surface or storage space. Over half the homemakers expressed the need for more work surface and better facilities for sorting and storing soiled clothes.

The survey brought out one point that is often overlooked in planning laundry areas using automatic equipment--the importance of having facilities for doing hand washing such as sink or laundry tray, and of a suitable place for drying hand washing. At present two-thirds of the families dry hand washing in the bathroom but not always by preference.

The homemakers were asked where they would like to do their laundry work. Two-thirds of them said that they

preferred washing in a utility room near the kitchen, but only one-fourth preferred ironing in the utility room. The majority want movable ironing boards so they can work in different rooms of the house. Few had given any thought to the desirability of an arrangement for sitting while doing part of the ironing.

Many families volunteered the information that they plan to buy an automatic washer as soon as possible, and the four families visited who possess clothes dryers said that they value them more than any other major piece of electrical equipment.

In the space available it was found to be possible to develop a plan for the school laundry which fulfills the main requirements for an adequate home laundry area. The location, near the family-type kitchen, is the same as that preferred by two-thirds of the homemakers interviewed. Along the two adjacent walls the L-shaped plan allowed a step-saving arrangement of the equipment. Adequate work surface of a height suitable for the average homemaker is provided where needed. Storage facilities, suited to their uses, make it possible to store soiled clothes, equipment and supplies in locations where they are easy to reach.

This laundry area as planned to be adequate for home laundering will be used for doing the laundry for

the home economics department. It will also serve as a laboratory for the study of laundry equipment and procedures and for the organization of work centers.

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APPENDIX

APPENDIX

Table 1

Reference List of Standards
For Working Surface Heights¹

Dimensions Suited to Requirements of the Average Homemaker

1. Preferred heights of working surfaces, worker standing	<u>Inches</u>
Floor of sink	32½
Ironing board	32½
2. Preferred heights of equipment used by workers seated (2 inches allowed for thickness of table top and clearance above thighs)	
Ironing board	24
Lap board	25
3. Minimum toe space	
Width (front to back)	4
Height	3
4. Maximum height of shelf for articles in frequent use	
a. No obstruction	
Light-weight articles	79
Heavy articles	74
b. Obstruction 12 inches wide (as in reaching over work counter)	
Light-weight articles	76
Heavy articles	71
5. Maximum height of shelf visible throughout entire width	61
6. Maximum height of drawer	59

¹Selected items from Roberts, Wilson and Thayer, Standards for Working Surface Heights and Other Space Units of the Dwelling, Bulletin 348, p.37.

Table 2

Recommended Positions for
Convenience Outlets for the Hand Iron¹

Location of outlet on wall or ceiling	Distance	Clearance between board and wall
Front of worker	24 inches to right of center of long way of board	6 to 10 inches
Right of worker	18 inches forward of center of end of board	6 inches
Back of worker	24 inches to right of center of board	23 to 30 inches
On ceiling	18 inches forward and 24 inches to right of center of board	

All outlets for iron cord should be 36 to 48 inches above the ironing board.

¹Adapted from Wilson and Shively, Planning a Center for Hand Ironing, Bulletin 179, p.12.

Table 3

Energy Cost of Laundry Processes
As Compared With Resting¹

Kind of activity	Average per cent above resting
Washing by hand	191
Wringing by hand.	138
Wringing with electric wringer.	99
Emptying machine.	139
Putting up and removing lines	135
Hanging clothes, basket on floor.	184
Hanging clothes, basket raised.	118
Standing to iron.	70 to 80
Sitting to iron, chair comfortable.	66
Using rotary ironer	45-47

¹Swartz, The Human Energy Cost of Certain Household Tasks, Bulletin 282, p.13.

Table 4

Oxygen Consumed, Increase Over Standing,¹
For the Various Activities, All Subjects¹

(Average of 36 test periods for 9 subjects)

Activity	Height of	Oxygen consumed	
	reach above floor (Inches)	per minute, Increase over standing (Cubic cent.)(Per cent)	
Arm reach	46	28	12
Arm reach	56	54	24
Arm reach and body pivot through 90-degree angle	36	96	40
Arm reach	72	110	50
Arm reach and trunk bend	22	130	57
Step up 7 inches. . . .	no reach	291	119
Arm reach and trunk bend	3	312	131
Arm reach and knee bend	3	547*	224

*Average of 28 test periods for 7 subjects.

¹Bratton, Oxygen Consumed in Eight Selected Component Activities in Household Tasks, Abstract for Master's Thesis, Cornell University, p.6.

INTERVIEW FORM

Before planning a laundry area for the Home Economics Department of Hartnell College, we would like to become acquainted with what families of Salinas and vicinity need in equipment and arrangement for laundering.

We would appreciate your cooperation in obtaining the necessary information for your home.

1. How much laundry is done at home?

- | | |
|----------------------------------|------------------------------------|
| <input type="checkbox"/> 1. None | <input type="checkbox"/> 3. Most |
| <input type="checkbox"/> 2. All | <input type="checkbox"/> 4. Little |

2. What articles are usually laundered away from home?

- | | |
|--|--|
| <input type="checkbox"/> 1. None | <input type="checkbox"/> 6. Household linen and sheets |
| <input type="checkbox"/> 2. All | <input type="checkbox"/> 7. Household linen |
| <input type="checkbox"/> 3. All but fine | <input type="checkbox"/> 8. Shirts and flat pieces |
| <input type="checkbox"/> 4. Shirts | <input type="checkbox"/> 9. Other |
| <input type="checkbox"/> 5. Sheets and flat pieces | |

3. Where is the washing done away from home?

- | | |
|---|-----------------------------------|
| <input type="checkbox"/> 1. None sent out | <input type="checkbox"/> 4. Both |
| <input type="checkbox"/> 2. Commercial | <input type="checkbox"/> 5. Other |
| <input type="checkbox"/> 3. Self-service | |

4. How is the washing brought back?

- | | |
|---|---|
| <input type="checkbox"/> 1. None sent out | <input type="checkbox"/> 5. Part ironed, part wet |
| <input type="checkbox"/> 2. Wet | <input type="checkbox"/> 6. Part ironed, part dry |
| <input type="checkbox"/> 3. Dry, not ironed | <input type="checkbox"/> 7. Other |
| <input type="checkbox"/> 4. All ironed | |

5. How often do you do family washing at home?

- | | |
|---|--|
| <input type="checkbox"/> 1. None | <input type="checkbox"/> 4. Twice a week |
| <input type="checkbox"/> 2. Every 2 weeks | <input type="checkbox"/> 5. Daily |
| <input type="checkbox"/> 3. Each week | <input type="checkbox"/> 6. Other |

6. Where do you think is the best place to wash at home?

- | | |
|--|--|
| <input type="checkbox"/> 1. None | <input type="checkbox"/> 6. First floor in kitchen |
| <input type="checkbox"/> 2. Basement | <input type="checkbox"/> 7. Near bedroom |
| <input type="checkbox"/> 3. Garage | <input type="checkbox"/> 8. In bathroom |
| <input type="checkbox"/> 4. Separate building | <input type="checkbox"/> 9. Other |
| <input type="checkbox"/> 5. First floor near kitchen | |

7. Do you need indoor drying facilities?

- | | |
|---------------------------------|--------------------------------|
| <input type="checkbox"/> 1. Yes | <input type="checkbox"/> 2. No |
|---------------------------------|--------------------------------|

8. Where do you think is the best place to iron?

- | | |
|---|--|
| <input type="checkbox"/> 1. Have ironing done | <input type="checkbox"/> 6. Dining |
| <input type="checkbox"/> 2. Kitchen | <input type="checkbox"/> 7. Basement |
| <input type="checkbox"/> 3. Bedroom | <input type="checkbox"/> 8. No opinion |
| <input type="checkbox"/> 4. Utility | <input type="checkbox"/> 9. Other |
| <input type="checkbox"/> 5. Living | |

9. Do you feel the need for a place where the ironing board can be left up at all times?

- | | |
|---------------------------------|--|
| <input type="checkbox"/> 1. Yes | <input type="checkbox"/> 3. No opinion |
| <input type="checkbox"/> 2. No | |

10. Where do you think would be the best place to have the ironing board left up? Select answer from Question 8.

11. Would you prefer a built-in ironing board or a movable one?

- | | |
|---|-------------------------------------|
| <input type="checkbox"/> 1. No preference | <input type="checkbox"/> 3. Movable |
| <input type="checkbox"/> 2. Built-in | <input type="checkbox"/> 4. Both |

12. Give reason for your choice.

13. Have you used a built-in or movable ironing board?

- | | |
|--------------------------------------|-------------------------------------|
| <input type="checkbox"/> 1. Built-in | <input type="checkbox"/> 3. Both |
| <input type="checkbox"/> 2. Movable | <input type="checkbox"/> 4. Neither |

14. How do you now do your ironing?

- ☐ 1. Sit to do all ☐ 3. Both
☐ 2. Stand to do all

15. If you do not sit to do your ironing, give reasons.

16. What kind of ironing board are you now using?

- ☐ 1. Built-in adjustable
☐ 2. Built-in non-adjustable
☐ 3. Movable adjustable
☐ 4. Movable non-adjustable

17. What is the height of your ironing board or boards?

18. What is the width of your ironing board or boards?

19. Do you use an extra wide board?

- ☐ 1. Yes ☐ 2. No

20. Have you used an ironer?

- ☐ 1. Yes ☐ 2. No

21. If you have used an ironer, what features did you like about it?

22. For what items did you use the ironer?

23. If you own an ironer and do not use it give reasons.

24. Do you plan to buy an ironer?

- ☐ 1. Yes ☐ 2. No

25. What kind of iron do you use?

- | | |
|--|--|
| <input type="checkbox"/> 1. Hand iron only | <input type="checkbox"/> 4. Steam iron, hand |
| <input type="checkbox"/> 2. Steam iron and | <input type="checkbox"/> iron and ironer |
| <input type="checkbox"/> hand iron | <input type="checkbox"/> 5. Steam iron only |
| <input type="checkbox"/> 3. Hand iron and | |
| <input type="checkbox"/> ironer | |

26. If you use a steam iron for what articles do you use it?

27. What do you like about the steam iron?

28. Do you use or have you used an automatic washer?

- | | |
|---------------------------------|--------------------------------|
| <input type="checkbox"/> 1. Yes | <input type="checkbox"/> 2. No |
|---------------------------------|--------------------------------|

29. How many laundry trays do you use?

- ☐ 1. None
- ☐ 2. One and no machine
- ☐ 3. One with automatic washer
- ☐ 4. One with non-automatic washer
- ☐ 5. Two with automatic washer
- ☐ 6. Two with non-automatic washer
- ☐ 7. Sink with automatic washer
- ☐ 8. Other

30. Where do you do hand washing?

- | | |
|--|-----------------------------------|
| <input type="checkbox"/> 1. None | <input type="checkbox"/> 4. Both |
| <input type="checkbox"/> 2. Kitchen sink | <input type="checkbox"/> 5. Other |
| <input type="checkbox"/> 3. Bathroom | |

31. Where do you dry hand washing?

32. Where would you like to dry hand washing?

33. Where do you do special hand ironing?

34. Do you have a water softener?

___ 1. Yes ___ 2. No

35. If not, do you plan to install a water softener?

___ 1. Yes ___ 2. No

36. If you do not have a water softener how do you treat the water?

37. How do you store soiled clothes?

___ 1. Basket or box on floor	___ 5. Hampers
___ 2. Basket or box on table	___ 6. Bags
___ 3. Fixed bins	___ 7. Hamper and machine
___ 4. Movable bins	___ 8. Hamper and tub
	___ 9. Basket and hamper
	___ 10. Bag and hamper

38. Do you store soiled clothes by washer loads?

___ 1. Yes ___ 2. No

39. Do you feel the need for better facilities for storing soiled clothes?

___ 1. Yes ___ 2. No

40. Where do you now sort your laundry?

___ 1. None	___ 4. Floor
___ 2. Counter	___ 5. Bins
___ 3. Table	___ 6. Other

41. Do you feel the need for better facilities for sorting laundry?

___ 1. Yes ___ 2. No

42. What type work counter do you have?

___ 1. None	___ 4. Shelf
___ 2. Table	___ 5. Other
___ 3. Cabinet	

43. What is the size of your work counter?

44. What do you do on your work counter which requires most space?

45. Do you feel the need for more work space?

1. Yes 2. No

46. What devices do you use to save on amount of washing?

- | | |
|---|-------------------------------|
| — 1. Change only 1 sheet | — 4. No table covers |
| — 2. Use paper napkins | — 5. Fabrics not showing dirt |
| — 3. Use place doilies in place of table cloths | — 6. Other |

47. What devices do you use to save on amount of ironing?

- | | |
|--------------------------|---------------------------|
| ___ 1. None | ___ 5. Buy material which |
| ___ 2. Not iron sheets | requires little or |
| ___ 3. Not iron towels | no ironing |
| ___ 4. Not iron sleeping | ___ 6. Other |
| garments | |

48. Where do you have drying lines?

- [illegible]

49. Annoyances in your laundry area.

- 1. Traffic through work area
- 2. Doors in wrong place
- 3. Too many doors
- 4. Wrong swing of door
- 5. Electric outlet in wrong place
- 6. Telephone too far away
- 7. Front door too far away
- 8. Too far from child play area
- 9. Too far from drying yard

50. What members are in your family?

- 1. Young couples with no children
- 2. Families with children under 6 years
- 3. Families with children 6 to 18 years
- 4. Adults only

51. Do you own your own home?

☐ 1. Yes

☐ 2. No

52. If so, did you

☐ 1. Build

☐ 2. Remodel

☐ 3. Use as purchased

53. What is the age of your house?

☐ 1. 5 years or less

☐ 2. 6 years and less than 20 years

☐ 3. Over 20 years

Attitude of Homemaker Toward Laundering and Efficiency Methods

1. How well she likes to launder

<u>Wash</u>	<u>Attitude</u>	<u>Iron</u>
<input type="checkbox"/> 1.	Like	<input type="checkbox"/> 1.
<input type="checkbox"/> 2.	Dislike	<input type="checkbox"/> 2.
<input type="checkbox"/> 3.	Don't mind	<input type="checkbox"/> 3.

2. Had arranged equipment convenient for work

☐ 1. Yes ☐ 2. No

3. Aware of need for good arrangement

- ☐ 1. Yes
☐ 2. No
☐ 3. Had possibilities for better arrangement, not done
☐ 4. No easy possibilities for improvement

4. Interested in improving arrangement

☐ 1. Yes ☐ 2. No

5. Had improvised energy-saving device

☐ 1. Yes ☐ 2. No

6. Had improvised storage space

☐ 1. Yes ☐ 2. No

7. Aware of importance of correct working heights

☐ 1. Yes ☐ 2. No

8. Adequacy of laundry

☐ 1. Good ☐ 3. Poor
☐ 2. Fair