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Wife's name _____

contained on this sheet, all of _____
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My age is _____
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AGRICULTURAL EXPERIMENT STATION
COLLEGE OF AGRICULTURE, FORESTRY, AND HOME ECONOMICS
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MORGANTOWN

FARM AND HOME BUSINESS CENTER STUDIES

by

Mildred Jean Davis and

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Farm and Home Business Center Studies

MILDRED JEAN DAVIS and MARY LANE SWARTZ

Purpose of Study

This study was conducted as a subproject of the Regional investigation, "Space, Facilities, and Structural Requirements for Farm Houses in the Northeast." Objectives of the study were: (1) to determine the desirable space, furniture, and supplies for use in performance of business activities in farm homes; (2) to discover the nature, duration, and frequency of these activities; and (3) to ascertain satisfactory writing heights and working areas for business centers.

Procedure

The term *business center* as used in this report refers to an area where business activities of the farm and home are carried on. This may be a single piece of furniture or several pieces grouped together. *Business Activities* is used to designate such operations as opening and closing mail, writing letters, paying bills, ordering from a catalog, and keeping farm and household records.

Extension specialists were asked to suggest families who might contribute to the study through interviews. Thirteen farm women in Monongalia, Marion, and Preston counties gave helpful suggestions.

Researchers visited retail markets for new and used furniture and consulted catalogs to become familiar with the types of business furniture which might be available to farm families. On the basis of information obtained through this investigation and from farm family interviews, appropriate furniture was purchased for use in the study.

On three different occasions a research worker displayed business centers at the State 4-H Camp at Jackson's Mill. Valuable suggestions and comments were received from farm adults, both men and women. This also gave an opportunity to discover potential users for the field study. Other contacts with possible participants were made through Farmer's Home Administration and home demonstration agents in counties in the vicinity of Morgantown.

Visits were made to prospective participants to explain the purpose of the study and their role in it.

Thirteen centers, equipped with small business supplies and a lamp where needed, were included in the Field Study. Eight were variations of the knee-hole design and five were of different type and design.

At the end of the use period (4-6 months) business centers were rotated so that each family had an opportunity to use different centers, and research workers could study the uses made of centers by different families. The number of centers and participating families increased as the project progressed.

Each business center was evaluated by the families who used it. Following the recall of business centers from the field, a suitable questionnaire was prepared and additional data about the families were obtained at a final visit to each home.

Meanwhile, in the laboratory the activities of an operator performing six business-related activities¹ at each of nine centers were being recorded on film to determine the most effective arrangement of supplies for a given business center from micromotion analysis. Four of these centers were variations of the knee-hole design, and five were different in type and design.

When analyses of two films disclosed that the arrangement of supplies followed the principles of time and motion economy, it was decided to use a panel of observers in lieu of further micromotion studies.

Writing heights and areas also were studied in the laboratory. Data were secured from a random sample of men and women at West Virginia University to determine satisfactory working areas and writing height with relation to satisfactory chair heights.

Background Studies

Three background studies² were made among West Virginia farm families to learn of existing conditions regarding business centers and reactions thereto.

Results showed that a majority of the farm families depended upon more than one type of farming. Dairy, livestock, and poultry comprised the largest percentage of farm enterprises. Desks were used by about two-thirds of the families for conducting business. The living room was

¹Opening and filing mail, writing letters, paying bills, ordering from catalog, keeping farm records, addressing seasonal cards.

²Wittebort, Maxine Poland, *Facilities and Equipment For Business Activities*, 1951 unpublished Thesis, West Virginia University Library.

Cavendish, Charlotte Baughman, *Business Activities of 19 West Virginia Farm Families* 1952, unpublished Problem, Division of Home Economics, West Virginia University.

Plonk, Martha, and Waters, Helen Tucker, *Survey of Business Activities of Families Enrolled in Farming for Better Living Project*, 1950, unpublished, Division of Home Economics, West Virginia University.

the preferred location for the desk, with the dining room and bedroom second choices. In homes where a definite space was not allotted, the dining room or kitchen table was most often used. The knee-hole type of desk was in use most frequently. Those with large farm enterprises kept more accurate and detailed records than did families which farmed on a small scale.

Inventory of Business Centers

Business centers were purchased over a period of three years, careful consideration being given to their selection. Because the centers were planned to serve rural people, an effort was made to select from sources readily available to rural communities. Variety in design was also considered. As the study progressed, centers were selected or designed and built because of some special feature. The following photographs show basic specifications for each center used. All dimensions shown are in inches.

Field Study Survey

Each of the fourteen cooperating families was interviewed at the close of the Field Study to obtain information which might influence the attitude toward or the need for a business center.

Family income sources varied. Three families had estimated annual cash income of less than \$2,000, eight received between \$2,000 and \$5,000, and three more than \$5,000.

Believing that there is a relationship between education and recognized need for a business center, educational attainments of the families were analyzed. It was learned that families with more education made more use of their business centers.

At the time the experimental equipment was taken to families, three families already had two centers each in use, six were using one each, and five had no business center. Some of the centers already in use were not giving complete satisfaction.

Of the twelve business centers set up in farm homes prior to the Field Study, six were located in the living room, one in the dining room, two in the kitchen, and one each in the bedroom, sunroom, and den. All rooms were heated.

At the close of the Field Study it was found that twelve families were planning to acquire business centers or additional centers in the near future. Their choices varied: seven desired ready-made centers, one a custom-built center, and four expected to have remodeled centers. The two who were not making plans for the future already owned business centers.

BC I — Designed by Housing Research personnel and constructed by Agricultural Engineering. Made of solid walnut. Special features: (1) Generous writing surface; (2) Ample storage and drawer space; (3) Built-in book shelves.

BC II — Custom-built. Special features: (1) Painted surface; (2) Made in three sections; (3) Pedestals movable, thus adapting desk to use by two persons.

BC III—Constructed of steel. Business center was purchased. Special features: (1) Single pedestal; (2) Requires additional storage facilities. Family comment: The pull-out shelf is convenient, but there is inadequate filing space.

BC IV — Custom-built. Special features: (1) Built into bedroom; (2) Combines business center with cosmetic center, and provides storage for clothing.

BC V—Walnut stain varnished. Purchased from mail-order house. Special features: (1) Limited writing surface simulating drawer, opens, providing space for storing supplies; (2) Combines bookcase with drawer storage.

BC VI—Purchased from mail-order house. Special features: (1) Two large drop-leaves; (2) Center pedestal of double drawers. Family comment: Very satisfactory business center.

BC VII—Designed by Housing Research personnel. Constructed of 4 orange crates and sheet of painted plywood and supplemented by 2-drawer file. Special features: (1) Open shelves for easy accessibility; (2) Large writing area.

BC VIII—Writing shelf purchased. Custom-built wall shelves. Special features: (1) Writing shelf folds down against wall to conserve space.

BC IX—Purchased from department store and mail-order house. Natural finish. Special features: (1) Separate table; (2) Chest of varied width drawers. Family comment: Center has storage space.

BC X—Purchased—steel construction. Special features: (1) Adequate storage space; (2) Large filing drawer. Family comment: Very satisfactory; expensive.

BC XI — Remodeled kitchen cabinet. Special features: (1) Used with or without wall unit; (2) Pigeon-hole dividers in open storage space. Family comment: Storage space limited; also, a second pedestal is desirable.

BC XII—Constructed of solid maple. Special features: (1) Narrow pedestals; (2) Inadequate filing space. Family comment: Very satisfactory; additional large drawer desirable.

BC XIII—Plywood construction (wall unit). Purchased from a mail-order house. Special features: (1) Book case in two units, one corner and one flat-wall; (2) Supplemented by card or lap table for writing. Family comment: Versatile.

BC XIV—Made of wood, mahogany stained. Purchased from mail-order house. Special features: (1) Narrow pedestals; (2) Inadequate filing space. Family comment: Satisfactory; drawers too small

BC XV—Made of 2 orange crates; plywood top. Special features: (1) Low cost; (2) Open shelves for easy access to supplies. Family comment: Unsightly.

BC XVI—Custom-built. Made of plywood. Special features: (1) Writing surface closes up; (2) Fluorescent light built in. Family comment: Top-heavy construction; needs better arrangement of storage.

BC XVII—Custom-built. Constructed of birch. Special features: (1) Formica writing surface; (2) Large drawer for filing; (3) Open and closed storage in wall unit. Family comment: Completely satisfactory.

BC XVIII—Wood construction, painted surface. Renovated typewriter desk. Special features: (1) Additional filing space needed; (2) No center drawer. Family comment: Unsightly; needs drawer.

BC XIX—Stained plywood construction. Designed by Housing Research personnel and custom built. Special features: (1) Open shelf for storage beneath writing surface; (2) Fits into small area; (3) Limited writing and storage space. Family comment: Recommend a drawer to replace open storage.

BC XX—Designed and built jointly by Housing Research and Department of Agricultural Engineering personnel for experimental use. Constructed of wood. Special features: (1) Adjustable height; (2) Supplemental storage necessary.

Of the families planning to get a business center, eight prefer the knee-hole design, three desire a writing surface with separate storage, and one plans a special design remodeled from a victrola cabinet. In nine families the new business center will be used cooperatively by the family members. The homemaker alone plans to use the center in three instances.

Use Record Analysis

Business centers were placed in farm homes to discover their usefulness, to study space arrangement, and to learn what supplies are desirable. Monthly Use Records were designed for use by farm families to record on a calendar-like form³ the activities carried on at the business centers and the length of time for each activity.

Activities listed by seven families who kept Use Records for a period of nine months early in the study formed the basis for selection of activities studied in the laboratory. Activities most frequently listed were writing letters, reading books and magazines, keeping farm records, preparing school lessons, ordering from catalog, and addressing seasonal cards.

Activities were classified under the headings of business, writing, reading and study, and extraneous, such as wrapping packages, sewing, serving, and dining. The frequency and length of time for each activity were tabulated monthly. For interpreting Use Records, the frequency factor seemed more significant than the time factor.

Three analyses were made from Use Records: (1) a profile analysis for each family based on four monthly reports,⁴ (2) a comparison of usage per activity category based on a composite of family profiles, Figures 1 and 2; and (3) a comparison of uses⁵ for the five centers that were involved in both periods, described in the following paragraph.

Two detailed use studies were made, each covering a period of four months. The study during Period I included seven families; Period II, seven other families.

The families who participated during Period I (October, November, December, and January) were designated as A, B, C, D, E, F, and G. Those participating in Period II (March, April, May Series) were designated as T, U, V, W, X, Y, and Z. Excluding Families F and G and T and U for the sake of comparison, the centers were used 305 hours 17 minutes, and 462 times during Period I. In Period II, they were used 173 hours 57 minutes, and 257 times. A striking difference in overall usage of business centers between the two periods could be attributed to the seasons.

³Available on request.

⁴Available on request.

⁵Available on request.

Figure I

PROFILE COMPOSITE OF PERIOD I

(October, November, December, January)

Categories of Use
at
Business Centers

Key

= Minutes %

= Frequency %

Figure II

PROFILE COMPOSITE OF PERIOD II

(March, April, May, June)

Categories of Use
at
Business Centers

Key

= Minutes %

= Frequency %

Family composition and activities influenced the use pattern considerably. Where there was a large business, it was used chiefly for business activities. Where the homemaker was active in club work, most of the use for the center was for writing letters and minutes. Where the homemaker was also the breadwinner, and so had less time to spend in the home, adaptability was desirable. Where there were school-age children or invalids in the family, reading and study were most frequently performed.

Evaluation Analysis of Supplies

The procedure in the Field Study was to arrange with each participant a convenient time for the researcher to deliver a business center. Soon afterward the research worker took to each cooperator a set of supplies to be used in the center. Families were permitted to arrange them as they saw fit.⁶ Supplies were identical for all families.

On a later visit the homemaker was asked to react to the use of each item in terms of whether it was considered necessary, nice, or unnecessary in light of the way in which the family had used it.

Items scored by 8 or more families as necessary were: address book, small blotter, desk calendar, desk pen set, dictionary, eraser, glue, ink, paper clips, parcel post labels, pencil sharpener, rubber bands, ruler, scissors, scotch tape, business and personal stationary, and waste basket. Items scored as "nice" included large blotter, hole punch, letter moistener, letter opener, sealing tape, stapler, book ends, scotch tape dispenser, and thumb tacks. Two items scored as unnecessary were ink eradicator and gum labels.

Evaluation Analysis of Business Centers

In the Field Study each of the participating families was asked to rate the center after having used it for a four to six month period.

A chart listed six business activities and five desirability factors which were scored on a scale ranging from one to ten, allowing two values each for the following factors: appearance, efficiency, cost, adaptability, and over-all desirability. Comments of the participants are listed with photographs of each center.

It would seem that the knee-hole type of desk is the type preferred by the families in this study. However, the sample is too small for this rating to be considered conclusive.

⁶Where any supplies were already in use, these were not duplicated.

In the Laboratory Study nine business centers, equipped with supplies like those used in the Field Study and arranged in the pattern determined by the micromotion study as being most efficient, were evaluated by a panel of three observers. Three West Virginia University staff members were included in the panel—the heads of home economics and agricultural engineering, and the Agricultural Extension Service housing and home management specialist.

Although the laboratory studies were not extensive enough to give conclusive results, there were some striking points of difference between the conclusions of the panel members and those of the homemakers. The main points of difference are given briefly.

It was interesting to note the difference in results of the evaluation of business centers by the panel and by farm families in spite of the fact that both groups used identical rating charts.

The experience of panel members was limited, whereas farm families had lived with the centers and used them daily for a period of four to six months. Families, having used the centers, might have had prejudices in favor of the centers they had used. Panel members, observing business operations in an objective laboratory situation, might have over-emphasized the importance of efficiency and adaptability. Families, on the other hand, were no doubt sensitive to appearance and the necessity of fitting the centers into homes. The panel had an opportunity to compare one center with another, whereas farm families could make few comparisons and had less training in evaluation. Each group, however, made an important contribution to the study.

Writing Heights and Working Areas

In this study it was assumed that individuals of different stature would each require variations in writing heights, chair heights, and different working areas. The study was set up to determine the interrelationship between writing height, chair height, work surface areas, and body proportions, which would contribute to comfort. The subjects were a random group of 101 men and 184 women at West Virginia University.

As a research tool an adjustable-height table was designed and built by Housing Research and Agricultural Engineering Personnel.⁷ The height of the table could be adjusted by turning a crank. Two yardsticks placed end-to-end and mounted along one edge of the table were used to measure side reaches. Additional equipment included an adjustable-height secretarial chair, an upright device for taking measurements of a seated subject, and scales for measuring height and weight.

⁷See West Virginia University Agricultural Experiment Station Circular 92, *An Adjustable-Height Table for the Laboratory or Home*, June 1954.

Results of the study showed that if writing surface heights could be made adjustable within a three and one-half inch span between 28 and 31.5 inches, they would be well adapted to use by both men and women. Likewise, if the height of chair seats could be adjustable between 17 and 20.5 inches, all the subjects in the study would have been accommodated.

The limitations of the study are apparent. Subjects assumed a writing position for only five minutes. No attempt was made to measure fatigue which might result from a protracted period in a writing position at given heights of table and chair.

Summary

A survey of farm housing in the Northeast indicated a need for information relative to business centers for farm homes.*

The West Virginia University Agricultural Experiment Station accepted responsibility for conducting a study of business centers for the farm and home as its contribution to the Regional Project NE-7, "Space, Facilities and Structural Requirements for Farm Houses in the Northeast."

Three preliminary studies were made among farm families in West Virginia to determine how and where business-allied activities were transacted in the homes.

The present study was divided into two sections, a field study and laboratory studies.

1. The Laboratory studies were conducted to determine how supplies should be arranged in business centers; to compare various centers as to appearance, cost, and over-all desirability in the performance of six selected tasks; and to determine satisfactory writing areas and writing heights.

2. The Field Study indicated that farm families preferred to have business centers in the living room, and the knee-hole desk was the most popular design. Composition of the family determined what uses were made of the business center. The use pattern was about the same irrespective of the design of the center. Families with large farm enterprises kept more records, and where there were children the business centers were used extensively for homework.

The panel of observers, judging business centers in the laboratory, favored the drop-leaf table and the built-in unit in bedroom.

There was indication that it would be advantageous to have desks and chairs adjustable in height to suit people of different stature.

*Beyer, Glenn H., *Farm Housing in the Northeast*, Cornell University Press, Ithaca, New York, 1949.