A PLAN FOR MEASURING THE EFFECT OF CONSUMER EDUCATION IN THE PURCHASE OF A CERTIFIED HOUSEHOLD FABRIC

by

ELIZABETH ANN F[illegible]S

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INTRODUCTION

Intelligent purchasing is one of the most difficult problems of the modern homemaker. Because little production takes place in the average home of today, the housewife is less familiar than was her grandmother with the articles offered for sale. She is faced with an increasingly wide variety of a given commodity from which to choose, and the task is made even more difficult by the similar appearance of articles which differ in quality.

Industrial purchasing has been largely specialized in the hands of expert buyers. Purchases are generally in large amounts, and, in consequence, close attention to prices and elaborate examination of qualities are warranted. Household purchasing falls largely upon the housewife, who has many other complex problems and duties with which to share her time. No purchasing agent in business is called upon to buy the wide variety of products that the ordinary housewife must purchase. Therefore, he can possess a much more exact knowledge of the methods of determining quality

than is available to the housewife. At best she can have only a general knowledge of prices and qualities.

Waite (1 ,pp.69-70) points out that "Where consumers are unable to judge the qualities of goods, they are open to exploitation in two ways: first, through the adulteration of products; and secondly,through the misrepresentation of the powers or services of a particular good by those selling it. The consumer can be protected under such circumstances only by the development of standards, together with their enforcement, and a dissemination of knowledge of the precise meaning of the standard as far as the performance or character of the good is concerned."

Home economists who have studied household buying are convinced that any satisfactory solution of present difficulties must provide for the development of means by which consumers will be given an adequate amount of reliable information about the quality or probable performance of the product on the retail counter. It is believed that in most instances it will prove desirable to attach a suitable informative label to the individual commodity.

The American Home Economics Association has played an important part in this movement. Since 1919 the textile section has had a committee on standardization. In 1925 a

general committee of the Association was appointed to cooperate with the Division of Simplified Practice of the United States Department of Commerce (2).

After the activities of the committee had been expanded to include standardization as well as simplification, the name was changed from Committee on Cooperation with the Division of Simplified Practice to the Committee on Commercial Standardization and Simplification. The committee sends representatives to express the consumer's viewpoint to conferences called to consider simplification and standardization of household goods, and initiates standardization projects whenever it is deemed advisable.

The first project initiated by the Association was that of the establishment of specifications for household refrigerators. The next commodity for which a standardization project was initiated was a household fabric, sheeting. The decision to take an active part in the development and adoption of specifications for sheeting came as a result of the presentation of facts showing that satisfactory tests and specifications as to the quality of sheeting are not available but are greatly needed for the guidance and protection of the household buyer. (3)

Cook (4) reports a study which included a test of

consumers' and salespeoples' judgments and a comparison of prices with quality. Nine brands of sheeting were tested for the three factors which textile experts believe to be the determining characteristics of quality: tensile strength, weight, and thread count. By combining these statistically, a quality rating was determined for each sheeting. Consumers and salespeople were asked to judge the quality of samples of these sheetings, employing their usual methods of judging, and to rate them in the order of quality. The consumers' and salespeoples' judgments of sheeting qualities were equally poor. The obvious conclusion drawn from this study is that present buying practice is not reliable.

Pursuant to unanimous action taken by the American Home Economics Association, the American Standards Association was requested in July, 1927, to call a conference of those concerned in the standardization of the quality of sheets in order that nationally recognized specifications for sheets and sheeting might be developed.

A general conference was held in May, 1928, at which it was voted that the time was ripe to undertake a study of this subject and that the American Standards Association be asked to assume the general administrative responsibility

for the project (5). Early in 1929 the organization of a representative technical committee, responsible for the formulation of the specifications and standards, was completed. Following the organization meeting of the technical committee (6), several meetings of a smaller working committee were held. Tables prepared by Mack and Emley (6, p.2), showing the results of tests of 183 kinds of sheets, were presented. A schedule of minimum and maximum weight limits for three weight classes (7) based on studies of Furry and Edgar (8), who made an exhaustive analysis of 109 sheets sold on the retail counter, and a schedule for two weight classes drawn up by the Bureau of Standards were also submitted.

After a number of conferences and considerable work by the committee, it was recommended (9):

1. That the following weight class groups be specified on labels on sheets and sheeting: Light weight--maximum 3.79 ounces per square yard; medium weight--3.80 to 4.49 ounces per square yard; heavy weight--4.50 to 5.03 ounces per square yard.

2. That specific information be given on the label as to the minimum tensile strength for warp and filling, tests to be made in accordance with A.S.T.M. General Methods of Testing Woven Textile Fabrics (10).

3. That information be given on the label as to minimum thread count, test to be made in accordance with A.S.T.M. General Methods of Testing Woven Textile Fabrics (10).

4. That specific information be given concerning the maximum amount of all finishing materials present, expressed as a percentage calculated by dividing the loss in weight (as found by the method of testing specified by the Federal Specifications Board, Specification 345a (11)) by the original conditioned weight of the specimen.

This action was taken July 17,1929. Members of the Cotton-Textile Institute, who represented the manufacturers at these meetings, submitted the recommendation to that group. In September, 1930, George A. Sloan, president of the Institute, reported that a majority of sheet manufacturers were not in favor of the proposed recommendations (12). It has been indicated informally that the members of the Institute are not now prepared to take the public responsibility for the abandonment of the project, and that further efforts should be made to seek some satisfactory solution (13).

Members of the United States Bureau of Home Economics think that if manufacturers could be convinced that the consumers would make use of such information, if available, they would be willing to give out details of the

construction of their products. Ruth O'Brien (6,p.4) declares it to be the experience of her Bureau that women are more open-minded and ready for technical information than is commonly supposed to be the case. She mentions the great growth of public information on foods and nutrition and the decided improvement in the American dietary that has come about through wide-spread appreciation of the importance of calorie values and vitamins.

It is realized that at present women do not know about buying according to specifications. Consumer education is therefore a necessary step. It is the purpose of this study to formulate a plan for such consumer education and for measuring the effect of this educational program through the demand for sheeting certified as to quality.

The only experiment determining the response of consumers to available technical information concerning a household commodity of which we have record is that conducted by the Rike-Kumler Company of Dayton, Ohio. As reported by Ames (6,p.9), bath towels were tested for thread count, breaking strength, and rate of absorption. They were displayed on counters in juxtaposition to large cards upon which the results of tests were given. It was found that women were interested in such data to a great extent. It

was concluded from the questions asked and the effect on sales that customers realized and acted upon the meaning of the information given. Customers' increased confidence in the store was noted and was attributed to their appreciation of having information made available that helped to evaluate the several types of towels on sale.

SCOPE OF PROJECT

Scope of project includes:

1. A study of the factors affecting the purchasing habits of a town.
2. A comparison of the qualities of sheeting sold with those meeting federal specifications.
3. A plan for consumer education that might lead to larger use of sheeting certified to meet specifications.

PRELIMINARY INVESTIGATIONS

Study of Town

In order to approach the problem intelligently and to interpret the results correctly, one must know something of the community in which the study is to be conducted. An exhaustive analysis would comprise a problem too extensive to be included as a part of this study. The purpose is to study only those factors which may influence the purchasing habits of the people of the community.

By means of observation, personal interviews and reading records, data should be collected concerning the population, industries, group solidarity, available avenues for advertising, purchasing power, and other characteristics of the community.

Data as to population may be obtained from the census reports, available at the offices of city and county clerks. Information concerning the various industries of the town is furnished by the chamber of commerce. One can rely upon census reports for statistics as to racial ratios, which influence group solidarity. More intimate information concerning the cooperative spirit of the community must be

drawn from interviews with the secretary of the chamber of commerce, ministers, welfare workers, Y. W. C. A. and Y. M. C. A. secretaries, and others familiar with community life as a whole.

Other characteristics of the town, such as the manner of spending leisure and the educational status, may be observed by the individual, or information concerning them may be secured through interviews with editors of the local paper and superintendent and principals of schools.

Available avenues for advertising may be determined by observing the means already in use or by making inquiry from merchants who advertise to the greatest extent.

Because the demand for any commodity is determined by the desire of consumers for that particular commodity plus their purchasing power, a study of a town or community would be incomplete without an analysis of purchasing power. Since the increase in use of checks, bank deposits have become a very good indication of this factor. Another method of estimating purchasing power is by the study of typical incomes. An estimate of the average income of each group, professional, business, and labor, should be made. Together with the approximate number of families in each group, this should indicate approximate purchasing power. An influencing

factor is the average size of family in each group.

A comparison with other towns in the state will indicate whether or not the town to be studied is typical.

An outline for this proposed study of the town follows:

(OUTLINE FOR STUDY OF TOWN)

Factors To Be Determined

1. Population
2. Industries
3. Group solidarity
    a. Racial ratios
    b. Spirit of cooperation
4. Other characteristics
    a. Ways of spending leisure
    b. Educational status
        (1) Schools
        (2) Standards of community
5. Available avenues for advertising
6. Purchasing power
    a. Bank deposits
    b. Typical incomes

(1) Professional group

(2) Business group

(3) Labor group

c. Average size of family

7. Comparison with other towns in state

Study of Stores

The retail establishments which sell any such commodity as sheeting may be classified according to type as follows: general merchandise, department, unit, and chain stores.

For clearness, the unit and chain-store types should be differentiated. Copeland (14, p.31) defines a unit store as "a retail store without an elaborate departmental organization that is owned and managed as an independent unit for sale of merchandise through personal salesmanship." He characterizes a chain store system (14,p.42) as "a group of scattered stores with single ownership and centralized management."

The stores of the town which is being studied should be grouped according to this classification.

A unit store ordinarily is managed by an individual

proprietor or by partners. A chain store is managed by an individual known as the manager, who is responsible to the owner of the system. This difference in management should be recognized, for it may account for a possible difference in spirit of cooperation. If a chain-store manager does not wish to cooperate, he may say that he must get permission from the general office.

By inquiry from the secretary of the chamber of commerce and from patrons of the stores, information is usually available concerning the spirit of cooperation which probably will be met when approaching each proprietor or manager.

Survey of Sheetings Handled

Lists of manufacturers who have expressed a desire to supply material in accordance with federal specifications for cotton sheets and sheeting can be obtained from the Bureau of Standards, Department of Commerce, Washington. These manufacturers have also expressed a willingness to certify to the purchasers, upon request, that the material thus supplied complies with the requirements and tests of these specifications, and is so guaranteed by them.

The lists do not include brand names of sheetings produced by each manufacturer, but this information can be obtained through inquiry from the individual manufacturers, if not otherwise available.

The stores of the local community which handle sheeting should be ascertained, and lists made of those brands handled which can be certified to meet federal specifications and the brands of sheeting for which certification cannot be obtained.

Tests to determine thread count, weight, and tensile strength should be made upon the uncertified sheetings, and the results of these tests compared with the detail requirements of sheetings which comply with federal specifications.

PREPARATORY STEPS

Securing Cooperation of Merchants

Endeavor to secure the cooperation of those merchants who handle sheeting, the manufacturers of which are willing to certify quality to comply with federal specifications. Approach first the merchant known to be most cooperative. Secure an agreement with one merchant after another, giving no opportunity for them collectively to agree to refuse.

In preparing to interview a merchant, keep in mind what you wish to accomplish: (1) to catch his interest, (2) to explain the plan, (3) to lead him to believe in the purpose of the plan, and (4) to enlist his cooperation.

To accomplish the last point, it may be necessary to present clearly the advantages to the store of cooperating in the project:

(1) The store will be advertised in the publicity concerning sheeting specification.

(2) Larger sales of sheeting may be anticipated, for consumers' attention will be directed to this commodity through the educational campaign.

The disadvantage of refusing cooperation lies in the probability that the store which does not cooperate will lose trade in this commodity to those stores which do cooperate.

It is manifestly unwise to prescribe a definite form of words to be used in all cases when the merchant is approached at the first interview. What would be proper to say to one man under given circumstances might be unsuitable to say to another under different circumstances. Much must be left to the discretion of the interviewer. At the same time there are certain leading statements to be

made, and certain ways of making them which are well adapted to the end in view. It is not necessary that this introductory talk should be long. Often a short talk is more convincing.

The student should adapt her approach to the man, but at the same time she should have a fixed idea of what she has to say. She should be dignified and earnest. As soon as the proprietor or manager is reached, and one has said to him, "Good morning! Is this Mr. _____?" Then say directly and plainly, "I represent the Department of Clothing and Textiles of the Kansas State College. I want to interest you in a project which would be to our mutual advantage." The remainder of the talk might proceed somewhat as follows:

"You handle _____sheeting. Perhaps you know that the manufacturer of _____sheeting is willing to guarantee to purchasers, upon request, that the materials supplied comply with federal specifications. These specifications require a certain minimum thread count, weight, and breaking strength.

"We believe that your customers would like to know whether or not the sheeting which they buy is so certified.

"This is the plan which we propose: That you request those manufacturers from whom you buy sheeting who have expressed their desire to supply materiel in accordance with federal specifications to certify that the sheeting sold to you complies with such specifications and is so guaranteed by them. The certification plan is explained in this literature published by the United States Bureau of Standards.

"Consumer education would proceed at once, through which an attempt would be made to give all prospective purchasers of sheets and sheeting an understanding of specifications and an appreciation of their value to the purchaser.

"After our efforts in consumer education a period of sales checking would follow, during which time a record would be kept of the amounts of certified and uncertified sheetings sold. This ratio should be compared with similar figures for last year during the same period, if such records are available. This comparison would indicate the effect of consumer education in the purchase of sheeting.

"Would you cooperate in carrying out such a plan? Your part would consist in securing certification from sheeting manufacturers, advertising your certified sheeting as such, furnishing records of last year's sales, and

making accessible to us the sales slips for sheeting during the test period.

"Our part would be educating the consumer, determining whether or not the sheeting delivered to you actually complies with federal specifications, informing your clerks as to a method of marking sales slips which would indicate the purchaser's reaction to the opportunity to buy certified sheeting.

"The publicity which you would receive should increase your sales. The intelligent consumer will appreciate the fact that cooperating stores are wide-awake and are eager to serve the consumer. In addition, the attention of every woman in the community will be directed toward sheeting, and sales should advance considerably.

"Do you favor such a plan? Would you like to enlist with the progressive retailers of Manhattan?"

Testing Sheetings

Upon the merchants' receipt of certified sheeting, it should be determined whether or not the sheetings delivered do actually comply with federal specifications. Testing should be done according to methods of test specified in

Federal Specification CCC-T-191, identical with General Specifications for Textile Materials U.S.G.M.S. No.345..

If the equipment required for the tests is not available, it will be necessary to have the testing done by outside agencies. A list of sources of testing service is issued as Bureau of Standards Miscellaneous Publication No. 90, under the title, Directory of Commercial Testing and College Research Laboratories. The United States Testing Company, Inc., 316 Hudson Street, New York, New York, is an outstanding commercial testing house. The textiles laboratory of the Massachusetts Institute of Technology is a representative college research laboratory. The charges for the necessary tests are as follows:

United States Testing Co., Inc. (15)

Weight of fabric per yard	$1.50
Threads per inch, average of five tests, in each warp and filling	2.00
Tensile strength, average of five tests, in each warp and filling, grab method	2.00

Massachusetts Institute of Technology

Ten fabric specimens, cut, raveled, micrometered, tensile strength only	$3.00-5.00
Thread count -- ten warp, ten filling	2.00
Weight and yardage measurements, three per fabric, total	6.00

If the tests done in the textile laboratory of the college do not confirm the claims of certification, it would be advisable to have the tests checked by some other agency, for example, the United States Testing Company, before refusing confirmation.

Educating Clerks

Sometime after the merchants' acceptance of the plan and before the selling period, a meeting of all clerks who may sell sheeting in the cooperating stores should be arranged, if a joint meeting would be advisable. If not, the clerks of each store should meet seperately, the groups meeting on successive evenings of a given week, if possible. Managers should be invited to attend the meetings.

If the college textile laboratory is equipped with apparatus used in the determination of weight, tensile strength, and thread count, it would be advantageous to hold the meeting there. A demonstration of the procedure of testing would impress more clearly upon the minds of the sales clerks the value and significance of the tests.

If the college textile laboratory is not equipped with the required apparatus, and if there is no such apparatus

available for demonstration purposes, the meeting may be given at the store, whenevar most convenient to the manager. If there are regular classes for clarks, perhaps the manager will wish to devote ona of these class periods to this purpose.

Charts should be prepared for illustrative purposes. For exampla, a placard might illustrate the difference between sheetings which comply with federal specifications and thosa which do not, by showing an example of each, with construction details stated.

Discussion with the Clerks.-- "What influences your customers in the selection of tha sheeting which thay buy? Do they know that the brands which they select will fill their needs batter than will other brands, or is their selection largely a mattar of guess work and chance?

"Miss Rosamond Cook, of the Univarsity of Cincinnati, tested the judgment of consumers and salespeopla in the selection of sheeting in this way. Nine brands of sheeting were tested for the three factors which taxtile experts believa to be the datarmining characteristics of quality -- tansila strength, weight, and thread count -- and by combining thasa, a quality rating was datermined for each sheeting. Consumers and salespeopla were then asked to

judge the quality of these sheetings and to rate them in the order of quality, employing their usual methods of judging. The results showed that the judgment of neither salesperson nor consumer could be relied upon to select the best quality of sheeting.

"Because price is not an infallible guide to quality, we cannot presume that the sheeting of highest price is of best quality. Because the quality of a given brand does not always remain constant, purchasing by brand is not absolutely satisfactory.

"These facts show us that the housewife needs more information than is now available to her, if she is to choose intelligently from the large array of sheets and sheetings which she finds on the retail counter.

"The practice of buying fabrics in terms of tests is developing. Many large institutions, like hospitals and hotels, buy towels, sheets, and other materials on this basis. The United States Government has long purchased materials in this way.

"The work of the Bureau of Standards at Washington includes the setting up of specifications for the purchasing of government supplies. By specifications is meant a description of quality. Tests and investigations are

carried on by the staff of scientists and technicians to determine specifications for the quality of goods best suited to specific and definite requirements. All goods purchased by the government must comply with these specifications, and each purchase is tested to see that it so complies. The government always knows the quality of the goods it buys.

"Specifications have been set up for sheeting, requiring a certain thread count, weight, and tensile strength. For bleached cotton sheeting the minimum number of threads per inch shall be 74 in the warp and 66 in the filling. The required weight is 4.6 ounces per square yard and the minimum breaking strength shall be 70 pounds in the warp and 70 pounds in the filling (16).

"It is believed by home economists that sheets and sheeting should be labeled with such specific information as to quality. Manufacturers have been asked to label their products with such statements, but they question that consumers really want these facts. It is the purpose of this experiment to find out whether or not consumers will consider specific information as to quality of sheeting when it is available.

"In brief, this is the plan. Your store handles certain brands of sheeting which the manufacturers are willing

to certify to comply with government specifications. Your next shipment of these brands will be so certified, and can be labeled and advertised accordingly.

"Consumers are being informed as to the meaning of specifications and their value to the purchaser, and as to what government specifications are. Beginning with January 1, we want to test the effect of this education. Will more consumers buy certified sheeting after having been informed as to its value?

"Now, how are we going to collect these data? This is the part of the experiment which depends entirely upon you. Do you think this plan would work?

"1. Mark sales slip with a "C" (Certified) when the customer asks for or about certified sheets or sheeting.

"2. Mark sales slip with "CC" (Clerk-Certified) when the customer does not ask for certified sheeting but asks for information about "your best sheet," or "best sheet for the money" or some similar questions, and you discuss the meaning of tests in explaining qualities.

"3. Mark sales slip with a "B" (Brand) when purchaser asks for a particular brand of sheeting with no comment or question about certified sheeting.

"4. Mark sales slip with an "M" (Money) when the purchaser asks for a sheeting at a particular price with no

comment on or questions about certified sheets and sheeting.

"These cards describing the method of marking sales slips may be placed in your sales books for memorandum. (Distribute cards printed with the foregoing information concerning symbols.)

"Now perhaps you would like to see the method of testing sheeting to determine whether or not it complies with government specifications.

"Thread count, which means the number of warp and the number of filling yarns to each inch, is determined by using this thread counting micrometer. As you see, the threads of the fabric are magnified by the lens, and the pointer facilitates the counting. If the number of warp and filling yarns is small, the cloth is said to have a low count. The lower the count, the more loosely the cloth is woven. As the firmness of sheeting depends to a great extent on the closeness of its weave, the count is an important factor in considering values. Closely woven fabrics do not stretch out of shape as quickly as do those of low count.

"Weight in ounces per square yard tells how many ounces one square yard of the fabric weighs. Considering the sheetings on the market, the government requirement of 4.6 ounces per square yard specifies a heavy-weight

sheeting. Weight accompanied by high thread count is a quality characteristic of durable sheetings. The weighing is done on a very accurate balance.

"Tensile strength is the measure of the breaking strength of the yarns. The test is made on a machine called a dynamometer. A description of its working will help to understand its value.

"The material is cut to standard size. A piece is then clamped between the jaws of the machine. The motor is started and the jaw pulls apart until the threads between the clamps are broken. Attached to the jaws is a mechanism which works a pointer on a dial. As the strain is increased, the pointer records on the dial the amount of the strain in pounds. When the material breaks or tears, the mechanism stops, and the record is complete for the piece being tested. Five lengthwise pieces are tested and the results averaged. The crosswise pieces are tested in the same manner. When we compare the tensile strength records of different sheetings, we get a very good idea of their relative wearing values.

(At this point, the discussion of some factors affecting tensile strength, which is given in the third article for newspaper publication, may be included in addressing those groups that would be interested. This must be left to

the discretion of the speaker.)

"Are there any questions concerning the meaning of government specifications or the method of marking sales slips? Your part in working out this plan is perhaps the most important of all, and we are grateful for your cooperation."

PLAN FOR CONSUMER EDUCATION

The education of the consumer is probably the most important unit of the project, for if this fails to be accomplished, the entire project will fall short of its aim.

The word "consumer" as here used means all consumers of sheets and sheeting in the local community. With this idea in mind, the plan for consumer education has been made to employ the channels thought to be most effective in reaching the consumer, including newspaper publicity, library displays, radio talks, talks to homemakers, and publicity in the schools. Not all of these means may be available in every community. On the other hand, other ways of reaching the consumer may be possible. At the best, this plan for consumer education can be only suggestive.

Newspaper Publicity

Because the local newspaper goes into almost every home, it is one of the best means of reaching a large number of people. The project should be "sold" to the editor so that he will be willing to devote a prominent place in the paper to the series of articles which follow. It would be advisable to have the article appear in the same place in the paper throughout the series.

Getting Your Money's Worth. Chase and Schlink, in their entertaining and enlightening book, Your Money's Worth, (17) quote an automobile advertiser as follows:

"'One who goes into the market to buy a motor car today is naturally confused. He has read the words best and greatest so often that they have ceased to be convincing. Where all is best, he reflects, there can be no best. Thousand dollar cars have been described to him in ten thousand dollar language. And vice versa. He finds himself a target in a war of adjectives; the helpless victim in a gigantic competition of words. And so he is forced to rely on chance -- the advice of friends -- or his own limited experience.'

"Thus an automobile advertiser frankly states the case of what confronts the consumer -- not only in automobiles, but in household appliances, textiles, shoes, soap, tooth powder, building materials, foodstuffs -- to a greater or less degree in nearly everything he buys. It confronts Park Avenue no less than the Bowery; the farmer no less than the city dweller. It affects every man, woman, and child in the country. We are all Alices in a Wonderland of conflicting claims, bright promises, fancy packages, soaring words, and almost impenetrable ignorance."

It is the purpose of the articles which follow this to indicate a path which may lead out of this Wonderland in the purchase of sheeting. Watch this space in tomorrow's paper for suggestions on How to Buy Sheets.

How to Buy Sheets. "How can I tell which sheets are best?" is a question of importance to every housewife. Because it is not an easy problem to solve, there has been much disagreement as to the answer. First, we must decide what we mean by "best."

Some women would call imported French sheets "best." Most housewives, however, want practical qualities. Miss Rosamond Cook (18), of the University of Cincinnati, reports that when more than a hundred women were asked what quality

they considered first when buying sheeting, almost without exception they replied, "Durability."

If you agree that durability, rather than super-luxury or sheer cheapness, is the quality you are looking for most in sheets, we can help you to determine how to select the best.

Durability is determined by three factors: tensile strength, thread count, and weight. If sheetings were marked at the factory with this information, it would be an easy matter for the purchaser to select for her taste and pocketbook. We hope that that time is coming; meantime, there is another plan for helping the consumer in her selection of sheeting.

After January 1, you will be able to buy sheeting which has been certified by the manufacturers to comply with federal specifications for sheetings. Several merchants in Manhattan are cooperating in this plan to give the consumer an opportunity to buy sheetings which meet certain minimum requirements for tensile strength, thread count, and weight.

Of course, you will want to know the meaning of these terms, if they are not already familiar to you. You will want to know also, what federal specifications for sheetings imply.

This information will be given in following articles. Watch this space tomorrow for What Determines the Durability of Sheeting?

What Determines Durability of Sheeting? When you look at a sheeting to judge its durability, what are your guides? Do you look for closeness of weave, weight, and evenly spun yarns? These are some of the qualities which can be discovered to some extent by the purchaser when selecting sheetings.

Closeness of weave or firmness is a result of the thread count of the sheeting. Thread count means the number of warp (lengthwise) threads in an inch and the number of filling (crosswise) threads in an inch. If the number of warp and filling yarns is small, the cloth is said to have a low count. The lower the count of the sheeting the more loosely it is woven. As the firmness of the fabric depends to a great extent on the closeness of its weave, the count is an important factor in considering values. Closely woven sheetings do not stretch out of shape as quickly as do those of low count.

Weight is expressed in ounces per square yard. Sheetings vary widely in this respect. A heavy-weight sheeting makes for durability.

The tensile or breaking strength of the threads has much to do with the wearing quality of sheeting, but this cannot be determined by the individual purchaser. The test is made on a machine called a dynamometer. A description of its working will help to understand its value.

The material is cut to standard size. A piece is then clamped between the jaws of the machine. The motor is started and the jaws pull apart until the threads between clamps are broken. Attached to the jaws is a mechanism which works a pointer on a diel. As the strain is increased, the pointer records on the dial the amount of the strain in pounds. When the material breaks or tears, the mechanism stops, and the record is complete for the piece being tested. Five lengthwise pieces are tested and the results averaged. The crosswise pieces are tested in the same manner. When we compare the tensile strength records of different sheetings, we get a very good idea of their relative wearing values.

Tensile strength is affected by several factors, one of which is the kind of fiber used in making the cloth. The length of fiber may affect the strength of the yarn. As a rule the longer the fiber the stronger the yarn which is made from many of those fibers twisted together. Illustrative of the importance of long fibers to durability of

cloth is the fact that in the manufacture of duck for automobile tires long cotton fibers are used, because the strongest fabric which can be made is needed to make a durable tire. The length of cotton fibers varies from one-half to two and one-half inches, the average length being three-quarters of an inch (19). The longer cotton fibers are used in the better grade of sheeting.

Tensile strength is affected also by the yarn used to make the cloth. As you know, yarn is made by twisting together many fibers. These fibers may be twisted only a few times or many times. When yarns have many twists to the inch, they are said to be tightly twisted, or hard-twisted. If they have few twists to the inch, they are spoken of as soft, loose, or slack-twisted. Comparing the two, we find that for the same weight of yarn, the harder twisted is usually much stronger (19). An example of a soft-twisted yarn is found in outing flannel. Examine a yarn drawn from this material and compare it with a yarn of equal weight taken from a cotton crepe. Hold them between your thumbs and pull. You will see that the hard-twisted yarn is stronger. The yarns used in sheetings vary in the twists to the inch and, therefore, vary in strength.

The length of fiber and the number of twists to the inch cannot be judged by even the most careful counter

inspection. Laboratory facilities are required for determining these qualities. Moreover, as consumers, we are not primarily concerned that the cotton fiber be of a specific length, nor that the yarn twist reaches a certain number. We are concerned only as these qualities affect tensile strength, which tells the story of durability.

In the following article we shall discuss the minimum requirements as to thread count, weight, and tensile strength for sheets and sheeting which are specified by the United States Government.

How the Government Buys Sheets. When the United States Government purchases sheets and sheetings, it follows a procedure much different from that used by the housewife when her bed linen needs to be replenished. Instead of using the trial and error method in selecting sheeting for purchase, the Government buys to specification. Its method is roughly as follows: When a given product, such as sheeting, is under consideration, the Bureau of Standards engineers first secure samples of all significant varieties in the field and subject them to rigid tests, in order to determine comparative quality. Next they theorize, asking what is the perfect product, and what are the reasonable limitations that prevent attaining perfection in commercial

manufacture. Then the engineers write a specification which represents the best type for the purpose in hand as governed by the practicable limits of manufacturing and reasonable cost. The specification is then presented to manufacturers for their bids. The sheetings which are supplied to meet these requirements are tested to see that they do comply with specifications. Thus we see that the United States Government knows what it wants and gets what it demands. The detail requirements for bleached sheets (20) and sheetings (16) are as follows:

Thread count.-- The minimum number of threads per inch shall be 74 in the warp and 66 in the filling.

Weight.-- The minimum weight shall be 4.6 ounces per square yard.

Breaking strength.-- The minimum breaking strength shall be 70 pounds in the warp and 70 pounds in the filling.

Detail requirements for unbleached sheeting (21) differ only in thread count and weight, the tensile strength requirement being the same as for that in the bleached sheeting.

Thread count.-- The minimum number of threads per inch shall be 68 in the warp and 72 in the filling.

Weight.-- The minimum weight per square yard shall be 4.7 ounces.

The Better Fabric Testing Bureau, Inc., in setting up specifications for a hotel bed sheet which will withstand approximately 200 or more launderings in a properly controlled laundry, states thread count, weight, and tensile strength requirements very similar to federal specifications for bleached sheets and sheeting. Therefore, we can safely assume that a sheet which complies with federal specifications will last four years, if washed twice a month in a properly controlled laundry.

What Length Sheet Should I Buy? So far in our discussion of sheets we have not mentioned size; we have discussed only quality. Because the size is always printed on the label of sheets, no one should be misled. The information is there for our taking.

Every housewife seems to be familiar with the range of widths of sheets, buying the correct widths for the particular type of bed upon which the sheet is to be used. It is the length which gives the trouble. Confusingly enough, the length printed on the label is the length of the sheeting used to make the sheet, that is, the length of the sheet before hemming. Useful length must be determined by making deductions for hems and shrinkage.

Hems may vary. Sheets may have a wider hem at one end than at the other, or they may have hems of equal width. Some prefer hems of different widths in order to distinguish between the top and bottom of the sheet. Because this is considered an arbitrary designation, there are many who favor hems of equal width so that either end of the sheet may be used as the top, thus insuring more even wear.

The Cotton-Textile Institute (22) reports that their textile engineer measured 208 sheets that were 108 inches in torn length. These represented 23 mill brands. The average length after hemming was found to be 103 inches. Therefore, we should deduct five inches from the torn length which is printed on the label to allow for hems.

Under present methods of manufacturing and laundering, new sheets when laundered show a decrease in length, known as shrinkage. In the textile research laboratory at Kansas State College, tests were made to determine the shrinkage of five well-known brands of sheeting sold in Manhattan stores. The shrinkage of the five sheetings after one washing averaged about one and one-half inches to the yard. This would amount to four and one-half to five inches in a sheet 108 inches in length.

The combined deductions for hemming and shrinkage would reduce 108-inch sheets to a useful length of 98 inches.

The length of sheets should be determined in relation to the dimensions of the mattress. The average length of the mattress is 75 to 76 inches, and the average thickness is five inches. In order to give the greatest service in comfort and protection, sheets should be long enough to have six inches for tucking in at each end. Allowing for length and thickness of mattress and the necessary tuck-under, we find that 98 inches is the minimum length for the hemmed and shrunken sheet. This qualifies the sheet of 108-inch torn length as the only choice for those who desire comfort and protection.

The United States Navy Department has adopted the 108-inch sheet as standard and the United States Shipping Board advises that the 90-inch sheet is no longer used in first and second class service. A great number of hotels and hospitals and a growing number of housewives concur absolutely with the Navy and the Shipping Board regarding the most satisfactory length in bed sheets.

If you cannot secure the 108-inch length in a ready-made sheet at the store where you are purchasing, it would be very much wiser to buy the sheeting and make your sheets.

Library Displays

A display of reading material upon a subject of general interest is often seen in libraries. It would be advisable to arrange with the librarians of city and school libraries for a display of books and magazines dealing with purchasing according to test. The list of refarences given at the end of this study may be used as a guide in collecting the reading matter.

Radio Talks

The managar of radio programs should be interviewed to ascertain the possibility of securing a place on the program. If there is a housewives' hour, it would be advisable to give the talk at that time. Many housewives regularly listen to such programs. This hour may be under the supervision of some group, such as Home Economics Extension. If so, arrangements for giving the talk should be made with the one in charge of the programs for this hour.

Some Suggestions for the Purchase of Sheeting. Have you ever asked yourself what you want most when you buy sheets or sheeting? Is it strength and durability, or is it washability, whiteness, smoothness, softness, or lustrous appearance? Do you want a heavy-weight or a light-weight sheeting? The various qualities desired differ among housewives, but all have one desire in common -- to get the best quality which the money they have to spend will buy. Many women want to make their bed-linen dollars go as far as possible, and therefore attempt to choose that sheeting which will wear the longest for the money expended.

If you attempt to do this, are you sure of your judgment? Can you rely upon advertisements for aid in making a wise selection? If you ask the salesperson for help, can she give you accurate information?

Miss Rosamond Cook (4), of the University of Cincinnati, tested consumers' and salespersons' judgment in the selection of sheeting. Nine brands of sheeting were first tested for the three factors which textile experts believe to be the determining characteristics of quality: tensile strength, weight, and thread count. By combining these statistically a quality rating was determined for each sheeting.

Consumers and salespeople were asked to judge the quality of samples of these sheetings and to rate them in the order of quality, employing the usual store method of judging.

The consumers' judgment of sheeting qualities was poor and the salespersons' no better. The obvious conclusion drawn from this study is that present buying practice is not reliable.

Perhaps you have been thinking that the question of judging quality is a difficult one and that we need some method of measuring the various qualities.

There are three tests which give a very good indication of the qualities which make for durability. These tests are those for tensile strength, thread count, and weight.

Perhaps you are familiar with the meaning of these terms. If not, they are not difficult to understand.

Tensile strength is the measure of the breaking strength of the yarns. The test is made on a machine called a dynamometer. A description will help to understand its value.

The material is cut to standard size. A piece is then clamped between the jaws of the machine. The motor is

started and the jaws pull apart until the threads between clamps are broken. Attached to the jaws is a mechanism which works a clock, and as the strain is increased the dial records the amount of the strain in pounds. When the material breaks or tears the mechanism stops, and the record is complete for the piece being tested. Five lengthwise pieces are tested and the results averaged. The crosswise pieces are tested in the same manner.

When we compare the tensile strength records of different sheetings, we get a very good idea of their relative wearing values.

(If a longer talk than the one here given is desired, the discussion of some factors affecting tensile strength, which is included in the third article for newspaper publication, should be inserted at this point.)

The number of threads to the inch both lengthwise and crosswise is important. Closely packed threads mean greater firmness and strength. And so we find that thread count is important to help us analyze and supplement the story told by tensile strength.

The full story of the relative value of sheetings is not complete until the weight is known. Weight tells the amount of cotton used in construction plus the amount of

sizing or starch and indicates durability.

With this information, statements of actual facts concerning the quality of sheetings, could you not make a more intelligent selection than is possible under present conditions?

It is believed by home economists who have given careful consideration to the situation that sheets and sheetings should be labeled with reliable and specific information concerning their qualities. Manufacturers have been asked to do so, but have not yet accepted the plan. As far as we know, there are no sheeting manufacturers who label their products with quality specifications. However, there are some manufacturers who are willing to certify to retail merchants, upon request, that the material sold to them complies with federal specifications. After January 1, you will be able to purchase, at some of the local stores, sheeting which has been so certified.

Of course, you will want to know what federal specifications for sheetings imply. They specify a minimum thread count, weight, and breaking strength. For bleached sheets (20) and sheeting (16) the minimum number of threads per inch is 74 in the warp and 66 in the filling. The minimum weight is 4.6 ounces per square yard. The minimum breaking

strength is 70 pounds in the warp and 70 pounds in the filling. A sheeting that complies with these specifications is of excellent quality and will serve the average household many years.

At your first opportunity, look over your supply of sheets. If it will need to be replenished within the near future, plan to purchase your sheeting after January 1, when you will have the opportunity of buying certified sheeting. When you go into the store, ask for certified sheeting, compare it with sheeting which is not so certified, and note the differences in quality. You will be convinced of the superiority of sheeting which is certified to meet federal specifications.

Talks to Homemakers

A list should be made of all organized groups of homemakers which would offer opportunity for consumer education. Women's study and social clubs, chapters of the American Association of University Women and P.E.O., the Parent-Teachers' Association, women of the Farm Bureau and various church organizations should be included. It would be well to approach at an early date the presidents of the listed

organizations to secure a place on the program. Arrangements should be made for the type of program which each considers will be most effective.

A suggested talk for club programs follows. It may not be suitable to all communities; it may not be suitable to all groups. The essential facts are given, and should be used in any form which will "sell" to the group the idea of purchasing by test. It would be advantageous to know something of the group before you address them, so that the method of presentation can be better adapted to the audience.

A copy of each talk should be preserved with a record of the number of times it was given and the approximate number of people who heard it.

The exhibit which was prepared to accompany the talk to sales clerks can be used as illustrative material.

Standardization and Labeling of Textiles. "Intelligent purchasing is one of the most serious problems the homemaker faces today. Few of us are able to buy as wisely as our great grandmothers did. They were better judges of quality than we are because they were accustomed to make in their own homes most of the things displayed in the stores. Their task was also easier because there were only a limited number of kinds and qualities of articles from which to choose. The

The modern homemaker is faced with hundreds of different commodities in the retail market, many of them so constructed that it is impossible for her to judge their value from the casual inspection she can make before purchase. She is often unduly influenced by organized advertising and high-pressure salesmanship. The forces of a competing commercial world are urging her to buy, but few of them are giving her information which will help her buy wisely."

Thus the American Home Economics Association (23) frankly states the case of what confronts the consumer. The Association continues to say: "Many women are realizing that the well-being of their families depends largely on the way the buying is done and are asking what they can do to improve the present situation. The American Home Economics Association and the United States Bureau of Home Economics have come to believe that the best solution in the long run is for manufacturers and retailers to provide a set of specifications for at least the more staple articles. By 'specifications' is meant a statement of actual facts concerning quality and performance. For example, for the consumer's use, specifications on a refrigerator would tell its food storage capacity, its shelf area, the temperatures inside the box under standard conditions, and the amount of ice,

electricity, or gas required to maintain those temperatures."

The many new fibers and finishes now used for textile fabrics make it almost impossible for the consumer to know the quality of the fabrics she is purchasing. The use of specifications in this field would be especially valuable.

A careful study of the sheets and sheeting on the market reveals the fact that the housewife needs more information concerning these fabrics than is now available, if she is to choose intelligently from the large array which she finds on the retail counter.

Miss Rosamond Cook (18), of the University of Cincinnati, reports that when more than a hundred women were recently asked what quality they considered first when buying sheetings, almost without exception they replied,"Durability."

If you want durability in sheets, how can you be sure of getting it? Many brands are advertised to give long wear. Can you safely let advertising copy be your guide?

Mrs. Helen Woodward was,before she retired in 1925, perhaps the most successful advertising woman in America. In her autobiography Through Many Windows (24) she gives the viewpoint of the advertiser.

"If you are advertising any product, never see the factory in which it is made. Don't know too much about it.

Don't watch the people at work. Just know all you can about the finished article and the man who is going to buy it, and the conditions of selling in the business. Because, you see, when you know the truth about anything, the real inner truth -- it is very hard to write the surface fluff which sells it."

I wonder if it isn't the truth, the real inner truth, about sheetings which we want. That is what the federal government wants when it buys sheetings, and that is what it gets. The United States Government buys more to specification than any other body in the country. Its method is roughly as follows: Specifications are set up by the Federal Specifications Board. Each specification represents the best type for the purpose in hand as governed by the practicable limits of manufacturing and reasonable cost. All government purchases are then made according to these specifications. Federal specifications for bleached sheets (24) and sheetings (16) are as follows: thread count, which is the number of threads per inch, shall be not less than 74 in the warp and 66 in the filling; weight shall be not less than 4.6 ounces per square yard; breaking strength shall be at least 70 pounds in the warp and 70 pounds in the filling.

Perhaps you are familiar with the meaning of these terms. If not, they are not difficult to understand.

Thread count, which means the number of warp and the number of filling yarns to each inch, is determined by counting in five different places the number of warp yarns in one inch, and in five different places, the number of filling yarns in one inch. The five counts of warp threads are averaged to determine the thread count for the warp, and the five counts of filling threads are averaged to determine the thread count for the filling. If the number of warp and filling yarns is small, the cloth is said to have a low count. The lower the count, the more loosely woven is the cloth. As the firmness of the fabric depends to a great extent on the closeness of its weave, the count is an important factor in considering values. Closely woven sheetings do not stretch out of shape as quickly as do those of low count.

Perhaps you noticed that weight is specified in ounces per square yard. Considering the sheetings on the market, the government requirement of 4.6 ounces per square yard specifies a heavy-weight sheeting. Federal specifications require a heavy-weight sheeting because of its longer wear.

Tensile strength is the measure of the breaking strength of the yarns. The test is made on a machine

called a dynamometer. A description will help to understand its value.

The material is cut to standard size. A piece is then clamped between the jaws of the machine. The motor is started and the jaws pull apart until the threads between clamps are broken. Attached to the jaws is a mechanism which works a pointer on a dial. As the strain is increased the pointer records on the dial the amount of the strain in pounds. When the material breaks or tears the mechanism stops, and the record is complete for the piece being tested. Five lengthwise pieces are tested and the results averaged. The crosswise pieces are tested in the same manner.

When we compare the tensile strength records of different sheetings, we get a very good idea of their relative wearing value.

(At this point, the discussion of some factors affecting tensile strength, which is given in the third article for newspaper publication, may be included for those audiences that would be interested. This must be left to the discretion of the speaker.)

With specific information as to thread count, weight, and tensile strength, could you not make a more intelligent selection than is possible under present conditions? It is

believed by home economists who have given careful consideration to this matter that sheets and sheeting should be labeled with just such definite information concerning qualities. Manufacturers have been asked to do so, but have not yet accepted the plan. As far as we know, there are no sheeting manufacturers who label their products with quality specifications. However, there are some manufacturers who are willing to certify to retail merchants, upon request, that the material sold to them complies with federal specifications. After January 1, you will be able to purchase, at some of the local stores, sheeting which has been so certified. Watch for advertisements of certified sheets and sheetings.

As soon as you go home, look over your supply of sheets. If it will need to be replenished within the near future, plan to purchase your sheeting after January 1, when you will have the opportunity of buying certified sheeting. When you go into the store, ask for certified sheeting, compare it with sheeting which is not so certified, and draw your own conclusions. However, the advantage of this plan is that you don't have to rely upon your own judgment. You have the protection of buying by test. Try it and find out how well you like it.

Publicity in Schools

The schools, junior and senior high school and college, offer an opportunity for indirect education of homemakers. The daughter, if sufficiently interested in purchasing by test, will carry this information home to her mother, and may exert influence toward choice of certified sheetings.

The home economics classes furnish a psychological approach for the subject. Arrangements should be made with the teachers of these classes to have the material presented when it would best fit into the course. Problems should be presented which would develop an understanding of the need for protection by test and which would give the students an appreciation of the value of purchasing by test. Interest should be developed in the purchase of sheetings guaranteed as to quality.

The planning of the organization and presentation of the subject-matter can best be done by the teacher. It will be necessary for the one who conducts the experiment only to secure her whole-hearted cooperation and to supply her with sufficient material concerning the plan.

A program of the home economics club should be devoted to the subject of purchasing according to test.

Another means of consumer education through the schools appears in the school paper. Doubtless, a reporter for the paper would be pleased to have the opportunity for an interview, which should be carefully planned.

MEASUREMENT OF EFFECT OF CONSUMER EDUCATION

Selling Period

There should be sufficient time before the selling period for making the necessary arrangements and for consumer education. The dates for the period should be so set as to include the "white goods" sales, usually held during January, thus including the period of greatest buying. It would be advisable to begin the period of selling on January 2 and extend it through March. In all, a period of three months should be included. Sufficient time would follow for interpreting the data and drawing conclusions.

Tabulation of Data

Data should be collected from sales slips and tabulated to show by weeks for each store the following:

Total number of purchasers of sheeting.
Number of purchasers of certified sheetings.
Number of purchasers of uncertified sheetings.
Number of purchasers in each "C", "CC", "B", and "M" group.
Total number of yards of sheeting sold.
Number of yards of certified sheeting sold.
Number of yards of uncertified sheeting sold.

Total value of sales of sheeting.
Value of sales of certified sheetings.
Value of sales of uncertified sheetings.

Interpretation of Data

If comparable data for the same period of the preceding year are available, definite conclusions can be drawn concerning the effect of consumer education in the purchase of sheeting. For example, if the percentage of purchasers of certified sheetings has increased over that of the preceding year, it can be assumed to be the effect of consumer education.

It is probable that comparable data for the same period of the preceding year will not be available. However, merchants will be able to furnish information concerning the

amount of sheeting of the various brands handled which was sold during the preceding year. Dividing these amounts by four will give the average quarterly sale of each brand of sheeting. By grouping these brands as certified and uncertified sheetings, a basis for comparison will be obtained.

CONCLUSIONS

This plan for measuring the effect of consumer education in the purchase of sheeting has been worked out as a general guide, allowance being made for the individual initiative of the one who will conduct the experiment. No plan could be made in detail to suit the various circumstances of different communities. If adapted to the circumstances which the experimenter finds, it should prove effective in measuring the effect of consumer education in the purchase of a given household fabric, as sheeting.

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