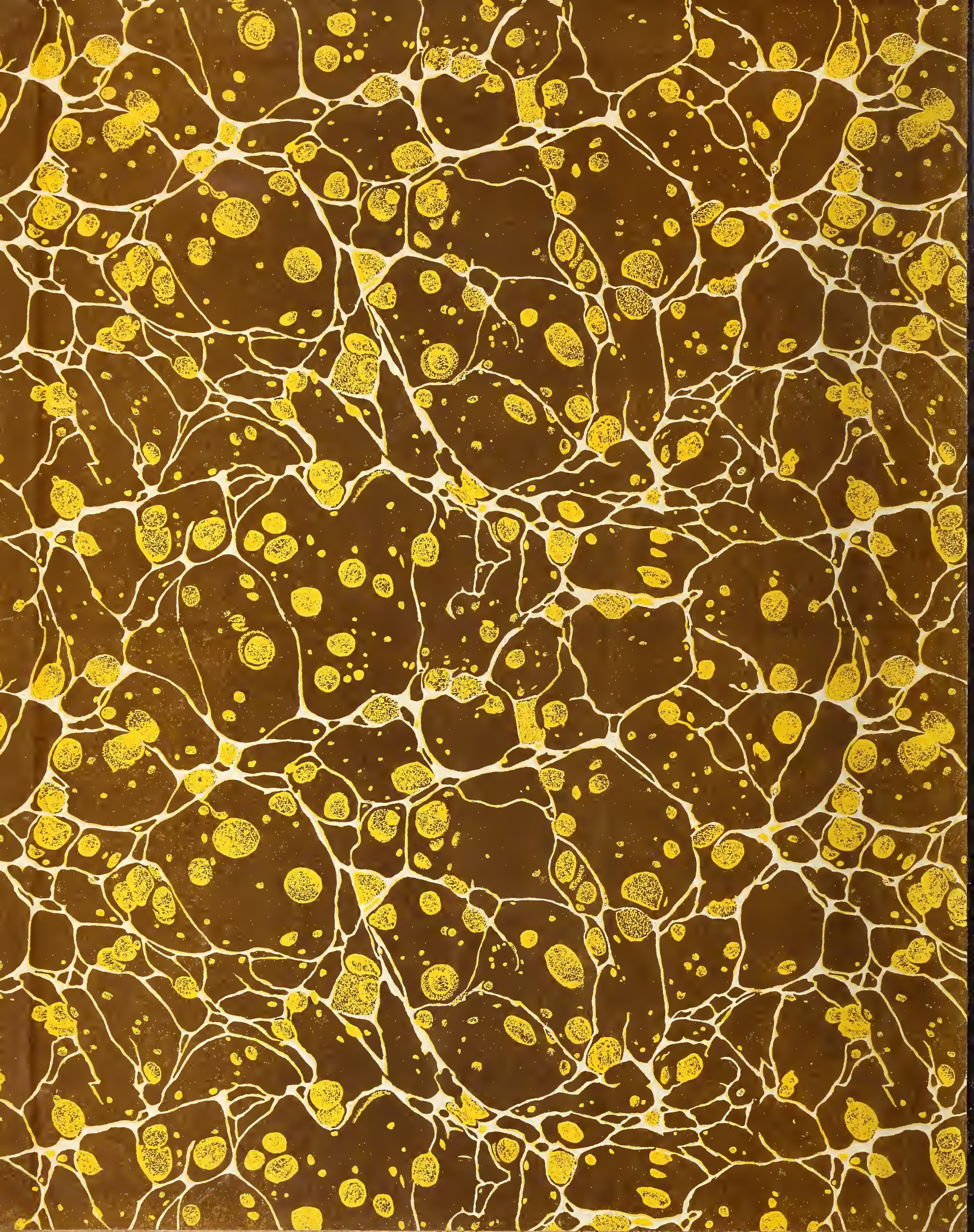
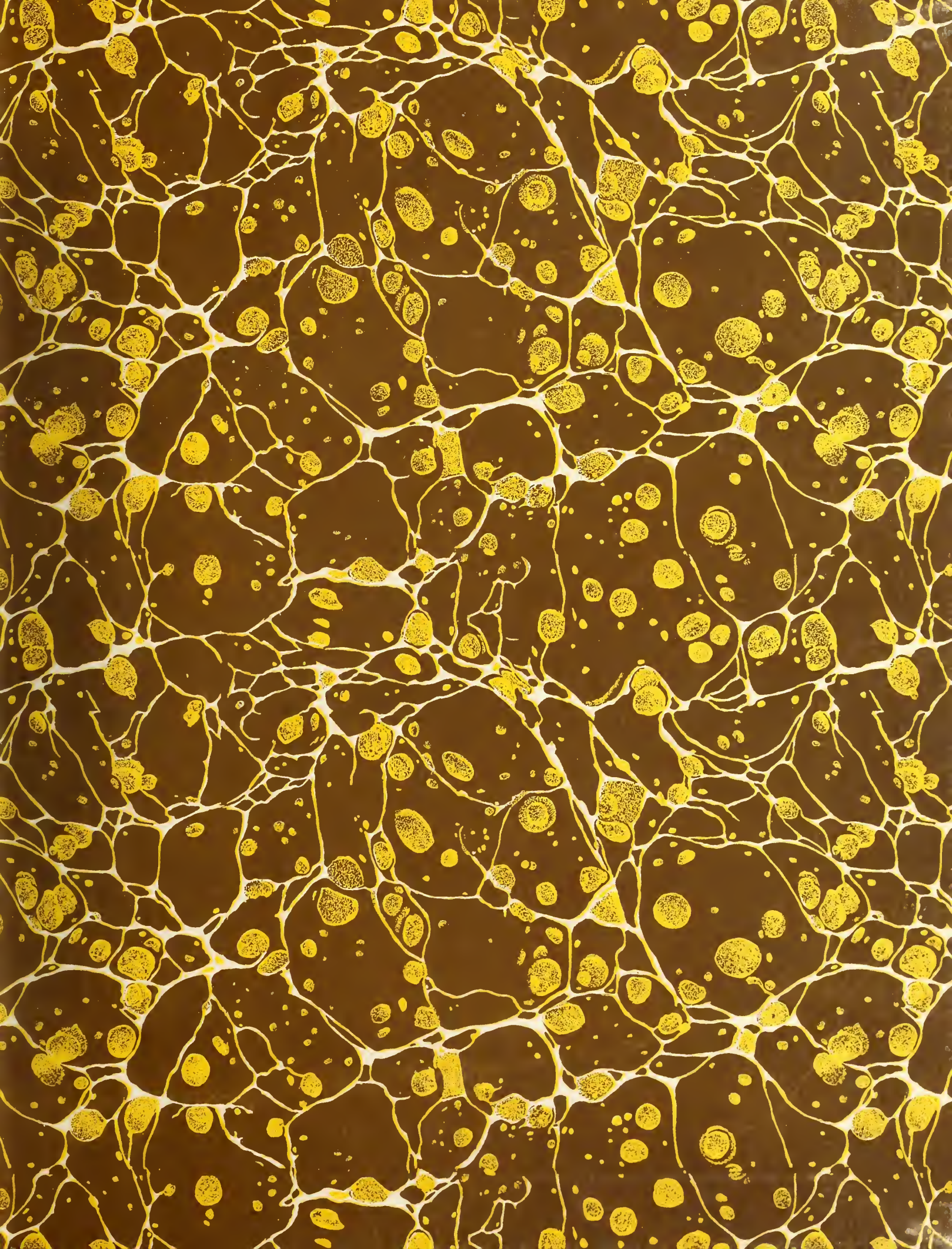
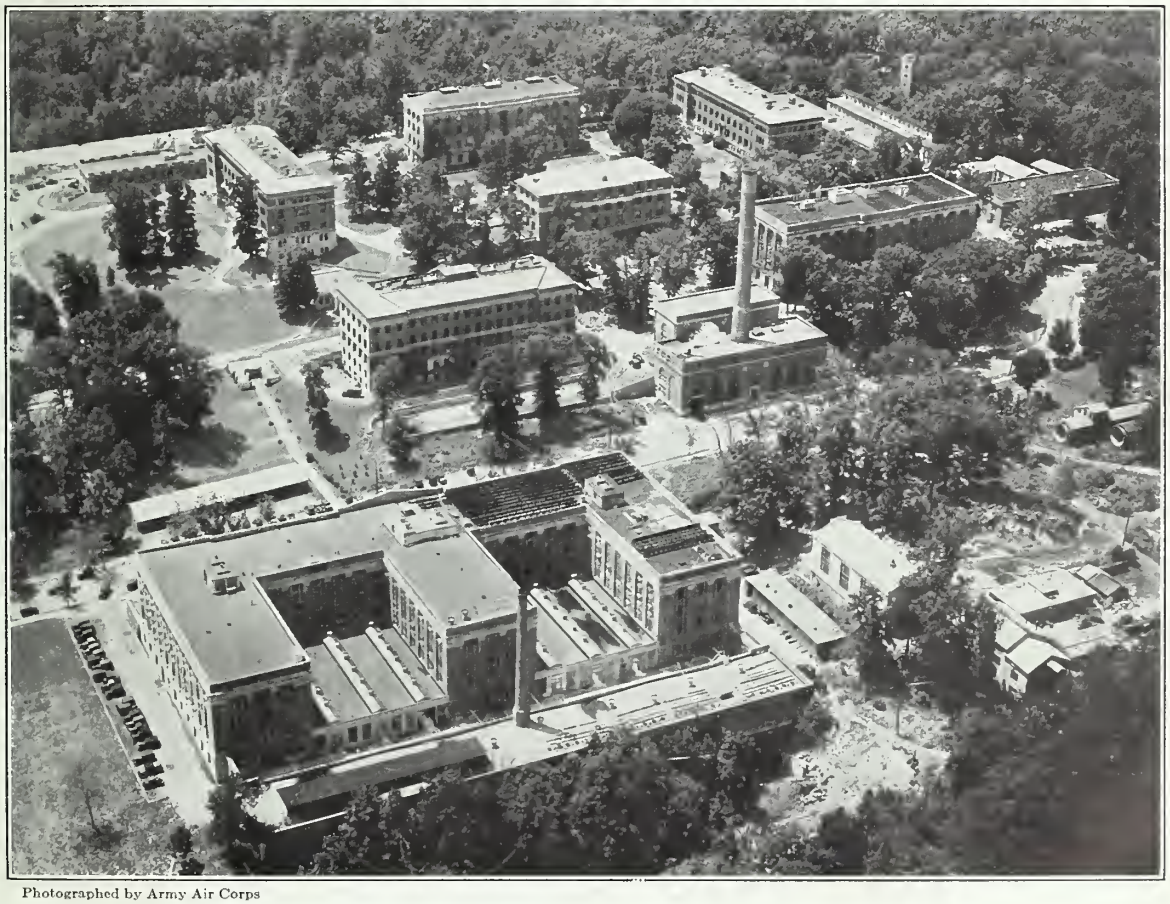




COMMERCIAL STANDARDS MONTHLY

A Review of Progress in Commercial Standardization and Simplification



Photographed by Army Air Corps

AIRPLANE VIEW OF BUREAU OF STANDARDS (LOOKING SOUTH)

ISSUED BY THE BUREAU OF STANDARDS OF THE UNITED STATES DEPARTMENT OF COMMERCE, WASHINGTON, D. C., U. S. A.

Vol. 9, No. 1 JULY, 1932

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U. S. DEPARTMENT OF COMMERCE
R. P. LAMONT, Secretary

BUREAU OF STANDARDS
GEORGE K. BURGESS, Director

COMMERCIAL STANDARDS MONTHLY, S. F. Tillman, Editor

The Commercial Standardization Group

A. S. Mc ALLISTER, Assistant Director

DIVISION OF SIMPLIFIED PRACTICE

Edwin W. Ely

The division of simplified practice cooperates with industrial and commercial groups to reduce waste, usually through eliminating unnecessary variety of product, method, or practice. Its function is to bring together all parties interested in a project of this character, and to coordinate their work in developing a simplified practice recommendation. Such work includes surveys of current practice, formulation of a simplified practice program, and presentation of that program for action by a general conference representing all interests. The division then transmits to all concerned a full report of the general conference, with a request for written acceptance of the action taken. When the volume of acceptances is sufficient to indicate initial success, the Department of Commerce indorses the program and publishes the recommendation. The division thereafter cooperates with a standing committee appointed by the industry concerned, in conducting periodic surveys to determine the degree of adherence, to maintain and extend support of the recommendation, and to secure data for reaffirmation or revision. Simplified practice may be applied to any commodity or activity in which it will reduce waste. The division stands ready to render service in developing and making effective any application of simplified practice which will reduce waste, stabilize business, or extend commerce.

STANDARDIZATION
..IS..
A CONTINUING PROCESS
ITS AIM IS NOT FIXITY OR STAGNATION
..BUT..
TO ADD SERVICEABILITY AS OFTEN AS THE POTENTIAL GAIN MAKES IT WORTH WHILE

BUILDING AND HOUSING DIVISION

J. S. Taylor

The division of building and housing, formed in 1921, cooperates with business, technical, and professional groups in furthering construction activities. It works to modernize building codes and to encourage improved standards for the quality of building construction, and the practical application of the latest development in design and use of building materials.

It encourages home ownership through the development of an enlarged, steadier, more intelligent, and more discriminating demand for dwellings—the largest single class of buildings which the construction industries provide.

The division also cooperates with other governmental agencies and with many private business and professional groups in efforts to distribute building activity more evenly throughout the year and to secure less fluctuation from year to year.

The work on city planning and zoning has the broad objective of making buildings more useful through proper location with respect to other structures, stabilizing of land values and property uses, well coordinated thoroughfare systems, and well laid out public works.

DIVISION OF SPECIFICATIONS

A. S. McAllister

The duties of the division of specifications are to promote and facilitate the use and unification of specifications. In doing so it carries on activities involving cooperation with technical societies; trade associations; Federal, State, and municipal Government specifications making and using agencies; producers, distributors, and consumers; and testing and research laboratories. It ascertains the Standardization and specifications promoting activities of the associations and societies, and brings to their attention the work being done by the commercial standardization group. It brings the Federal specifications and commercial standards to the attention of the maximum number of producers and users of commodities complying with these standards and specifications. It compiles and distributes lists of sources of supply of materials guaranteed to comply with the standards and specifications. It shows both buyers and sellers the benefits from handling nationally specified, certified, and labeled commodities. The division prepares directories of governmental and nongovernmental testing laboratories and the Directory of Specifications, and is working on an encyclopedia of specifications, the first two volumes of which have been issued, namely, "Standards and Specifications in the Wood-Using Industries" and "Standards and Specifications for Nonmetallic Minerals and their Products." It also aids in preparing the Standards Yearbook.

DIVISION OF TRADE STANDARDS

I. J. Fairchild

The division of trade standards, on request, assists industrial and commercial groups in the voluntary establishment of standards covering grades, quality, dimensional interchangeability, or other acceptance criteria as a national basis for marketing manufactured commodities.

The detail criteria are selected or determined voluntarily by interested buyers or sellers, without any Government dictation or domination, and adjusted at a general conference of producers, distributors, and users so as to represent the composite views of all branches. The division functions chiefly as a neutral agency to see that all interested elements are given full opportunity to be heard and satisfied; to solicit and record acceptances; and to publish and promulgate the standard when a satisfactory majority of acceptances is obtained and provided there is no active opposition.

Industries are encouraged to apply self-certifying labels to products meeting the commercial standard requirements, as a means of protecting the consumer and the scrupulous seller from misrepresentation or unfair methods of marketing.

Provision is made for regular revision of the standard through the appointment of a standing committee to consider periodically any necessity for revision of the standard, in order that it may be kept constantly compatible with progress in the industry.

COMMERCIAL STANDARDS MONTHLY

A Review of Progress in Commercial Standardization and Simplification

VOLUME 9 — WASHINGTON, D. C., JULY, 1932 — NUMBER 1

SUBJECT ANALYSIS

AN INVITATION TO VISIT THE BUREAU OF STANDARDS

A cordial invitation is extended to all interested in scientific progress to visit the laboratories of the Bureau of Standards when in Washington. A personally conducted trip is organized at 2.15 p. m. daily except on holidays. Special trips for groups may be arranged at other times by writing to the bureau in advance. The bureau's illustrated Visitor's Manual may be had for the asking. This lists the work in progress and gives an airplane view of the ensemble and a brief statement of typical discoveries and inventions which have been notable, basic contributions, to radio, aviation, and other modern arts and industries.

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GEORGE KIMBALL BURGESS
1874 - 1932

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Director, Bureau of Standards
1923 - 1932

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Associate Physicist, Bureau of Standards, 1903 - 1913
Physicist and Chief of Division of Metallurgy, Bureau of Standards, 1913 - 1923
Director, Bureau of Standards, 1923 - 1932

NUTRITION STANDARDS

A Symposium Consisting of Five Articles

Standard food rationing is of inestimable importance to the health and well-being of mankind. Its interesting story is given in part as a symposium in this issue of Commercial Standards Monthly. Measured standards for food intake are based on measured bodily needs.

We may weigh and measure the baby to control its food so that it may grow along the well-known normal height-weight curve or growth-age rate curve. Such a curve is a reference standard. When growth is complete, body weight is maintained by replacing used material. This, too, is measurable.

Food supplies energy for bodily activity. The measured ration of such energy may be determined by measuring the energy used in each type of bodily activity. This is a regular laboratory measurement using the respiration calorimeter. The results will permit balancing the energy need by an equal energy food ration.

Besides growth and activity, food also supplies regulatory materials such as vitamins and minerals. The rationing of these minute essentials is entering a scientific stage of quantitative control.

1. FOOD ELEMENTS AND VALUES IN DIET

By Dr. Stanley W. Sayer, *District Health Officer, State of New York*

There is probably as much conversation regarding diet as there is about the eighteenth amendment. To hear some people talk one might gather that the extent of the body growth and even one's disposition is wholly determined by our food. Others go so far to the other extreme that they insist it is entirely safe to allow custom, appetite, and pocketbook decide what foods are required. Between these two extremes there is a sane middle course. The study of food values and vitamins is not new. Four hundred years before Christ, Hippocrates insisted that there was one substance called an "ailment" which was found in many natural foods and was necessary for growth and nourishment of the body. It was not until the beginning of the last century that it was realized that the lack of certain substances in foods caused scurvy and that certain other diseases were related to diet. It is marvelous to consider what workers in medicine, chemistry, and nutrition have done to solve many of the problems relating to necessary food elements and food values. There are so many new discoveries that it is impossible as yet to make practical application of all of them; in fact, we may never be able to take complete advantage of them.

It is possible for a person to have in his diet all of the appropriate proportions of proteins, fats, carbohydrates, and mineral salts, and yet not continue in growth and health. Certain substances necessary in every diet are called vitamins; without them the proper body chemistry can not be maintained.

Vitamin C is the one which prevents scurvy, and although its exact chemical nature is unknown, we have learned from experiments that health and even life is not possible without a small amount of this food factor. Vitamin C is present in milk, oranges, and other citrus fruits, tomatoes, cabbages, and other

leafy vegetables. It is partially destroyed by heating to the boiling point, and also disappears when foods become stale. An exception to the effect of heat seems to be in tomatoes, for when canned, either whole or as juice, this element is retained.

Scurvy in adults, once a dread disease, especially among soldiers and sailors, causing among other symptoms swollen and bleeding gums, with pains in legs and blue discolorations of the skin, is now a rarity due to the addition to the diet of fresh vegetables and fruit. During the past 25 years interest has been taken in infantile scurvy, caused by feeding boiled cows' milk alone, which produces loss of weight, tenderness of the arms and legs, and increases the likelihood of infections. The addition of orange juice or tomato juice to the diet of all bottle-fed babies has caused almost complete disappearance of this disease. It is thought that this vitamin also prevents the decay of teeth.

Vitamin D is the one which prevents rickets and probably aids the growth and development of bones and teeth. This vitamin is present in small amounts in egg yolk and butter, but is especially abundant in cod-liver oil. It controls in some way the deposit of lime and phosphorus in bony structures of the body. It has also been rediscovered that natural sunlight accomplishes the same purpose as cod-liver oil. Therefore cod-liver oil is given to babies and young children; it is needed especially during the winter when less sunlight reaches the skin. Although for centuries it had been observed that cod-liver oil and sunlight prevented rickets, yet this knowledge failed to become generally applied.

2. METHODS OF FOOD DISTRIBUTION

By Lewis W. Waters, *Vice President, General Foods Corporation*

Two important factors, closely related to each other, serve to place the food industry in a unique position in so far as standard practice is concerned.

These two factors are: First, public demand for a widely diversified national menu embracing hundreds of food products, and, second, resultant necessity for various methods of food treatment and packaging, as well as differing methods of distributing the output of an industry that progresses by diversifying its products rather than by simplifying the choice of its offering.

For purposes of standardization, it might be said that aside from any difference in composition, finished steel bolts are steel bolts, virtually alike save in length and thickness. But a pound of coffee on the grocer's shelf is a blend, preferred by many persons to other trade-marked blends.

With millions of consumers' tastes demanding scores of different coffee blends, many types of wheaten breakfast foods, several forms and varieties of cakes, dozens of kinds of pickles and relishes—to mention a few comparisons in a list that would include hundreds—it behooves food manufacturers to cater to this growing epicurean consciousness.

True, out of approximately 1,000 natural food products in the world only about 100 are of commercial importance; but these 100 items, converted, blended, processed, and packaged, to suit the individual and group tastes of 126,000,000 persons, entail a vast production and distribution system which might seem to involve considerable duplication of effort. But seeming lack of standard practice becomes not only necessary but highly desirable when we regard pure, diversified table fare as a vitally important element in maintaining a high standard of living.

The food industry to-day is progressing principally through scientific research. Improved packaging, perfected refrigeration, selective irradiation, new methods of dehydration, adaptation of old products to new uses, and utilization of many other new practices and processes are constantly working toward further standardization.

In the research departments maintained by our organization, 500 new ideas worthy of consideration are presented every year. These researches do not end in the test tube or the laboratory oven. From 500 to 1,000 housewives in all parts of the country furnish the final, pragmatic test of each new process and product.

Packaging, which came into the research scientist's field originally as a factor of preservation or brand identification, has remained as a work of merchandising. It was the research scientist who told the food industry that certain foods must go into glass jars that others could go into tin cans, that still others would be best in cardboard cartons because of the effects of sunlight on their colors or composition.

The great resources which have been put into the hands of the food scientist have come as a result of economic researches almost as interesting and significant as his own. For several years there has been a tendency for food manufacturers to consolidate in great holding companies which are powerful factors in eliminating duplication of effort. The advantages of mergers which permit one producer to purchase, manufacture, and sell foodstuffs to 100,000,000 people, where 10 sold to 10,000,000 previously, are well recognized.

Perhaps the greatest single factor looking toward standardized practice in food distribution is quick-freezing. By use of low-temperature freezing apparatus, the original fresh qualities of meats, sea foods, vegetables, and fruits can be retained almost indefinitely while the foods are kept hard frozen.

The effects of quick freezing on food distribution are likely to be the completion of the metamorphosis of the food store. Just as the universal adoption of the packaged foods principle has served to put virtually all nonperishables and semiperishables into containers, so now is quick freezing extending this important standardization practice to perishables, frozen in cartons and kept properly refrigerated until they appear as standard quality, packaged foods in the retail store.

3. ARMY RATIONS CLASSIFIED

Average Daily Food Requirements for Men Depend Upon Occupation

By Maj. Robert M. Littlejohn, *United States Army*

Nothing can destroy more quickly the efficiency of a company than a poor mess. The best companies in any regiment are usually those with company officers who understand the proper handling of the ration and see that the men are properly and adequately fed.

A ration is the allowance of food for the subsistence of one person for one day. In the Army the ration is divided into five classifications. These are, namely, (1) the garrison ration, (2) the Filipino ration, (3) the travel ration, (4) the field ration, and (5) the reserve ration. In explaining these classes we find that the garrison ration is that prescribed in time of peace for all persons entitled to a ration, except under specific conditions for which other rations are prescribed. The Filipino ration is that prescribed in time of peace for the Philippine Scouts. The travel ration is for troops traveling otherwise than by marching and separated from cooking facilities. The field ration is that prescribed for all persons entitled to a ration in time of war and whenever the ration-savings privilege is suspended. The reserve ration is for use in campaign when the field ration is not available. It is an article of field equipment, and, except in emergencies, will be opened only by order of a commissioned officer. The organization commanders are responsible for the proper care and use of reserve rations when issued to enlisted men.

The first legislation fixing the components of the Army ration was the passage of a resolution by the Continental Congress on November 4, 1775. Bacon and hard bread were frequently issued to the Federal armies during the War between the States. At the beginning of any particular campaign or operation, several days' rations were issued to each soldier and carried by him in his knapsack. In such cases they performed the functions of both field and reserve rations. The reserve (emergency) ration of the Spanish-American War consisted essentially of 1 pound of hard bread and 10 ounces of bacon. It contained also a small amount of pea meal and coffee, roasted and ground. A reserve ration, developed about 1906, contained 8 ounces of sweet chocolate packed in a hermetically sealed container. It never passed the experimental stage, as those individuals who tested it found that they became nauseated within a short time when consuming other food besides this ration. The reserve ration employed in the American Expeditionary Forces during the World War consisted of canned meats, hard bread, soluble coffee, sugar, and solidified alcohol. They were not packed as individual rations and were rather difficult to handle.

According to the nature of the several foods and requirements of the human body, we can readily classify food as follows:

- A. Food as purchased.
  - Edible portion; for example, flesh of meat and fish, yolk and white of eggs, pulp of fruit, wheat flour, etc.
    - Water.
    - Nutrients.
      - Proteins.
      - Fats.
      - Carbohydrates.
      - Mineral matter.
  - Refuse; for example, skins of fruits and vegetables, bone of meat and fish, hulls, bran, etc.
- B. Foodstuffs oxidized in the human body to furnish energy or used to repair waste.
  - Proteins.
  - Fats.
  - Carbohydrates.
- C. Accessory food factors necessary to health or life, but not supplying energy.
  - Mineral matter.
  - Water.
  - Bulk or roughage.
  - Vitamins.

Very few of the common foodstuffs contain 100 per cent of the three main constituents; that is, proteins, fats, and carbohydrates, all being made up of varying proportions or none of some of these substances.

Protein.—The principal function of protein is to replace muscular wastage in the adult and in the growing child, as well as to furnish the nitrogen necessary to build up tissues during growth. The lesser function of protein is to serve as fuel for the body when the diet contains insufficient quantities of fats and carbohydrates. Important sources of protein are lean meats, fish, egg whites, casein of milk, peas, beans, gluten of wheat, etc. However, all of them are not of equal value when utilized in the diet. About 18 per cent of the average body weight is protein.

Fats.—These produce fuel and heat for the body, and at the same time improve the flavor and texture of the food. A certain amount of fat is necessary in foods to prevent them from being dry and unpalatable. Fats are obtained from both animal and vegetable sources. A certain percentage of fat is usually stored by the body as such. The amount varies according to personal idiosyncrasies, habits, occupation, etc., but in the average man it forms about 15 per cent of the total body weight.

Carbohydrates (glucides).—These consist essentially of starches and sugars. Starches are obtained from cereals, tubers, and vegetables. Sugar is obtained mainly from the sugar cane, the sugar beet, and honey; small amounts are found in fruits, vegetables, and milk. Carbohydrates are the principle sources of body fuel and energy. They may be converted into fat, are easily digested and are an important food, but comprise less than 1 per cent of the weight of the body. They are immediately "burned" for heat and energy.

Mineral matter.—Mineral matter, or mineral salts, usually include the carbonates, phosphates, sulphates, oxides, and chlorides of calcium, potassium, sodium, magnesium, iron, etc. These are found in fruits, vegetables, and cereals (whole grains). They are utilized principally in forming the bony structures and the

blood, and share in making certain intestinal juices necessary for the digestion of food. In all the mineral matter comprises only 5 to 6 per cent of the total body weight.

Water.—Water is a component part of all the tissues and forms about 60 per cent of the total body weight of the average individual. It is essential to cell life, is the food solvent, and assists in the elimination of waste materials.

Bulk or roughage.—The muscles of the intestines operate in a wavelike manner, squeezing the material which the intestines contain. In order that fecal elimination may proceed satisfactorily, it is essential that a certain amount of bulk or roughage be present in the intestines. The framework of fruits and vegetables is made up of the cellulose necessary to give the desired bulk.

Vitamins.—These are recently discovered accessory food substances present in minute quantities in milk, in particular fruits, vegetables, and other products. To maintain the body in good health they must be present in the diet in sufficient quantities.

The proper amount of food.—To be able to make a practical study of and compare the fuel value of the several foods, the calorie, an arbitrary value, has been adopted. The calorie is the amount of heat necessary to raise 1 kilogram of water 1° C., or approximately 1 pound of water 4° F. Though both in peace and war a fair percentage of the enlisted and commissioned personnel perform tasks of a sedentary nature, the bulk of the Army daily performs a moderate amount of muscular work; hence, muscular activity is the most important factor in determining the soldier's ration. The average daily food requirements of man are about as follows:

	Calories
A. Without muscular work	2,500
B. With light muscular work (sedentary)	2,700
C. With light to moderate muscular work	3,000
D. With moderate muscular work	3,500
E. With moderate to hard muscular work	4,000
F. With very hard muscular work	5,000

The soldier performing ordinary peace-time duties may be classed as a man with moderate to hard muscular work and requiring 4,000 to 4,500 calories. Those of us confined to offices fall into the sedentary class which requires 2,700 calories. During actual campaigns the amount of muscular work is increased and such work will fall between hard muscular work and very hard muscular work requiring 4,500 to 5,500 calories. Generally, when young recruits are taken into the service, they develop enormous appetites, due to a change of environment and increased exercise, but within a short time they fill out and then come within the same category as other soldiers.

The question as to the proper amounts of protein, fats, and carbohydrates, etc., is one which has been widely discussed, and the end is not yet in sight. The dietary standards which have been adopted by the Army are based largely upon experimental data. Though apparently satisfactory, they can not be accepted as conclusive with our present limited knowledge of nutrition. Therefore, the Army will be most interested and watchful of the progress made in standardizing the nutrition values of food.

4. STANDARDS IN FOOD VALUES

Proper Balance Food Diets Are Resultant of Laboratory Research

By Hazel K. Stiebeling[1]

With improved facilities for handling the transporting food materials, products from the ends of the earth are at our doors. Manufacturers are preparing the common food materials in an endless variety of forms, and are sparing no efforts to merchandise them in an appealing fashion. The findings of nutritional investigations are being popularized. The "health-conscious" public is listening first to one and then to another expound the values of his particular wares. A bewildering array of foods and an endless variety of appeals confront us. What shall we eat?

In so far as we can, we tend to choose what we like. This usually means what we are used to, although our new interest in foods is fostering adventures in, and a taste for, greater variety. Food has social and psychological significance. We eat what it is style to eat, or what seems to be to our advantage to use, whether for social or personal reasons. The primary use for food, however, is the satisfaction of physiological needs. This article will deal largely with that aspect, although it is to be hoped that while satisfying bodily requirements we may always obtain some of the other values at the same time.

[1] Senior food economist, Bureau of Home Economics, U. S. Department of Agriculture.

What shall we eat? The chemist of food and nutrition points out that every individual requires attractive, palatable, and digestible food, which will provide:

1. Enough energy to permit the desired, or necessary, amount of activity.
2. Enough of the proteins of suitable quality to permit normal growth in children, and the maintenance of body tissue in adults.
3. Enough of all of the necessary minerals in suitable proportion for constructing body tissue, and for maintaining and regulating body processes.
4. Finally, enough of each of the essential vitamins to promote growth and maintain a high level of health.

But how much is enough? This depends largely on the age, size, and activity of each individual. Many investigators have added to our knowledge of the nutritional needs of man, and have given us information regarding the extent to which our food materials furnish the various factors.

The diets of children and adults differ not only in total quantity, but also in the proportion in which many food materials should be used. At certain periods of growth the total quantity of energy-giving

food needed by children exceeds that required by adults at moderate muscular work. Children who are growing also need much larger amounts of certain body-building and body-regulating substances than do adults who are merely maintaining an organism already built. For example, the amounts of calcium and phosphorus required for skeletal development are relatively great, particularly in the early years of life. The foods which furnish minerals and vitamins, as well as energy, are usually more expensive than those which furnish energy only. The adjustments which must be made to include a higher concentration of these nutrients in children's diets make adequate diets for children cost relatively more than adequate diets for adults.

But since one does not purchase food from retail stores according to specifications stated in the chemist's language, are there other terms in which an adequate diet can be described?

Value of various types of food in the diet.—The common articles of food used in this country may be classified into six main groups on the basis of their distinctive contributions to the diet:

1. *Bread, flour, and cereal.*—Refined grain products are cheap sources of energy and protein, but are poor in minerals and vitamins. Their proteins are not wholly adequate, but can be advantageously supplemented, as with milk. The more highly the cereal is milled, the more necessary it is to supply minerals and vitamins from other sources. When cost need not be considered these other factors may be entirely supplied by vegetables and fruits, eggs, lean meat, and milk. The use of whole-wheat bread or flour, or one of the dark, less highly refined wheat cereals will increase the iron content of the diet at little cost. Cereal products, to which all or part of the embryo usually removed in the milling process is restored, will also contribute vitamins B and G to the diet.

2. *Milk and cheese.*—Milk contains the greatest assortment of nutrients of any single food material, and together with cereals, forms the foundation upon which an adequate diet can most safely and cheaply be built. Milk is particularly important for its high-quality proteins, for calcium, for vitamin A, and for the pellagra-preventing factor, and in these respects effectively supplements the cereal products. If skim milk is used instead of whole, some extra butter should be added to the diet to supply the vitamins A and D, removed with the butterfat in the separation process.

3. *Vegetables and fruits.*—These foods vary widely in energy value and in minerals and vitamins. Tomatoes and citrus fruits deserve special mention as sources of vitamin C, and green leafy vegetables or others of green or yellow color, as sources of vitamin A and of iron. Dried beans and peas contain considerable vitamin B, and small amounts are also contributed by most fresh vegetables and fruits. Care should be taken in the preparation of these foods to conserve their mineral and vitamin values.

4. *Fats.*—Fats are important primarily as sources of energy; they also help to make a high-cereal diet palatable. Lard is usually the cheapest form of fat, but it is deficient in some of the vitamins found in other fats, as butter. Lard may be used as the chief fat in a family dietary, if whole milk and green vegetables are used liberally.

5. *Sugar.*—Pure sugar provides only energy to the body. During the refining process the mineral elements are removed. Unrefined cane molasses contains considerable calcium and iron, elements not found in corn sirup or refined sugar sirups.

6. *Lean meats, fish, poultry, and eggs.*—These foods are important mainly for their proteins or excellent quality, for their pellagra-preventing values, and for the flavor and interest which they add to the diet. Liver and eggs are good sources of iron and some other minerals, and of vitamins A and D, as well as of protein. If the egg supply is limited, the children should be considered first.

Within each of these general classes of food there are, of course, numerous kinds or forms of food materials from which to choose. With the exceptions noted above, the foods within a group may be used more or less interchangeably. Good balances may be kept among these various types of food if the following food budgets are used as guides:

Food budget for families with limited incomes.—If there are children in the family, out of every dollar it is well to use for—

	Cents
Bread, flour, and cereals	15 to 20
Milk and cheese	25
Vegetables and fruits	25
Fats and sweets	20 to 15
Meat, fish, and eggs	15

If the family consists entirely of grown-ups, out of every dollar it is well to use for—

	Cents
Bread, flour, and cereals	15 to 20
Milk and cheese	15
Vegetables and fruit	25 to 30
Fats and sweets	20
Meats, fish, and eggs	20

Dividing the food dollar in this way will bring the greatest return in nutritive values for the amount of money used. The less money a family has to spend for food the more important it is that it should be spent approximately in this fashion.

The quantity of each type of food which can be purchased for a given amount of money will depend upon the variety chosen, and the quality and form in which it is obtained, as well as upon the services which the consumer demands along with his food supplies. But the selection within each group must be such that the amount of money available will provide enough food for the family group. For families of two adults with three children, approximately the following quantities of food or their equivalent will be needed.

Suggested weekly food supply for family of five with limited income—

20 to 24 pounds flour and cereals (1 pound flour counts the same as 1½ pounds bread).
18 to 28 quarts milk.
12 to 15 pounds potatoes or sweetpotatoes.
1 to 3 pounds dried beans, peas, or nuts.
6 pounds tomatoes or citrus fruits.
4 to 5 pounds leafy or other green or yellow vegetables.
10 to 13 pounds other vegetables and fruits.
1 pound butter.
3 pounds other fats (including salt pork and bacon).
3 to 5 pounds sugar, molasses, jellies, etc.
5 to 7 pounds lean meat or poultry.
8 to 12 eggs.

The most economical adequate diets include a relatively high proportion of grain products, and a

relatively low proportion of lean meats, fish, and eggs. The former are inexpensive sources of energy and protein. The latter are usually expensive articles of food when considered from the standpoint of their nutritive value. The variety permitted from day to day when families are living on this type of low-cost diet can be indicated as follows:

Food guide for families with limited incomes.—Every meal: Milk for children, bread for all. Every day: Cereal in porridge or puddings, potatoes, tomatoes (or oranges) for children, a green or yellow vegetable, a fruit or additional vegetable, and milk for all.

Two to four times a week: Tomatoes for all. Dried beans and peas or peanuts. Eggs (especially for children). Lean meat, poultry, fish, or cheese.

Families of moderate means and those who can afford to freely choose their food will probably prefer to use less bread and cereal, fewer dried beans and peas, more vegetables and fruits, and more lean meat, fish, and poultry than are suggested in the above lists. But free choice is not necessarily a guaranty of wise choice as judged from the standpoint of physiological adequacy. The following budget may be used as a guide for spending food money when the amounts available are somewhat liberal.

Food budget for families of moderate means.—With an income permitting choice the family with children might distribute its food dollar as follows—

	Cents
Bread, flour, and cereals	10
Milk and cheese	25
Vegetables and fruit	25
Fats and sweets	15 to 20
Lean meat, fish, and eggs	25 to 20

The choice within the food groups should be such that the food money will purchase enough food for the family group. For a family of two adults and three children this will include approximately the following quantities or their equivalent.

Suggested weekly food supply for family of five with a moderate income:

12 to 15	pounds flour and cereals.
28	quarts milk.
10	pounds potatoes or sweetpotatoes.
6 to 8	pounds tomatoes or citrus fruits.
½ to 1	pound dried beans, peas, and nuts.
6 to 8	pounds leafy or other green or yellow colored vegetables.
15 to 25	pounds other vegetables and fruits.
2	pounds butter.
2 to 4	pounds other fats.
5 to 7	pounds sugar, molasses, jellies.
10 to 15	pounds lean meat, fish, and poultry.
1½ to 2	dozen eggs.

These cost and quantity budgets allow more individual choice among articles of food than can be indulged in by families with limited amounts of money. The larger quantities of milk, certain vegetables and fruits, of butter, eggs, and lean meats not only make a diet which is more interesting to most people, but one which provides a greater margin of safety in the mineral elements and vitamin factors.

While the dietary suggested for families of moderate means is more liberal than that recommended for families with limited incomes, the latter is probably wholly adequate according to our present knowledge of nutritional needs.

Many combinations of food materials can be evolved to yield the chemical elements and organic substances needed by the body for its activity and the complex processes of building and maintaining itself. The weekly food supplies here suggested to fill these needs are not offered in a dogmatic spirit, though for the sake of brevity the reasons for the selection can not be fully presented. The selections represent, however, the results of much research on the problem of economically satisfying nutritional needs, in terms of food materials customarily used by the American people.

Many modifications could well be made in recognition of special needs, sectional or class dietary habits, or local food supplies. At their best, as one of our earlier investigators in this field pointed out, dietary standards are indications, not hard and fast rules.

5. CERTIFYING THE NUTRITIONAL VALUE OF FOOD

By R. Hertwig [1]

The Committee on Foods of the American Medical Association is an official committee of that association authorized to utilize the prestige and influence of the medical profession to promote the establishment of truthful and proper food advertising and the merchandising of foods of full nutritional values. The work of the committee is in the interest of public health and welfare.

The committee is cooperating with the food industry for the development of a system by which the industry may regulate and control its own advertising. Claims as to the nutritional values of manufactured and prepared foods are thus limited in accordance with established scientific knowledge and recognized policies of social welfare.

The plan of operation of the committee among other things includes the "acceptance" of truthfully and correctly advertised wholesome foods which fulfill nutritional requirements; the formulation of general rules and regulations proposed for governing food labels and advertising; the promulgation of general committee decisions portraying the requirements and policies of the committee on specific advertising claims and nutritional values of specific foods and offered for the guidance of food manufacturers and advertising agencies; and the publication of an authoritative text on foods of the American market, including information on its "accepted" and "rejected" foods and intended for the special use of physicians, dietitians, hospitals, the food industry, and the public.

The committee purposes its seal of acceptance as related to or used with any individual food article to have the following significance:

(*a*) That the food article, its label, all related published or displayed advertising copy of any nature, statement of physical and chemical composition, proc-

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ess of manufacture, and other pertinent required information, have been submitted to the committee for its consideration.

(*b*) That all "health" or nutrition claims—either specific or by inference, appearing on package label, in any advertising copy, or published or displayed in any other form—harmonize and are in accord with the evidence submitted as to the chemical and biologic values of the finished product on the market.

(*c*) That evidence has been submitted that the food product is neither adulterated nor misbranded under the terms and provisions of the Federal food and drugs act or other Federal statutes.

(*d*) That claims, other than those of a "health" or nutritional nature, offered in the manner mentioned under (*b*) are not self-evidently or grossly exaggerated, false, misleading, or deceptive.

All foods merchandised under a label, or which are advertised in any way may come within the scope of the considerations of the committee. Requisite information on the product given consideration by the committee includes:

1. Complete manufacturing formula for mixtures or compounds.
2. Chemical analysis to chemically define the product.
3. Statement of microscopic or bacteriologic examination for products with claims of microorganism content.
4. Definition and specifications of raw materials used in the preparation of the article.
5. Detailed description of manufacture.
6. Caloric value.
7. Information on the vitamin contact. Biologic assay is required only under certain conditions.
8. Assurance that the product fulfills all food law requirements. The committee expects and solicits the earnest cooperation of the entire food industry in this service to the public. The committee alone can not attain its objective. With the willing and helpful support and cooperation of the industry its authorized purpose can be achieved. Manufacturers of "accepted" foods are looked upon as associates and co-partners in the project of the committee; they are obligated and expected to contribute their individual share in their own way to this common cause of public welfare. By maintaining their "accepted" products wholesome and of full nutritional value and their advertising in accord with the rules and regulations, announced policies and decisions of the committee, food manufacturers are rendering a genuine public service.

Many manufacturers are already efficiently doing their part as members of the industry which en masse ultimately will demand and enforce truthful and proper food advertising and the manufacture of foods of required and expected nutritional values. The benefits will accrue to the industry as well as to the public.

FEDERAL SPECIFICATIONS

Twenty-one specifications were acted on by the Federal Specifications Board during the month of June. Of this number 13 proposed specifications and 8 revisions were received and sent out for official comment and criticism. Copies of these specifications (in mimeographed form) and further information can be obtained from the Federal Specifications Board, Bureau of Standards, Washington, D. C.

New designation	Specifications proposed	Old F. S. B. No.
	Candles	
	Steel, sheet, flat, terne-coated (long ternes)	
	Pipe, water, cast-iron (bolted joint)	
	Undershirt, men's (ribbed knit, cotton-wool, high neck, long sleeve, medium)	
	Undershirt, men's (flat knit, cotton, light weight, short sleeve, pullover)	
	Underdrawers, men's (ribbed knit, ankle length, medium, cotton-wool)	
	Hog brains	
	Calf brains	
	Sausage, cervelat style	
	Fat-back, dry salt-cured	
	Gratings; steel (for flooring, landings, steps, etc.). This specification intended for land and marine use)	
	Hydrometers; antifreeze solutions	
CCC-C-231	Chambray	

SPECIFICATIONS TO BE REVISED

W-F-801a	Fuses, cartridge, inclosed, renewable	W-F-801
HH-B-671a	Brick, fire-clay	HH-B-671
KK-L-151	Leather, bag	482
QQ-B-101a	Bases metal; (for) plaster and stucco construction	QQ-B-101
QQ-S-675	Steel, carbon and alloy; bars, billets, blooms, and slabs (for) reforging	316
WW-U-531	Unions, malleable iron or steel, 250-pound	393
ZZ-S-751	Stoppers, rubber	383
ZZ-T-721a	Tubes, automobile and motor-cycle, inner	ZZ-T-721

LUMBERMEN OF CANADA AND NEW HAMPSHIRE ADOPT TRADE MARKING OF LUMBER

As stated in the April, 1932, COMMERCIAL STANDARDS MONTHLY, all lumber used in the city of Boston, Mass., for load-carrying purposes must bear the official grade-mark stamp of the association under whose rules the lumber was manufactured or a mark of equivalent value satisfactory to the building commissioner of Boston. This ruling became effective April 1, 1932.

Since that time the Canadian Lumbermen's Association have adopted grade-marking rules on eastern Canadian merchantable spruce, and the New Hampshire Lumbermen's Association have also adopted a similar program.

To take care of the supply of lumber which is on hand in dealers' yards at the present time and which is not grade-marked at the mills by the manufacturers' association, the Northeastern Lumber Service (Inc.), has been formed to succeed the Boston chapter of the Northeastern Retail Lumbermen's Association.

This organization, formed by Boston lumbermen with the cooperation of the Northeastern Retail Lumbermen's Association, will perform a grade-marking service, applying their effort to those stocks which are on hand in this area at the present time and which are not grade-marked, as well as performing other associational services. It is and has been the intention of dealers in Boston and vicinity to purchase grade-marked stock at the mill, officially graded according to the rules of the association serving that particular species.

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INTERNATIONAL ELECTRICAL CONGRESS

Notable Meeting in Paris Celebrates Semicentennial
of First International Electrical Congress

FROM JULY 5 to 12, 1932, an International Electrical Congress at Paris celebrated the completion of a half century (with an extra year for good measure) since the great Electrical Congress of 1881. That congress had a remarkable influence in promoting international uniformity and understanding in the science of electricity and in its applications. Permanent organizations which have grown up in the last quarter century have taken over the functions of international standardization, so that the recent congress was devoted to reports and discussions summarizing the present state of electrical theory and practice, without any attempt to arrive at resolutions or decisions on any point.

So wide has the field of electricity become that the congress was organized in 13 sections. These included general theories of electricity, and electrical measurements, as well as the diverse branches of electrical engineering. Authorities in various countries were invited by the French committee of organization to prepare reports on a list of selected subjects. For the section on electrical measurements six reports were invited from members of the Bureau of Standards. These were Absolute Measurement of Electric Current, and Measurements and Standards of Inductance, both by Harvey L. Curtis; The Silver Voltameter, by George W. Vinal; Potentiometers, by H. B. Brooks; Practical Magnetic Measurements, by R. L. Sanford; and the Velocity of Electromagnetic Waves, by N. Ernest Dorsey.

While American authors contributed their full share of the program, attendance from this country at the congress was very small. The chairman of the American delegation was Prof. Arthur E. Kennelly, of Harvard University. The Bureau of Standards was represented by Dr. Harvey L. Curtis.

The proceedings of the congress will be published entirely in French. They will be obtainable either in complete sets or in separate volumes covering the work of the several sections.

GERMANY ADOPTS NEW STANDARDS FOR EGGS

New Classification Became Effective on April 18, 1932

Under provisions of the trade standards act of Germany, agricultural commodities are classified and packed, as well as standardized, to conform with certain standards set up by the trade. Eggs are the first agricultural commodity to fall within the provisions of this act.

No producer is allowed to use the trade-mark and grade standards set by the Government unless he proves that he will at all times conform to the regulations and keep his products standard under all conditions. However, producers that have less than 750 chickens and cooperative packing societies that have a turnover of less than 2,000,000 eggs per year, are not qualified to use these trade-marks. Apparently it is felt that producers and cooperative societies smaller than those mentioned are not in a position to maintain a uniform standard at all times. German-produced eggs under the new classification will be as follows:

G.–1. Very fresh eggs	S. Extra large. A. Large. B. Medium large. C. Average. D. Small.
G.–2. Fresh eggs	S. Extra large. A. Large. B. Medium large. C. Average. D. Small.

The various classifications from extra large down to the small, are all graded according to the weight of the egg, and so the extra large category " S " must contain eggs that weigh from 65 grams upward. Large eggs "A" must weigh from 60 to 65 grams, medium large eggs " B " must weigh from 55 to 60 grams, average eggs " C " must weigh from 50 to 55 grams, small eggs " D " must weigh from 45 to 50 grams (1 gram equals 0.3215 ounce Troy weight). The condition of the two groups of eggs, namely G–1, very fresh, and G–2, fresh, must conform to the following regulations:

Very fresh eggs.—The shell must be normal, clean, washed, and not broken. There must be not more than 5 mm air space in the egg. The egg white must be transparent and firm. The yolk of the egg must be clearly visible and on turning the entire egg the yolk must remain in the middle. The germ of the egg must not be visible and not developed. The egg must be free of all bad or foreign odors.

Fresh eggs.—Fresh eggs have exactly the same specifications with the exception that under the provision "there must not be more than 5 mm air space in the egg," there is a tolerance of 10 mm allowed for air space in the egg instead of 5 mm as for the very fresh eggs.

All eggs that are to be sold under these new trade-marks must have a minimum weight of 45 grams. Further, cold storage eggs are not permitted to be used. According to the new regulations, cold storage eggs are those which have been held in rooms or houses or ships in storage where the temperature has been artificially held under 5° C. However, refrigerator cars in which eggs have been shipped, are not included in this category. Preserved eggs are not allowed to be sold under these new trade-marks. A preserved egg is one which has been kept fresh by chemical means either by the use of calcium, waterglass, etc. Dirty and broken eggs as well as those spotted with blood or spotted shells, and above all, partly hatched eggs, are not allowed to be sold under the fresh or very fresh classification.

Each egg sold under the trade standards act trade-mark must be stamped according to regulation and packed according to regulation. Further, eggs of various grades must be stored together and should not be offered in mixed lots. Each egg must be marked according to sample. The regulations go so far as to specify that the diameter of the circle which contains the word " Deutsch " must be 12 mm (0.47 inch) and that the word " Deutsch " must be at least 2 mm high. Further, between March 15 and August 31, the color of the stencil must be in black and from September 1 to March 14, the color must be in red.

If these trade-marked eggs are packed in closed packages, such as boxes, crates, etc., they must be sealed with an official seal, which must be broken when the container is opened. The official seal for very fresh eggs is white, and for fresh eggs blue, and must be 42 cm long, 14 cm wide for large packages and correspondingly smaller for the smaller ones. On the seal must be shown the name of the shipper and address, the classification of the eggs as well as the weight classification, and a serial number as well as date of pack. All this information is filled in by the shipper. In each box, crate, etc., that is packed, a control slip is laid which contains the same serial number as the outside seal, shows the name of the shipper, address, by whom the eggs were candled, packed, and date of packing, as well as classification number and weight classification. These seals and control slips are only obtainable from the Ministry of Agriculture after permission has been granted producers or large companies to use the new trade-mark.

Cold storage eggs can only be brought into the trade if each egg is plainly stenciled with black stencil ink. This triangular stencil must be at least 15 mm on each side and must contain the letter " K " in Latin script. On the outside of the package must appear in large black blocked letters at least 3 cm high the word " cold storage." If cold-storage eggs are sold in the shop in bulk or otherwise, a sign showing the price must be there and also show that the eggs are of cold storage origin. For preserved eggs the same regulations have been in effect, only that the word " preserved " must be on the eggs as well as on the package. In the shops also, placards must be put on preserved eggs showing that they are preserved.

Eggs imported into the country must have on the package printed in readable Latin letters the country of origin. These letters must be at least 2 cm in height, either stenciled or burnt in. Each egg must also carry a stencil showing the country of origin, and this stencil must be at least 2 mm in height.

For cold-storage eggs or preserved eggs the color of the stencil must be black in the interim of March

15 to August 31, and from September 1 to March 14, red. Eggs imported into the country that are not marked in accordance with these new regulations will not be allowed entry for consumption, but it is possible to have the eggs marked in accordance with the regulations under proper supervision at a small nominal charge.

Eggs that do not or can not be sold under the new national trade-mark must be sold under the name of the producer and the producer must show his name and address on the package. A penalty of three months' imprisonment or a monetary penalty is assessed on all violations of these regulations, which became effective April 18, 1932.

SHOVELS, SPADES, AND SCOOPS

The standing committee of the industry in charge of Simplified Practice Recommendation No. 48 (first revision), entitled "Shovels, Spades, and Scoops," has reaffirmed the existing schedule without change.

This simplification program, which was proposed and formulated by the industry under the auspices of the Bureau of Standards, recommends certain sizes, multiples, grades, and finishes of these commodities as regular stock items. The recommendation has been instrumental in reducing the number of sizes and varieties of shovels, spades, and scoops from 5,136 to 2,178, or an elimination of 57 per cent in superfluous variety.

BRITISH STANDARD ISSUED FOR SOFT SOLDERS

Primarily, in order to make provision for the incorporation of a further grade of solder, namely, grade "K," suitable for certain classes of machine soldering, the British Standards Institution has issued a revised edition of the specifications for soft solder.

The compositions of grades "A" to "J" remain unchanged, though, in some instances, modifications have been made in the references to the uses for which the solders are primarily intended. Some additional provisions have been made in the clause relating to the chemical analysis of samples.

A new specification for cored solder, rosin filled, has also been issued. This provides for six standard sizes, ranging from 8 to 16 Stubbs, wire gage, and contains clauses regulating the composition of the solder and the quality and proportion of the rosin.

LABELS INDICATE SUBSTITUTIONS USED IN MAKING CANDIES

Twenty years ago boys and girls went to the store for a bag of stick candy, gumdrops, licorice, or other confectionery. Now they buy their sweetmeats in boxes or in transparent wrappers, says J. W. Sale, of the Federal Food and Drug Administration. In those days, says Sale, there was little to be found on confectionery labels which would aid the buyer in making a purchase. But candy labels are more informative to-day.

"Chocolate-coated candies, such as bon-bons, creams, and fruits, generally bring the highest price of any confection on the market," Sale says. "And when the word 'chocolate' appears upon the label the purchaser may be sure that genuine chocolate was used. Cheaper ingredients, such as hydrogenated coconut oil, are sometimes used to adulterate chocolate coatings. When these substitutes are wholesome, as is usually the case, Federal food officials do not object to their use, provided the label plainly states this fact.

Many kinds of nuts also go into the manufacture of confections, and it is the duty of the Federal Food and Drug Administration to see that only sound and wholesome nuts are used. The administration removes from the market every year numerous shipments of imported and domestic nuts, because the goods have been found to be wormy, moldy, or otherwise unfit for food. The pure food law requires that all packed foods entering into interstate trade bear a plain quantity-of-contents statement upon the label. Some boxes of candy look as though they hold 1 pound, but actually contain only 14 ounces.

During the past few years there has been a marked increase in the sale of candy bars boxed or wrapped in cellophane. These, too, must be labeled with a quantity-of-contents statement. Any other declarations made upon the label must be truthful. Packaged hard candies, such as fruit drops, or jelly beans with fruit centers, are also on sale. When the label on the confection bears the name of a fruit, unqualified, the flavor used must actually have been derived from that fruit. If initation flavors are used, the name of the fruit must be preceded by the word "imitation."

NEW METHODS ADOPTED IN GRADING TOBACCO

Plans for Federal-State tobacco grading service at auction markets the coming marketing season are being formulated by the United States Department of Agriculture. The tobacco grading service at eastern markets heretofore has been furnished only where the grower paid a fee of 5 to 10 cents per 100 pounds to have his tobacco officially graded and certified previous to sale. Change from this procedure was put into operation as an experiment on certain markets in Kentucky and Tennessee last December, and the results have been so satisfactory that the new method has been adopted in place of the old.

Under this new procedure, tobacco grading service is furnished where the warehouseman agrees to have all tobacco graded at a flat rate per 100 pounds. Officials of the Department of Agriculture believe that in most markets tobacco grading service can be supplied at materially less cost when all the tobacco is graded. The advantages found in this procedure are that the graders are kept fully occupied, thus reducing the cost per 100 pounds for grading service, and buyers more quickly become familiar with the standard grades. It has been found that the grading service is much more effective in serving the interests of farmers and the tobacco trade under these conditions.

SAVINGS FROM SIMPLIFIED PRINTED FORMS

Canadian National Railways Official Reviews Work Done by His Organization in Simplifying Office Forms

By C. U. Stapleton [1]

In endeavoring to control the cost of the many manufacturing elements necessary to produce printed forms, and to establish a set of standards which would eliminate the nonessential elements, the Canadian National Railways became convinced that the application of engineering principles were necessary for the constructive revision of form production practices. The first step was a survey which enabled the forms committee to decide if the reference value of the information furnished through the form justified the expenditure for labor and material, and, at that time, to further facilitate judgment, forms furnishing correlated information were brought together to be compared for similarity of data. This survey disclosed: (1) What forms were being furnished and how distributed, (2) the necessity of their existence, (3) their individual clerical and manufacturing costs, (4) possible cancellations, (5) possible consolidations, and (6) possible cost reductions by revising manufacturing specifications.

The next step was to set up a series of manufacturing specifications applicable to different requirements, and drastically reduce the variables to the smallest possible number, after which each form was individually studied to plan the least expensive production. A specification was then drawn up for the approval of the management of the Canadian National Railways and a control established for the maintenance of the standards.

It was found that a scientific approach to the problem of cost reduction in form printing, which is not commonly considered to be controllable by the purchaser, resulted in an average saving of more than one-third of the manufacturing cost for some 5,000 forms with a total annual consumption of about 250,000,000 copies. Such a reduction would seem sufficiently important to warrant Canadian National Railways bringing to the attention of other large users of printed forms a few of the principal cost-reducing methods employed in bringing this about.

If printed form requirements permitted, the acme of standardization would be to set-up all forms of one size, color, weight, and texture of paper, and print them in only one color of ink, but as this is impossible, the next best thing that can be done is to establish the minimum number of different sizes, colors, and weights possible. Sizes should be multiples of one another, and cut evenly from standard flat mill stock sheets, as far as is practicable, otherwise there will be waste included in the cost of the form with no advantage to the user. Sometimes it may be advisable to enlarge a form rather than reduce it. For example, both composition and press work may often be saved by enlarging a form to include on the front, instructions or other composition now printed on the back, which, of course, cuts the presswork in two and often justifies enlarging the form accordingly. Where instructions are absolutely essential, they may be printed on the cover, or board back if the form is padded.

As paper in many cases amounts to half the cost of the form, size is a very important factor in cost reduction, and it is surprising how many forms will be found to have been drawn up originally by the author on a blank sheet 8½ by 11 inches, without any regard for the entry spaces actually needed. A number of forms can be reduced to two-thirds their present size by simply setting a standard of four lines to 1 inch for handwriting, and applying this standard to such forms as are not typewritten. There are some who do not give column spacing the same attention as line spacing, and consideration is very seldom given to the number of digits, or characters, to be entered, or what allowance should be made for these characters.

It has been the practice of Canadian National Railways to allow one-eighth of an inch for each letter space, which provides for a slight margin at each side of the column, and care is always taken to see that the positions for the decimal points, or the lines between the dollars and cents columns, are spaced apart in tenths, to provide for typewriter tabulating. The weight of stock is determined by the number of copies required at one writing, and the amount of strength necessary. We prefer to increase a 16-pound sulphite form to 20-pound sulphite, rather than change the substance to rag, in order to obtain a firmer body, the reason being that while 25 per cent more weight is paid for in one case, it would be necessary to pay almost three times as much for quality in the other.

In connection with colors, it seems that almost every organization is faced with some important officer being an advocate of color schemes. In the opinion of the writer, altogether too much stress is being laid on the advantage of colors as a means of reducing errors in sorting, and identifying copies of forms with certain departments or activities. Very few color advocates consider the extra cost of colored paper, or the interleaving that is necessary, in manufacturing sets of forms—all they seem to be interested in is saving the clerical forces the trouble of thinking about what they are doing. All copies can be printed in one color, and, if necessary, the complete distribution instructions included in the composition appearing on every form copy, which results in all copies being the same and no interleaving. In cases where there is need for each set to have an individuality, the forms can be press-numbered as they are being printed, so that there still remains no interleaving or no other additional operation, such as machine numbering.

Press perforations appear to be quite as satisfactory as perforations that have been made after the form has been printed, and this also applies to press numbering. Both these operations become extra operations if run through a perforating or numbering machine afterwards, and increase the manufacturing costs proportionately. Some presses are now used that will gather,

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or interleave, the forms as they are being printed, but to set a press for a job of this kind costs so much that unless it is distributed over a long run it is cheaper to interleave by hand.

It is possible to avoid interleaving by having three forms of a set printed all on one sheet, two on the front and one on the back, and press perforated the same time that they are printed, provided the forms are not too wide when joined together side by side, or too long when joined together top and bottom. In other words, the total length, or width of the complete set before folding should not be over 25 inches, and when fan-folded, of course, the set would then become the size of one form. Cases are also found where the user requires one page of a book perforated, and interleaved with a page not perforated, but exactly the same in all other respects, which ordinarily requires that half of the run be perforated and interleaved with the other half before binding. To avoid this, have all copies press perforated and it will be found that there is no complaint of the original and carbon copy both being torn out of the book, because there is always a sheet of carbon paper in between, and after the form is filled in, the clerk usually raises the original to remove the sheet of carbon, and tears the original out at the same time.

Many books now center sewn with thread, can be saddle stitched with wire, providing the wire stitching is run through a strip of fabric in the center, which acts as a washer and prevents the center leaves from tearing away from the staples, thereby reducing the cost of center stitching materially. An investigation will disclose forms now being delivered folded, which may be delivered flat without any inconvenience, because the stenographer has to unfold them for the insertion of carbons before using in any case, so folding should be eliminated unless absolutely necessary owing to the size of the form.

So much is heard concerning the necessity of the envelopes being of the same quality, color, and weight as the letterhead that it has come to be generally accepted as being an essential requirement. Apart from the occasional letter under personal cover, how many of the men we wish to reach ever see this container?

The cost of window envelopes is reduced by omitting the glassene covering inside the opening and specifying these to be manufactured opened window, with the exception of cases where stock is not sufficiently strong, or the window is too large, to permit this substitution. The Canadian National Railways have found that the majority of the window envelopes used are subject to open-window treatment, and over a period of several years, have not had any complaints that the contents were tampered with in any way. Certainly the open window makes the name and address much more legible, as well as overcoming the tendency for insertions to catch on the glassene edges when filling the envelope.

The Canadian National Railways has found the least expensive envelope stock for interdepartmental use to be manila, for light weight contents, and kraft, for bulky contents. Kraft is also used for strength in communications with the public, but otherwise wood white wove in 20-pound weights. While occasional complaints have been received in connection with the latter substance, these have not been sufficiently numerous to justify the use of rag white wove, which would more than double the cost of our envelopes, and so the policy of supplying the least expensive material suitable to the requirement has been followed.

GROUP EXPERIENCE USEFUL IN WRITING SPECIFICATIONS

Very serious and successful specification writing has had the attention of the electrical industry for some years. The National Electric Light Association, the American Telegraph & Telephone Co., the American Standards Association, the Bureau of Standards, the National Electric Manufacturers Association, and others, have all put in valuable time on the problem with the result that group knowledge and experience are well woven into the standards that now exist.

In an editorial discussion of the subject the magazine, Electric Light and Power, recently pointed out that despite the study behind certain accepted specifications it is not unusual to hear of individuals who are not satisfied with them and who write, for universally accepted equipment, specifications of their own.

"There is no satisfaction in obtaining the thing one wants if the price one pays is out of proportion with that of the nearest suitable substitute," the editorial pointed out. Continuing in part, the editorial comment added "We have heard of cases where the individualized specifications could not be filled regardless of cost. The more specifications, the more standards or semistandards and the higher prices, seems a logical premise—it is the practical sequence."

At best the writing of materials' specifications is not an amateur's job—far from it. In this connection the editorial quoted above said that "it is one employment where a number of heads and experiences can, and should, get together for conference before the writing starts. Excepting where a specific piece of equipment is needed for a particular installation, specification and standards writing is committee work."

SIMPLIFIED SCHEDULES FOR COMMERCIAL LAUNDRY MACHINERY MAILED TO INDUSTRY

Four simplified practice recommendations in the commercial laundry machinery field, namely, washers, extractors, ironers, and tumblers, have been mailed by the Bureau of Standards to all interests in the industry for their consideration and written approval.

The simplified schedules for washers and tumblers are concerned with the size, the type of drive, the number of compartments, the number of cylinder doors, and the number of vertical and horizontal partitions. The tumbler program also provides for the method of heating. Types and diameters are considered in the extractor recommendation, and sizes, types, drive, and method of heating are contained in the flatwork ironer program. These recommendations, which were proposed and developed by the industry, will be effective when the required degree of support has been accorded them by members of the industry.

METHODS OF JUDGING FRUITS AND VEGETABLES

Suggestions to Consumers on How to Measure Quality and Conditions of Products of Farm by Specific Characters

By H. W. Poulsen [1]

The average housewife or purchaser of home supplies knows comparatively little about the details of quality in the produce which he or she is buying. By experience they have learned that certain commodities are satisfactory if they have a good appearance, but many purchases depend entirely upon the integrity of the retail grocer or vender.

In the enforcement of the California fruit, nut, and vegetable standardization act and the California standard apple act, the county agricultural commissioners, inspectors, and deputies, together with the members of our bureau, come in contact with many facts which we feel would be of interest and value to the purchaser of fruits and vegetables for home use.

Recently California experienced some very severe weather, with the result that many of the oranges still on the trees were severely damaged. During the harvesting of such a crop it is very difficult for the law-enforcement officials to catch all the loads of oranges which go from orchards directly to the cities for distribution among the retail stores and directly to the houses by the peddlers. It is comparatively easy to retard the movement of frozen oranges by carloads to out-of-State markets, but much more difficult to stop the flow which goes, as stated above, directly to the consumer.

In purchasing oranges this year and in any season when freezing temperatures have been experienced, it is important that everyone be on the lookout for oranges which are frozen on the inside. The effect on the orange from low temperatures is the bursting of the cells and the drying of the juice, so that it has far less juice than a normal orange. While there are several characteristics which appear on the outside of the orange, such as light-colored sides, irregular spotting of the color, etc., there is no definite means of determining from the outside appearance, whether or not the oranges have been frozen or what extent of frost damage may be present.

As the drying process continues, the orange becomes lighter because of the absence of juice, and occasionally can be recognized by this fact. The best method, however, of determining the condition of oranges which might have been frozen is to cut a representative sample.

The maturity or ripeness of an orange is another factor which often confuses many of us. One of the important things in eating an orange or drinking the juice of the orange is whether or not it is sweet enough to satisfy our taste. The amount of acid in proportion to the soluble solids of sugar in the juice determines the sweetness. The standardization law referred to above requires that this ratio be at least 8 parts of sugar to 1 part of acid or better when the color on the outside is 25 per cent at the time of picking. However, if the color is at least 70 per cent at the time of picking a 6½ to 1 ratio is sufficient. This, of course, is a minimum standard, and to be really desirable it should be sweeter; but, of course, a law of this kind can not have a provision which might be prohibitory to some producers.

The outside color of an orange is not a true indication of its maturity or sweetness. Oranges generally are accelerated in color by artificial means, such as heat and various types of gases. By this means an orange which is quite sour may have a beautiful deep color, which may indicate to you that it is very desirable, which, of course, is not true. Again, the only real method of finding out whether or not the product is sweet enough is to have it tested, but, of course, this can not be done in the average case, so that one must resort to tasting.

Avocados, sometimes known as alligator pears, are now grown in large quantities in California. The standardization act requires that this fruit contain at least 8 per cent oil content before being sold. This is a minimum standard, and many varieties grown in California exceed this considerably. The larger the oil content of the avocado the better the product is. Many people are confused in purchasing avocados because of the fact that when they are received by the retailer and sold to the consumer they are quite hard.

The flesh of avocados to be desirable must be almost as soft as fairly warm butter. When selecting avocados for immediate use they should be soft; but for use in the next few days, it is a good policy to buy those which are still quite firm.

Generally speaking, the appearance of our various vegetables is a fairly good indication as to their quality and desirability. However, in the case of head lettuce it is important to observe further. A soft head of lettuce may have a very fine appearance, being fresh and bright, but will not contain much in volume, nor will the leaves be well bleached. Soft heads of lettuce quite often have a large part of their leaves very green in color. The harder the head of lettuce the more desirable it will be. Irregularly shaped heads are sometimes caused by the advanced growth of seed stems within the head. Oftentimes these have developed so far that a knob appears on one side of the head, and in most instances this type of head is bitter to the taste.

California grows a very large acreage of different kinds of melons which are shipped out of the State and sold in our own markets. In order to ship cantaloupes for any distance they must be picked in a hard, ripe condition, which in the trade is called "fancy." Those intended for local markets are riper and are called "choice." While it is legal, as far as the standardization law is concerned, to ship both of these types, they must comply with the maturity standard calling for 8 per cent soluble solids, which is sugar, in the juice of the edible portion. Sometimes the fancy grade of melon reaches our local markets or is offered for sale on roadside stands to the home purchaser.

[1] Bureau of fruit and vegetable standardization, department of agriculture, State of California.

In order to be desirable for immediate consumption, a cantaloupe should have a well-developed raised net and the ground color of the skin between the net should be well colored. For most varieties this color is of a yellowish golden cast. While all cantaloupes failing to meet the maturity standard of the law should be, and are generally, kept off the market, occasionally some might be offered for sale. These melons are quite green in color, with a flat net, and by the time they reach the consumer in most instances will have begun to shrivel. Oftentimes cantaloupes are held by the wholesaler or retailer until they become overripe. Generally, this is shown by the fact that they become very soft. The desirable characteristics of maturity, in addition to those points mentioned above, are that the cantaloupe be fairly firm. If they yield readily to the pressure of the hand they are usually a little bit too ripe to be desirable. This condition should not be confused with a melon picked too green, which becomes soft after being held. This type will be green in color and soft, but, of course. it is also undesirable.

In the buying of fresh garden peas there are several points of importance which would be of value in purchasing them. Peas which are too young—that is, not well enough developed—will appear very nice—the pods will be fresh and green—but will oftentimes contain very small peas. This condition of a pod is usually referred to as flat. On the other extreme the peas in the pod are often overmature. This condition is shown by the shriveling, yellowing, and drying up appearance of the outside surface of the pods. Also the peas in the pod will be quite large. To determine the overmaturity of peas, one should break a few open and taste them.

Local tomatoes grown in the vicinity of the district in which they are marketed are usually quite ripe and in fairly good condition. However, when it is necessary during certain seasons of the year to ship them in from earlier producing sections, they arrive in the retail stores and markets with considerable variation as to maturity between the individual tomatoes in the containers. They are all picked and packed at point of origin in a green condition, but are supposed to have reached the state at which they will complete their ripening process. While I realize that most housewives desire tomatoes which are comparatively ripened, being nice and red, one should not be discouraged if a few of them are rather pink in color or do not have sufficient dark red color to satisfy the need. These can be held over until they ripen to the proper stage.

The California State Department of Agriculture, through the county agricultural commissioners, is endeavoring daily to patrol the shipments of these products to see that everything which is offered for sale is suitable.

FIBER INSULATING BOARD

In response to a request from the manufacturers of insulating board a general conference of manufacturers, distributors, and users of the product was held at the Palmer House, Chicago, Ill., on May 16, 1932, to consider the adoption of a minimum quality standard for the guidance of the industry. The conference was held under the auspices of the division of trade standards, Bureau of Standards.

A proposed standard that was tentatively drafted by a committee of manufacturers was thoroughly discussed and numerous constructive changes were made. The specifications finally approved by the conference will be submitted to the industry for written acceptance within the very near future.

The recommended standard for fiber insulating board is a minimum specification for two classes designated as "insulating building board" and "roof insulating board." Insulating building board is used for sheathing, partitions, plaster base, etc., and is governed by requirements of thermal conductivity, water absorption, tensile strength, deflection, minimum thickness, plaster adhesion, expansion, and standard sizes. Roof insulating board is used as the name implies and is governed by requirements of thermal conductivity, water absorption, tensile strength, minimum thickness, and standard sizes.

The adoption and use of the standard will establish definite criteria of insulating value and other physical requirements that should be possessed by this material. It will become a basis on which performance guaranties may be made by the manufacturer for the guidance and assurance of the prospective home owner, architect, or builder.

ENGINEERS HOLD INTERNATIONAL CONFERENCE

Engineers of 18 nations met in Milan, Italy, May 30 to June 9, for a series of technical conferences on securing greater international uniformity in standards for airplane and automobile parts, cutting tools, iron and steel, and other subjects. These conferences were held under the auspices of the International Standards Association, which includes in its membership the national standardizing bodies of 18 nations, of which the United States is one.

Ernest Wooler, chief engineer of the Timken Roller Bearing Co. of Canton, Ohio, outlined to the conference on ball and roller bearings, the American proposal on bearings to replace the thousand different types and sizes now manufactured in the United States alone. Upon returning to the United States from the conference Mr. Wooler informed the Commercial Standards Monthly that this proposal which is the standard of the Society of Automotive Engineers, was accepted only by France, which adopted the American basis using their own standard millimeter dimensions. He said that Sweden, Germany, Switzerland, and Italy accepted the Swedish proposal, outlined below, and expressed the opinion that Czechoslovakia and Russia would follow suit.

Mr. Wooler stated that the Swedish proposal of tapered roller bearing standardization is an entirely new line and is interchangeable with ball bearings to metric dimensions, which the American group considered entirely unsuitable for use in this country. The American proposal, he explained, was developed from the most popular and satisfactory bearings at present in production and used for the past 30 years.

NEW GRADING RULES ADOPTED BY HARDWOOD LUMBERMEN

Secretary of National Hardware Lumb er Association Outlines New Grading Rules of His Association to Members of the National Association of Purchasing Agents

By L. S. Beale[1]

The new hardwood grading rules adopted at the thirty-fourth annual convention of the National Hardwood Lumber Association became effective on January 1, 1932. These new rules are now the official standard of the association and are referred to as the 1932 rules, to distinguish them from 1931 rules which were the last issue of rules based upon former principles of grading now given the stamp of obsolescence by the action of the last convention.

Up to 1931 the rules of the association were based for the most part on principles adopted 34 years ago. There had been changes and modifications in details, but no major changes in basic principles. During this time there were many changes in the conditions under which hardwood lumber was produced; many changes in the extent and kinds of trades using hardwoods and the purposes for which they were used. These changes in both the producing and consuming fields have had their influence from time to time in bringing about a desire for changes in the grades. For some years there were serious differences of opinion among hardwood lumbermen as to the basic principles under which hardwoods should be graded. These differences at one time developed factions which splits the industry and caused strife within its own ranks. At one time there was another set of grading rules in the field advanced by one of those factions, causing confusion and annoyance in the trade.

At about this time the then Secretary of Commerce was advocating standardization of designs, sizes, types, kinds, and processes in various lines of industry. This movement was prompted by World War experience which disclosed a lack of standardization and resulting waste in many lines. This movement caught the lumber industry first in the softwood field where apparently there was considerable difference in grades and sizes as between the various softwood species, particularly where different species were under the control of different associations. Hardwood grading rules at the inception of this movement had been standardized by our association for many years. All hardwood species having been under one association there was not the lack of cohesion existing in softwoods resulting from the numbers of associations. Nevertheless, the movement for standardization in lumber brought out an examination of the hardwood grades, raised questions as to the merits of the principles then applied and proponents of various schools of lumber inspection voiced their theories in the resulting conferences and committee meetings.

An examination of the standards of the association at that time was not objectionable to our association. It was felt that if a discussion should show the way to improved grading that we should adopt the improvement. The association, however, did object to entirely scrapping the experience of its then 25 years and the adoption of wholly new and radical principles throughout and without regard to the needs and interests of the consuming trade as well as those of the lumber producer. Its representatives fought successfully for the rejection of such proposals as that all grades be determined from the best side of the board, and that there be allowed an unlimited number of cuttings in obtaining the required percentage of clear material in the board. The subject was argued for several years through meetings of the hardwood consulting committee, an advisory or subcommittee of the central committee on lumber standards. The matter was eventually boiled down to three sets of basic rules being submitted to the hardwood consulting committee, known as proposals A, B, and C. Proposal C was formulated by representatives of the association and was adopted by the hardwood consulting committee in 1927.

Conferences with representatives of the National Furniture Manufacturers Association and the Southern Furniture Manufacturers Association resulted in revisions and modifications of the program. The new proposal was then submitted to the membership at the 1931 convention of the association. While these rules have now been in effect five months it is still too early to say what experience we are having with them because of the fact that so little lumber has moved in that time, and because lumber production since January 1 has been so low most of the lumber stocks on hand was produced and piled according to the former rules. Nevertheless, a general acceptance of these new rules is indicated by the fact that association inspections in January were made under the new rules to the extent of 60 per cent of the volume handled; February, 80 per cent, and since then about 90 per cent. The new rules have certain specific benefits for both consumer and producer which are not at the expense of the other, but are mutually advantageous.

For the consumer there will be a more uniform quality in each grade; less spread in quality between the high and low and of each grade, resulting in a stabilization of costs when a certain grade is bought repeatedly for the same purpose. Because the present rules force the producer to rip wide boards to obtain the best grade classification while the proposed rules eliminate much of this necessity, there will result a wider run of widths in each grade and, therefore, more flexibility in fabricating to the best advantage for each consumer.

The producer will benefit from reduced costs by eliminating the necessity of ripping and trimming to raise the grade at time of shipment, resulting in a saving of both labor and material. This is accomplished in a manner which maintains just as high a percentage of clear material for the consumer in each grade. The producer will also be able to offer better average widths from such timber as is now available.

Both consumer and producer will be benefited by the simplified wording of the rules and the fact that

[1] Abstract of paper delivered before June 7 meeting of the National Association of Purchasing Agents, Detroit, Mich., at their seventeenth annual conference. Mr. Beale is the secretary-treasurer of the National Hardwood Lumber Association.

they present less ambiguity as to meaning or interpretation. There will be more definite dividing lines between certain grades because of both simplified wording and the fact that the grades are sorted entirely according to utility value. These conditions will result in more uniform grading of the same shipment by different inspectors and, therefore, make less differences between sellers who intend to furnish what the order specifies, and buyers who seek no more than they bought.

RESEARCH IN AERONAUTICS

BUREAU OF STANDARDS RESEARCH WORK DEALS WITH AIRPLANE RUDDERS AND COMBUSTION PROCESSES IN ENGINES

The behavior of an airplane with respect to recovery from a spin has a most important bearing on its safety. The air commerce regulations have rather stringent requirements as to the case and quickness of recovery, requiring recovery in one and one-half turns with controls neutral. The studies of recovery from a spin carried out in this country and abroad would have indicated that the most useful control in stopping the spin is the rudder. Hence a knowledge of the effectiveness of rudders as dependent on various design factors is most desirable.

Previous studies of the effectiveness of rudders have usually been made in connection with the design of a particular airplane. By the method of trial and error, an arrangement of the vertical surfaces is found which gives a satisfactory yawing moment for a given angular displacement of the rudder as judged by comparison with measurements on models of airplanes whose rudder control is known to be satisfactory. Such measurements do not readily lend themselves to analysis or to the determination of the influence of the several factors, such as the area and aspect ratio of the vertical tail surfaces, on the magnitude of the yawing moments. An investigation recently conducted at the Bureau of Standards represents a beginning at least of a systematic study of the effect of the area and the aspect ratio of the vertical surfaces, of the angle of pitch, and of the shape of the fuselage on the yawing moments produced by rudder displacement.

The effectiveness of a rudder is approximately proportional to its angular displacement for angles less than 25°. The effectiveness continues to increase with increasing rudder angle at approximately the same rate for rudders of small aspect ratio, but for rudders of large aspect ratio, the rate of increase falls off rapidly above rudder angles of 25°. The value of the rudder moment, however, is never less than for corresponding rudders of small aspect ratio. The term "aspect ratio" means roughly the ratio of the width of the vertical tail surface measured perpendicular to the airplane fuselage to the length measured along the fuselage.

The effect of increasing the angle of pitch is to decrease greatly the control at a given rudder angle; the decrease being greatest for rudders of large aspect ratio, when the rudder angle is less than 25°; but when the rudder angle is large (44°), the decrease is greatest for rudders of small aspect ratio.

The effect of the shape of the fuselage is quite noticeable, being especially marked in the case of the cabin fuselage. The shielding effects are such for the cabin fuselage that the effectiveness at a given rudder setting at an angle of pitch of 40° is about two-thirds of that for the open cockpit fuselage.

When the aspect ratio is maintained constant, the effectiveness of the rudder is linearly related to the area ratio, but increases somewhat faster than in direct proportion. The effect of aspect ratio is sufficiently large to be considered in design. If rudder angles approaching 45° are permitted, the effort of increasing the aspect ratio is small and may be ignored for practical purposes, although at high angles of pitch, large aspect ratio is appreciably favorable. If the rudder angle is restricted to 25° or less, an increase of rudder control of 30 to 45 per cent may be produced by increasing the aspect ratio from 1 to 2.

In aircraft, to secure the most horsepower per pound of engine weight and maximum cruising range without refueling, it is necessary to use supercharged engines of high-compression ratio. Such engines will overheat and may suffer serious mechanical damage if the combustion phenomena known as preignition and detonation occur. Preignition commonly arises from overheated spark plugs or inadequately cooled exhaust valves and shows itself by loss of power and a tendency to back-fire. Detonation is what the motorist calls "knock" and commonly results from using unsuitable fuel. Continued detonation will heat the cylinder head until preignition sets in.

Experiments on combustion in engines, made in various laboratories for the purpose of learning more about the nature of detonation, were discussed by H. K. Cummings of the Bureau of Standards staff, before a recent aeronautical meeting of the American Society of Mechanical Engineers. These experiments indicate that a narrow combustion zone proceeds from the spark plug at a rate depending on engine speed and carburetor adjustment and that detonation usually does not occur until this burning zone has nearly crossed the combustion chamber. In the event of detonation the remaining portion of the charge, which is already heated and highly compressed, burns with extreme rapidity. This rapid burning of the last portion of the explosive charge probably is due to compression and temperature rise and to chemical actions which have taken place during the compression of the charge.

The only known effect that adding tetraethyl lead to a gasoline has on combustion is to prevent the ultra-rapid burning of a portion of the charge and the accompanying abrupt pressure rise which constitute the knock. Precisely how this is accomplished, has not been established as yet.

METHODS FOR EXPORT PACKING

Need Exists for Greater Development of Standard Containers for Export

By Paul H. Sullivan[1]

"Export packing is by no means the least important of the new problems which face a manufacturer who has decided to enter the export field," says the Bureau of Foreign and Domestic Commerce, in the introduction to its book on "Packing for Foreign Markets." "Each American exporter, whether his business be large or small, has a direct and personal interest in the development of scientific packing methods, and the dissemination of information on this subject," it is pointed out. "The millions of dollars lost annually through careless or injudicious packing, which invites pilferage and destroys goods through breakage and other damage, is a tax on industry which those sharing in the distributive process should join forces to eliminate."

In domestic shipping, the packing problem has for many years been uppermost in the minds of those identified with it, particularly the domestic carriers, who are most vitally interested in seeing that shippers employ adequate packing methods. The railroad companies, for example, have formulated very definite regulations for the construction of shipping containers, and through a rigid inspection service, are constantly on the alert for violations.

Numerous container designing and testing laboratories have been established, patronized by shippers, transportation agencies, and others, which function solely for the purpose of strengthening this important link between factory and destination. Those concerned with the problem are showing an awakened consciousness of the benefits of good packing, and as a result domestic packing methods have been elevated to comparatively high standards.

There has also developed a rather widespread interest in standardization, and some industries have made commendable progress in establishing standard packing methods for their products, although, as an article in a recent issue of this magazine pointed out (Simplified Practice in Container Field, by R. L. Lockwood, appeared in the January, 1932, Commercial Standards Monthly, a tremendous amount of work in this field remains to be done. Whatever standardization is found to exist in export packing, however, is largely the result of experience over a long period of years which has enabled shippers to determine which types of containers are best suited for certain commodities, rather than the outgrowth of any sort of progress calculated to put such methods into effect.

Certain commodities are shipped in barrels, for example, because long years of experience have shown that barrels will do the job satisfactorily. Likewise, the selection of other types of containers will be found to be more the result of tradition and precedent than of any studied effort to discover "the one best way" to pack the commodity in question.

From the point of view standardization, export packing undoubtedly offers a fertile field. However, little progress can be made until the indifference with which the average export shipper regards his packing problems is broken down.

An important reason why the shipper has failed to accept a share of the responsibility for the safe delivery of his merchandise is the fact that shipping agencies and marine insurance companies "make good" on direct losses resulting from damaged or pilfered goods—once the consignment is accepted, the shipper stops worrying.

A mistake that is often made by some American exporters is to assume that because the containers they are using in domestic service perform satisfactorily, they may be safely employed for shipments overseas. In many cases, domestic packing methods are wholly satisfactory for export shipping, because the hazards of transportation may be no greater or may even be less, than the hazards encountered in transporting the same shipment to a domestic destination. But for every instance of this kind, there are scores in which the use of domestic packing methods for foreign shipments is almost certain to give trouble.

In determining the proper construction of containers intended for domestic use, destination is a relatively unimportant factor. In designing containers for export service, however, destination is a factor which must be given the utmost consideration. Since foreign destinations differ in so many important respects, the character of the packing methods employed to insure safe delivery must be varied accordingly. In many overseas shipments also, the problem is complicated not so much by conditions at the point of departure, or on board ship, as by conditions which will be encountered at the end of the voyage, such as unloading facilities, the nature of the harbor, and the methods of transportation utilized to carry the shipment to its final destination.

Aside from the necessity of providing adequate protection to goods in transit, two other important factors are present to further complicate the export packing problem. One is the requirement that the exporter must keep his transportation charges as low as possible, through reduction in displacement and the elimination of unnecessary weight. The other is that he must promote economy in the cost of the goods to the foreign customer, to whom excessive bulk and weight may also prove a burden.

What is the shipper who appreciates the seriousness of this problem to do? Does the solution lie with his own organization? The wire-bound box manufacturers think not. Unless his requirements are most elementary in character, we do not believe "home-made" remedies will suffice. Those who have tried to make packing engineers out of their shipping-room personnel have soon discovered that it is an unsatisfactory and costly experiment. Where, then, can the skill and experience so vital to the development of proper packing methods be obtained, and what do they cost?

We are firmly of the opinion that careful packing for export can best be arrived at in the container-de-

[1] Trade promotion manager, Wirebound Box Manufacturers Association, 111 West Washington Street, Chicago, Ill.

signing laboratory. Ordinarly, the cost of this service to the shipper is nothing. Usually, the economies effected are so considerable that they will offset, or may even exceed, the expense of changing over to different methods. This frequently happens where a shipper who has been using a heavy, old-fashioned container is induced to use a much lighter package, such as the various types which employ thin lumber, plywood, or veneer in combination with metal straps or bindings, and which have proved so satisfactory in export service during recent years.

The location of these laboratories is no mystery. Various progressive shipping-container manufacturers in the United States operate designing and testing departments of their own; or if they do not, are members of a trade association which devotes a sizable portion of its income to the maintenance of such an institution. These manufacturers have committed themselves to a policy of offering a container engineering service, rather than one of being in business merely to sell boxes and crates alone. A shipper who has come in contact with a container manufacturer of this type for the first time will be surprised at the intimate knowledge of his packing requirements that is shown, and the technical approach that is made to his problem.

Even though a shipper's present methods seem to leave small room for improvement, it may pay to have them checked, with the view to achieving economies other than the prevention of damage. A few cents saved on each shipment, such as may result from a decrease in labor cost, elimination of unnecessary packing materials, reducing the variety of container sizes, etc., will in a short time represent an attractive profit.

Finally, it should be remembered that inadequate packing is one of the surest means of destroying the confidence of customers. Good packing, on the other hand, is not only one of the most effective forms of good-will advertising, but it pays handsome dividends as well.

IMPROVEMENT OF SLUM AREAS SEEN IN PROPERTY RECONDITIONING CAMPAIGN

That property reconditioning campaigns afford a practical method of bettering slum areas and improving tenement districts is revealed in a report recently received by the committee on home modernizing, which is attached to the division of building and housing of the Bureau of Standards. The report in question is a review of a special property improvement campaign undertaken by the Neighborhood Association of Kips Bay, New York City, a typical tenement district containing about 40,000 families.

An unusual feature of this campaign was the fact that all the field work was carried on by business and professional women drawn from the ranks of the unemployed. Although lacking experience in such activity, because of their tact and understanding of the human problems involved, most gratifying results were secured. As a result of their efforts, 1,200 workers, including carpenters, plumbers, painters, and electricians, were given temporary employment with total wages amounting to approximately $100,000. About 4,000 violations of building and sanitary ordinances were corrected in the course of the campaign. According to the association's report, there was evident as a result of the campaign a tendency on the part of tenants to take more interest in keeping their quarters clean and in preventing further abuse of the property.

Property improvements involving an expenditure of $36,000,000 for labor and materials have been reported to the committee as having been pledged in 49 cities throughout the country. Of this amount more than $10,000,000 has been expended since the first of the current year. Ten cities have reported more than 11,000 men put to work on odd jobs. Cooperative assistance is offered by the committee to any city or local group of citizens who desire information on how campaigns have been successfully organized in other cities, as well as suggestions of constructive value to property owners. Communications should be addressed to the Committee on Home Modernizing, United States Department of Commerce, Washington, D. C.

COOPERATION WILL IMPROVE INDUSTRIAL CONDITIONS

Cites Economies Through Standardization and Simplification

By cooperative effort we have effected economies through standardization, simplification, and the elimination of waste, said Charles F. Abbott, executive director of the American Institute of Steel Construction (Inc.), speaking before the seventeenth annual conference of the National Association of Purchasing Agents, June 7 to 12, at Detroit.

Obsolete plants and improper selling methods are not entirely extinct, he said, adding that "many executives are still ignorant of their costs." What we have done so far is merely an indication of the good work that can be done if these potential powers of cooperative effort are extended to their logical conclusion.

The opportunity of industry to recover awaits a cooperative plan to promote normal business and normal profits. It is obvious that if our industries are to progress and contribute to the welfare of the country the way will be found in the creation of reasonable profits and not in a struggle to obtain volume at a disregard of fair prices. It is evident that the country must soon choose between unregulated competition, destructive in the end to all interests, and a regulated competition which will prevent excessive prices.

WOOL AND PART-WOOL BLANKETS

Signed acceptances of the recommended commercial standard for wool and part wool blankets have been received from a sufficient number of manufacturers, distributors, and users to constitute a satisfactory majority, and the Bureau of Standards has therefore announced the indorsement by the industry. The commercial standard will become effective for new production and clearance of existing stocks on December 31, 1932.

Mimeographed copies of this commercial standard may be obtained from the division of trade standards, Bureau of Standards, Washington, D. C.

DEPENDABLE LABELS NEEDED WHEN PURCHASING HOUSEHOLD GOODS

Survey Among Housewives Discloses Urgent Need for More Reliable Information When Purchasing Certain Commodities for the Home

By Mrs. M. T. Nelson [1]

For the past two years the home-makers sections of the District of Columbia Home Economics Association has attempted to help solve the purchasing problems of its members. As is well known, the present status of the woman in charge of a household is not so much that of a producer as that of a buyer, and it is, therefore, imperative for her to become an intelligent one.

Our method for this: If Mrs. A was in need of a new blanket, she or another member proceeded to gather information regarding blankets and then reported the findings to the group of discussion and deliberation. The sources from which the information for a specific commodity was sought were generally one or more of the following: Clerks and buyers in the local stores; manufacturers; research agencies, both private and governmental; and testing institutes maintained by magazines.

In addition to gathering information, the group attempted to set up for each kind of article a standard or a set of desirable qualities pertaining to performance construction, and expected length of service of the article. Among the articles studied were blankets, sheets, pillows, mattresses, refrigerators, rugs, and kitchen utensils; at the last monthly meeting of the section foods were under consideration. It is almost needless to say that for each commodity thus investigated plenty of literature was received, but little useful information.

In the case of sheets, it was found that the clerks at the local stores could give little or no information regarding tensile strength and thread count of the fabric used; many lengths and widths were found on the counters, instead of three widths for single, three-quarter, double beds, and one length of 108 inches; and the price was by no means a guide to wise buying of sheets. Letters were written to the manufacturers asking for data on thread count and tensile strength; the replies may be roughly divided into four types: (1) Complete evasion of the question asked, (2) assurance that any article sold under the manufacturer's trade-mark would give complete satisfaction, (3) assurance that the sheet had been laboratory tested but that information could not be given, and (4) one respectful reply gave laboratory data.

As a result of such replies, the women have become wary of trade-marks. They also felt that any manufacturer who had helpful laboratory data and refused to give them on request was a hindrance to wise buying and should be avoided.

In the case of part-wool blankets, no information was obtainable regarding the percentage of wool and cotton contained. Furthermore, when a blanket of known quality and an inferior one were brought to a meeting, no one in the group was able to judge between them.

In studying mattresses, it was discovered that the inner cotton padding between the lovely covers may be of the poorest quality, even when it is new and unused. The group visited a local mattress plant to get some idea of what to expect to find inside of what is considered a good mattress.

In the case of a refrigerator, it was discovered that the prospective buyer must still take the manufacturer's word that it is well insulated, because the salesman and the local dealer know very little about it. It was learned that a number of interested national associations had combined their efforts in standardizing and labeling refrigerators, but as far as could be learned, the recommended specifications have not been accepted by the manufacturers.

The results of our two years' efforts are mostly negative. Our purchasing problems are not solved. We were not even able to establish a basis upon which we could judge the articles, because information was not made available to us. Our efforts, however, were not in vain. Through our discussions, we learned much that was of value to us. Some members found that an intelligent question frequently shattered a salesman's well-planned scheme to make a sale. And above all, we have come to the conclusion that to insure wise buying the manufacturers must place on the goods reliable labels to indicate essential factors of quality and performance.

[1] District of Columbia Home Economics Association.

PUBLICATIONS OF INTEREST TO HOUSEHOLD PURCHASERS

A mimeographed circular of publications of interest to household purchasers has been prepared by the Bureau of Standards, and is designated as Letter Circular No. 322. Copies may be had upon request to the bureau.

The publications listed in the circular comprise those of several of the series of the Bureau of Standards, consisting of the regular bureau circulars, research papers, scientific papers, technologic papers, miscellaneous publications, commercial standards, building and housing recommendations, simplified practice recommendations, and letters circulars. Included also are the specifications for household commodities promulgated by the Federal Specifications Board for the use of the departments and establishments of the Government. All of these specifications have recently been, or are now being, revised. Reference is also made to certain publications of the National Committee on Wood Utilization which are of interest to household buyers.

AMERICAN STANDARDS ASSOCIATION

Current developments of the following standardization projects under the auspices and procedures of the American Standards Association have been reported by that association.

Noise measurement project.—The change in the title and scope of the project on noise measurement, which was recommended to the American Standards Association by the sectional committee at its organization meeting, has been approved by the A. S. A. standards council. The former scope restricted the work of the committee to units, scales, terminology, and methods of measurement in the field of noise measurement, while the new scope permits fundamental standardization in the general field of acoustics. The new title of the project is "Acoustical Measurements and Terminology" and the scope is as follows: "Preparation of standards of terminology, units, scales, and methods of measurement in the field of acoustics." Two new subcommittees will be appointed as a result of the enlarged scope of the project, one to cover sound insulation and absorption, the other to cover fundamental sound measurements.

Radio standards.—Two standards for radio have been approved by the association. The first of these, covering standard vacuum tube base and socket dimensions, is an extension of specifications for vacuum tube bases. The specifications for vacuum tube bases covered only dimensions of standard 4-pin vacuum tube bases of the large and small type, while the new standard covers in addition the following: Dimensions of large 4-pin base without bayonet pin; large 5-pin base without bayonet pin; large 5-pin base; terminal caps for receiving tubes and transmitting tubes; 4-pin transmitting tube base; large transmitting tube base; terminal cap with large transmitting tubes; 4-pin socket for receiving tubes; 5-pin socket for receiving tubes; and standard connections for vacuum tube bases. The other standard, manufacturing standards applying to broadcast receivers, covers definitions of certain standard manufacturing practices as well as certain rated voltages and dimensions for component parts of radio receivers. The subjects covered in the standard are as follows: Definitions of battery operated, socket powered, electric, a. c. electric, and d. c. electric radio receivers; selector (station selector), multiple, master, single, direct, and close selectors; volume and range; on-off switches; frequency range of radio broadcast receivers; rated voltages of socket power devices and electric radio receivers; definitions of antenna parts; antenna installation instructions; definition of solder-tests for cord terminals; dimensions and tolerances for cord tips of the cylindrical and pin type; drilling dimensions for binding posts; dimensions for speed type terminals; dimensions and tolerances for radio plugs and jacks; dimensions and tolerances of radio receiver pilot lamps of the Edison type; and miniature size and connections for magnetic pick-up jack.

Wires and cables.—Three standards for wires and cables have been approved by the American Standards Association as follows: American standard definitions and general standards for wires and cables; American tentative standard specifications for weatherproof (weather-resisting) wires and cables; and, American tentative standard specifications for heat-resisting wires and cables.

The first of these, the definitions and general standards for wires and cables, include definitions and standards of general character which are applicable to wires and cables for power purposes and comprise a rearrangement of the American Institute of Electrical Engineers' standard number 30, of October, 1928; which has been brought up to date with certain additions and the deletion of some of the tabular matter. The standard contains definitions for the various types of wires and cables, conductivity standards, designation standards, high voltage test standards, insulation resistance standards, capacitance or electrostatic capacity standards, and maximum temperature limits.

The specifications for weatherproof (weather-resisting) wires and cables cover weatherproof wiring and cables and the materials used for coverings and saturating compounds as applied to metallic conductors. The specifications are divided into the following headings: Covering; saturating compound, which includes the tests therefor; stranded cables, which includes sizes of conductors and the stranding therefor; standard weights; a table of weights and weatherproof wires and cables; sample for tests; tests on copper conductors; and explanatory notes.

The specifications for heat-resisting wires and cables cover the usual type of heat-resisting covering commonly known as "slow-burning" as applied to metallic conductors for use in hot, dry locations where the other types of insulation would not long endure or where the presence of large masses of inflammable materials would be an objection. As explained in the standard itself, "There are many types of heat-resisting materials used for insulating electrical conductors, but no attempt is made in this specification to cover anything but the so-called 'slow-burning' insulation. The various types of asbestos coverings and enamels are for special purposes and are generally put out under trade names." The following subjects are included in this standard: Number of grades, material and workmanship; thickness; adhesion; samples for test; and explanatory note.

Petroleum products and lubricants.—The American Society for Testing Materials, sponsor for the project, "Methods of Testing Petroleum Products and Lubricants," has recently requested a slight broadening of the scope of this project. This action, resulting from a recommendation of the sectional committee, is taken in order to bring the scope into conformity with that of the newly organized committee on nomenclature and methods of test of petroleum products of the International Standards Association. As broadened, the scope of the sectional committee would read as follows:

> Methods of test of petroleum and all products derived therefrom, except tests applied to such products used as road or paving materials or for waterproofing; methods of tests of lubricants, including all materials used for lubrication when they consist either wholly or in part of petroleum products; nomenclature of petroleum, petroleum products and lubricants except for materials excluded above. The scope of this project excludes tests applied to organic chemicals or to products used medicinally.

Revision of National Electrical Code.—An interim revision of the National Electrical Code, covering non-

metallic surface extensions has been adopted under the interim revision procedure of the sectional committee having the code in charge. The new section, to be known as section 511 (nonmetallic surface extensions), reads as follows:

(*a*) Semiportable 2-wire assemblies approved for the purpose may be used as extensions to existing convenience outlets on lighting and/or appliance branch circuits only in exposed dry locations in residence or office occupancies; (*b*) attachment of such extensions to existing convenience outlets shall be by plug connectors approved for the purpose; (*c*) such extensions shall be attached only to the surface of interior woodwork or plaster finish and shall not be installed as concealed wiring or run through floors or partitions or be installed where subject to moisture or corrosive vapors; nor be installed in contact with any piping, metal work, or other conductive material; (*d*) such extensions shall not be made on circuits of more than 150 volts; (*e*) individual extensions shall not run more than 20 feet in either direction from the existing outlet, and may contain a maximum of three receptacles, provided the total outlets on the branch circuit including those on the extension are not more than 12; (*f*) such assemblies shall be secured between outlets to the surface wired over by tacks, screws, small nails or other approved means at intervals of not more than 6 inches, except that the assembly shall not be secured within 6 inches of a connector. The heads of such nails or screws shall not exceed in width one-half the space between the conductors in the assembly; (*g*) receptacles and other fittings shall be of approved type and be secured to the surface wired over by suitable screws. The end of the assembly on such an extension shall terminate in an approved receptacle which covers the ends of the wires in the assembly. All angle bands which reduce the space between conductors shall be covered by an approved cap securely attached to the surface wired over; and (*h*), such extensions shall be made in continuous lengths without joint, splice, or tap, or exposed bare conductors.

Sieves for testing purposes.—Work on the establishment of national standard specifications on sieves for testing purposes is now under way in the sectional committee recently organized under the auspices of the American Standards Association. The Bureau of Standards and the American Society for Testing Materials are jointly directing the technical work of the committee.

The need for standard specifications for testing sieves arose from their wide use in numerous industries. Some of the products for which sieve testing is important are sand, stone, cement, pigments, and paints, etc. The work of the sectional committee is based upon practically identical standards previously issued separately by the Bureau of Standards and the American Society for Testing Materials. While these standards have not been as widely used in some industries as is desirable, it is expected that the establishment of a unified American standard will lead to its nation-wide acceptance. The sectional committee is also cooperating through the agency of its secretary, Dr. L. V. Judson, of the Bureau of Standards, with a committee of the International Standards Association which has been active in Europe for some years in an effort to secure a greater degree of uniformity in the various national standards for testing sieves. (The scope and procedure of the American Standards Association committee were outlined in the February, 1932 (p. 233), issue of COMMERCIAL STANDARDS MONTHLY.)

STANDARDS FOR THE INTERNATIONAL OHM, AMPERE, AND VOLT COMPARED

Through the courtesy of the Physikalisch-Technische Reichsanstalt at Berlin extended comparisons were made during 1931 of the standards for the international ohm, ampere, and volt as maintained by the national laboratories of Germany, England, and United States. Wire standards of resistance and standard cells were carried by hand to the Reichsanstalt for these comparisons and, in addition, a series of 10 experiments with the silver voltameter was made by representatives of the three laboratories to verify values assigned to groups of Weston normal cells. Following the measurements in Berlin, additional measurements on wire resistance standards and standard cells were made at the Laboratoire Central d'Électricité in Paris and at the National Physical Laboratory in Teddington, near London. In some respects the cooperative work done during the past summer at the Reichsanstalt was similar to the work of the International Technical Committee at the Bureau of Standards in 1910.

Twenty-one years have elapsed since an agreement was reached among the national laboratories for a uniform basis for the international electrical units. Intercomparisons made in 1929 and 1930 indicated that some significant differences existed between the standards of the national laboratories, and the principal object of the present work therefore was to explain, if possible, these discrepancies.

The maximum difference found for the ohm, as the unit is maintained at these laboratories, amounted to seventy-three millionths. Three of the laboratories, however, were in close agreement. The standards for the volt, which are groups of Weston normal cells, were found to differ in electromotive force by as much as ninety millionths. The voltameter experiments which were used for verifying the values for the Weston normal cells were highly concordant, the maximum difference between the three laboratories being only 10 parts in 1,000,000.

Since the international ampere used in ordinary measurements is based on working standards of electromotive force and resistance, it is possible to compute the existing differences in the international ampere for the several laboratories. The maximum difference is one hundred and thirty-six millionths. Measurements of electric power also are usually based on standards for the volt and the ohm. The maximum spread in the unit for the watt between the several laboratories is nearly two hundred millionths. The results of the present work indicate that some readjustment of the values assigned to standards for the ohm and the volt is needed.

BENEFITS OF BUREAU'S WORK TO THE PUBLIC

The impracticability of the Bureau of Standards setting itself up as a clearing house through which the public would be kept currently informed concerning the relative merits of competitive merchandise was pointed out to the National Association of Purchasing Agents in annual session June 7, at Detroit, by Dr. A. S. McAllister, assistant director for commercial standardization, of the Bureau of Standards.

There is an ever-increasing demand from the public for information which the Bureau of Standards is supposed to possess concerning the relative merits of numerous commodities sold to contract buyers and the over-the-counter trade, according to Doctor McAllister. Such testing of commodities as is performed by the bureau for Federal, States, and local government authorities is primarily to insure that merchandise delivered on contract is in accordance with established specifications. Much other collateral testing of commodities, such as automobile tires, automobile brake linings, shoe leathers and other commodities in common use is carried on currently not only for the Government purchases, but also to assist manufacturers in the general improvement of such merchandise.

The Bureau of Standards is not able to test a wide range of commodities to determine their comparative merits and, therefore, is not in a position to advise persons concerning the relative merits of identical types of merchandise. Even were the bureau authorized by Congress to perform such activities, Doctor McAllister stated that it is doubtful if the results obtained would justify the expense of maintaining such service. Periodic issuance of ratings on comparative commodities could only be carried out after exhaustive and expensive laboratory tests and it could well happen that a given commodity rated high on the basis of current tests would within a very brief period thereafter be unworthy of such a rating because of changes made in either the basis of comparisons or the commodities produced. Such information, to be of value, would have to be revised from day to day and its proper interpretation by the public would also present great difficulties. Well-intentioned information as to the comparative merits of commodities might, therefore, readily prove to be misinformation.

An analysis of the many problems involved in passing along information of value to the public in a form suitable for use has indicated that the Bureau of Standards can render its most effective service by its present plan of expressing in specifications the characteristics and qualities which its research has demonstrated that satisfactory commodities should possess, and through promoting the use of such specifications by all interested manufacturers of such commodities and facilitating the use of these specifications by the contract buyers of the country.

Too, by taking advantage of the so-called "certification plan" developed by the Bureau of Standards in cooperation with many domestic manufacturers, the public and all branches of the Government—local and States—can derive benefits from the knowledge and experience accumulated by the Federal purchasers, by the producing industries of the country, and by numerous specification making and using agencies cooperating in this undertaking.

In outlining the bureau's cooperation with State and local governments in connection with the purchase of commodities, Doctor McAllister stated that the bureau's services have been utilized to some extent by the government of every State in the Union during the past few years. During this period the bureau has been called upon to assist local governments in matters of governmental action ranging from the preparation of standard samples of various commodities to the testing of materials entering into the construction of bridges.

COOPERATION BETWEEN LEATHER INDUSTRY AND SCIENCE

Appointment of a central research committee for the leather industry to assure cooperation between business executives and persons engaged in scientific and research work on leather was suggested to the Tanners' Council of America recently in session at Atlantic City, by Warren E. Emley, chief of the organic and fibrous materials division of the Bureau of Standards.

Left to himself without the cooperation of business executives, the scientist by reason of his training may bend the program of scientific investigations toward solution of problems which in his opinion will be of the greatest value in the long-time development of the industry—problems in fundamental research, Mr. Emley stated.

Conversely, the business executive trained to think in terms of current trade requirements may possibly consider such objectives to be chimerical and wish the program developed along lines which have more promise of tangible results of immediate benefit to the industry. Cooperation between the two groups should, therefore, be of material assistance in the proper balancing of the program of research with regard to both present and future needs of the industry, he said.

The scientific and research work on leather being performed by the Bureau of Standards and the many services and facilities which the bureau has available for the leather and leather manufacturing industries were outlined by Mr. Emley.

SIMPLIFIED SCHEDULE ON WIRE INSECT SCREEN CLOTH NOW IN PUBLISHED FORM

Simplified Practice Recommendation RI22–31, entitled "Wire Insect Screen Cloth," is now available in printed form, and may be had from the Superintendent of Documents, Government Printing Office, Washington, D. C.

The recommendation, which was proposed and developed by industry, establishes wire sizes, width, and length of roll, mesh openings, and method of packing steel wire, and copper and commercial bronze wire. The program has been instrumental in reducing the number of sizes and varieties of wire insect screen cloth from 360 to 154. The 206 items eliminated are 20 widths each of four meshes of bright galvanized wire insect screen cloth, 20 widths each of three meshes of black painted wire insect screen cloth, and 6 widths each of all retained varieties.

DENTAL LATHE GRINDING WHEELS RECOMMENDATION NOW AVAILABLE

The printed copies of Simplified Practice Recommendation R130–32, entitled "Dental Lathe Grinding Wheels," are now available, and can be purchased from the Superintendent of Documents, Government Printing Office, Washington, D. C.

This recommendation, which was proposed and developed by the industry, provides for the size and type of wheel, and size of arbor hole. The survey of variety from which the program was developed listed 91 varieties of wheels, considering diameters, thicknesses, hole diameters, and types of edge. The simplified schedule retains 10 sizes, all square edge, and all with one-forth-inch diameter of hole. The reduction in variety is approximately 89 per cent.

The American Dental Trade Association has long been interested in the simplification of commodities handled by its members. A simplification and standardization committee was appointed to make a study of current conditions with a view to the elimination of superfluous varieties of those commodities made and distributed by the dental trade and used by the dental profession. The items studied were classified as teeth, sundries, cements and plasters, equipment, gold, and instruments. Each member of the committee was assigned one of these groups for his special attention. As a result of the committee's preliminary work a number of items were selected for simplification, and for some of the associational recommendations were approved. Recognizing the need for the cooperation of all concerned in order to derive the maximum benefit from the movement, the association, in March, 1928, requested the division of simplified practice, Bureau of Standards, to assist in enlisting the support of all elements of the industry toward the development of definite simplified practice recommendations which would have national application.

The first program covered dental hypodermic needles. This has been accepted by the industry and is available in printed form as Simplified Practice Recommendation R108–29. This was followed by Simplified Practice Recommendation R116–30, dealing with dental brush wheels, and R117–30, for packaging of dental plaster, investment, and artificial stone. This program for dental lathe grinding wheels is, therefore, the fourth recommendation to be accepted by the dental supply industry and its customers.

STANDARD GRADING SYSTEM ANNOUNCED FOR COTTONSEED

Standard grades for cottonseed have now been established by order of the Secretary of Agriculture. The grading system makes possible the determination of the quality and yield or milling value of cottonseed and the publication of market-price information, thereby enabling producers to know whether they are getting a fair price for their seed.

Grade 100 is the basis grade on which quotations will be made. From 1 ton of cottonseed of this grade an efficient cottonseed-oil mill should be able to obtain 313 pounds of oil, 822 pounds of meal (41.13 per cent protein), 125 pounds of linters, and 640 pounds of hulls. Grades above 100 are premium grades. These grades result either from the fact that greater quantities of oil or of protein can be obtained or that the seed is of special quality.

Grades below 100 are discount grades. These grades result from the fact that because of variety or unfavorable soil or climatic conditions the development of oil or protein has been restricted or to the fact that the seed have deteriorated in quality through exposure or contamination.

Cottonseed, formerly a farm waste, now constitutes one of the major farm products of the Cotton Belt. The cash farm income from cottonseed in three States is second only to that from cotton lint, which ranks first of all farm products. In North Carolina, Georgia, Louisiana, Texas, and Oklahoma cottonseed ranks third or fourth in cash farm income.

The growth of the cottonseed industry has been so rapid that more attention has been given to the methods of processing and distributing cottonseed products than to methods of purchasing and garnering the seed. It has been generally assumed that the same quantity and quality of products could be obtained from any variety or growth of seed, provided the seed had not deteriorated or been damaged. But about 1914 some of the more progressive of the cottonseed crushers who realized that different lots of cottonseed varied widely in their composition initiated steps to establish a method of grading. This work was abandoned about 1919 after a method of discounting the base price, which it was assumed would represent the value of the average of the recoverable products, had been adopted. The bases of the discounts were immaturity of the seeds, so-called damaged seeds, moisture, and foreign matter. By 1924 the industry realized that these rules of purchase were equitable neither to crushers nor to producers, and at the annual convention of the Interstate Cottonseed Crushers Association, held May, 1924, a resolution was passed requesting the Department of Agriculture to undertake a study of the subject with a view to establishing standard grades for cottonseed.

Intensive studies beginning in 1925 have been carried on by G. S. Meloy, Bureau of Agriculture Economics. The grades were finally established after two years' test by the cottonseed industry, during which time the grade were applied successfully to more than 2,000,000 tons of seed.

CONCRETE JOIST CONSTRUCTION FLOORS

The revised Simplified Practice Recommendation R87–32, entitled "Forms for Concrete Joist Construction Floors," has been accorded the required degree of written acceptance by all interests, and is to be considered as in effect on May 1, 1932, the Bureau of Standards has officially announced.

This simplification program provides for widths and depths, in inches, of standard and filler forms. It also establishes widths, lengths, and taper, in inches, for standard end taper forms.

Important changes made in the revised recommendation are the elimination of the 12 and 16 inch filler forms, and the insertion of a table covering standard end taper forms. It is expected that as a result of this action wider use of the recommendation will be made by specifying authorities.

RECOMMENDATION FOR 1-POUND FOLDING BOXES FOR COFFEE NOW AVAILABLE

Simplified Practice Recommendation R64–30, coving 1-pound folding boxes for coffee, is now available in printed form, and may be had from the Superintendent of Documents, Government Printing Office, Washington, D. C.

This recommendation provides for the dimensions, in inches, and capacities, in cubic inches, of two sizes of folding boxes. Formerly more than 100 sizes of this type box were in use.

Upon the joint request of the National Coffee Roasters' Association and the Paperboard Industries Association, a general conference of representatives of the manufacturers, distributors, and users of 1-pound folding boxes for coffee was held in New York, March 28, 1930, under the auspices of the Bureau of Standards. The results of the variety survey and the developments leading up to the general conference were reviewed, and attention directed to the fact that the two recommended sizes were determined upon after careful study of the several hundred different sizes and types of folding boxes which had been submitted from various sources in different sections of the country.

Careful consideration was given to the relative merits of the different sizes of 1-pound folding boxes in use, as well as to other suggested sizes. The two sizes in the recommendation were unanimously approved and, in the opinion of the conferees, would adequately meet all normal requirements for this type of container.

HOME-IMPROVEMENT CAMPAIGNS GIVEN IMPETUS BY EMPLOYERS' LOANS

That certain progressive firms have established home-loan improvement funds for their employees with gratifying results is revealed by the committee on home modernizing which is attached to the division of building and housing, Bureau of Standards, Commerce Department. These home-improvement loans carry a nominal interest charge and are, as a rule, repaid over a 1-year period. In numerous cases they have permitted home-owners to keep their property in good repair, which they would have been unable to do otherwise because of inability to borrow elsewhere. Lack of available cash, the committee points out, has been the principal handicap encountered in many cities throughout the country where home-improvement campaigns have been conducted.

These improvement campaigns, which are designed primarily to maintain property values as well as stimulate local business, have proved most successful, according to the committee, in the medium-sized and smaller cities where the so-called community spirit is stronger than in the larger cities. The size of a metropolis makes it more difficult to carry on a house-to-house campaign and results in cities of this class are being secured largely through newspaper advertising and other forms of publicity rather than by volunteer workers.

As examples of cities which have obtained outstanding results from home-improvement campaigns, the committee points to Portland, Oreg., where more than $10,000,000 has been pledged for home construction and repairs; Omaha, Nebr., which has obtained pledges amounting to $5,000,000; and Spokane, Wash., with pledges of $4,100,000. Among the smaller cities, Lincoln, Nebr., has pledged $800,000; Taunton, Mass., $550,000; Ashville, N. C., $266,000; and San Jose, Calif., $200,000. Other cities report pledges ranging from $50,000 to $100,000. The ultimate total will approximate $40,000,000 worth of work in 1932 through organized campaigns.

The committee on home modernizing was established to assist home owners, local organizations, and others interested in home improvements through educational work. It acts as a clearing house for information on home-improvement campaigns being conducted throughout the country. Reports received by the committee to date indicate that approximately $35,000,000 will be expended for labor and repairs by the end of summer as a result of these campaigns.

PURCHASE SPECIFICATION FOR PAPER TOWELS

A report of further study of paper towels has been submitted by the Bureau of Standards to manufacturers and others interested, for their consideration of a purchase specification for this commodity, which is being developed with their cooperation. Revision of a specification, developed in a similar way several years ago for use of some of the Government departments, was found necessary, because it did not guard against decrease in absorptiveness, which occasionally occurred during prolonged storage.

A preliminary study of 17 samples, representative of the different types, resulted in the development of the following testing procedure, which was used for a second lot of 13 samples, all of which were received shortly after they were manufactured. The towels were tested for weight, bursting strength, tensile breaking strength, fiber composition, absorptiveness, acidity, and resin content. The test for absorptiveness was repeated after heating at 100° C. for periods of ½, 1, 2, and 3 hours, and after storage under normal conditions for periods of 1, 2, 4, and 6 months from date of manufacture.

It was found that the 1-hour heat treatment approximated the 6-month storage period as regards increase in time of absorption of water; therefore this appears to be a very definite and convenient way of testing the stability of towels in this respect. As the previous tests had shown that the strength did not decrease appreciably in 6 months' storage, no further tests of this kind were made.

The tensile breaking strength appears to be a better strength criterion than the bursting strength, as the latter gives much more erratic results with this type of material. No constant relation between the desirable qualities of towels and their components was found, but in general the better qualities were associated with long, clean fibers, and minimum resin and acid contents.

It seems from the test results obtained that weight, tensile breaking strength, and rate of absorption after heating the towels one hour at 100° C., are sufficient test requirements for quality, and limits in these respects, defining two grades of towels, were suggested.

RECOMMENDATION ON PAVING BRICK REVISED

The eleventh annual meeting of the permanent committee on the simplification of varieties and sizes of vitrified paving brick was held in Washington on April 14. The committee considered in detail the data collected by the National Paving Brick Association, covering the industry's 1931 shipments of paving brick. For the benefit of the other members, G. F. Schlesinger, chief engineer and managing director of the association, analyzed the report and commented on the significance of the various sections.

After thorough discussion it was unanimously decided to propose to the industry the following revisions to Simplified Practice Recommendation R1–29, vitrified paving brick, drafted and adopted by the industry, and published by the Bureau of Standards:

First, that the 4 by 3 by 8½ inch vertical fiber lug brick should be included in Simplified Practice Recommendation R1–29 as a recognized variety; second, that the 4 by 3½ by 8½ inch vertical fiber lugless brick should be dropped from the list of recognized varieties.

The former represents 22.6 per cent of the 1931 shipments, while the latter averaged, during the last four years, less than 3 per cent. With these changes, the new list of six recognized varieties will cover 75.9 per cent of the total shipments, as compared with 56.1 per cent for the previous list.

Before the Bureau of Standards can incorporate these proposed changes in the new edition of the printed recommendation, it is necessary that they be indorsed by the present acceptors. In accordance with the request of the standing committee, therefore, the bureau's division of simplified practice is circularizing all acceptors of record, in order to secure their approval of the proposed revision.

The committee unanimously reelected George F. Fisk, consulting engineer, Buffalo, N. Y., chairman of the standing committee for the ensuing year.

REAFFIRMATION OF STANDARD FOR MEN'S PAJAMAS

After consideration of a report of survey of adherence to the commercial standard for men's pajamas, the standing committee has recommended the reaffirmation of the standard without change for another year, or until authorized revisions are duly indorsed by the industry. Announcement has therefore been issued to this effect.

Production of men's pajamas conforming to the requirements of the Commercial Standard CS15–29 was reported as averaging 66 per cent of individual production. (An average from 19 replies not weighted according to production.)

Some excerpts from the comments follow:

"Consumers have no knowledge of standard sizes and will take anything offered by dealers. Dealers (in most cases) do not take any interest in standard sizes; they seldom speak of it when buying. They are apparently buying price merchandise and do not inquire too closely as to how it is made. This applies to all department stores and most men's specialty stores."

"Standard correct, but promoted principally on popular price merchandise."

"The standard requirements have aided in the sale of better grade pajamas."

Actual direct benefits from the establishment of the commercial standard were reported by 10 manufacturers.

PROPOSED SIMPLIFICATION COVERS CUPOLA REFRACTORIES

A simplified practice recommendation covering cupola refractories was approved by the general conference of representatives of the industry, held May 3, 1932, at Detroit, Mich., under the auspices of the division of simplified practice of the Bureau of Standards. The industry will shortly be circularized for formal approval and adoption of the recommendation, which will become effective one month after the receipt of the required degree of support.

This recommendation is concerned with the sizes and varieties of cupola lining, one and two hold tap out, and slag-hole blocks. In the development of this recommendation, consideration has been given by the industry to the present trend toward the use of smaller cupolas. In view of this, cupola refractories were listed that were of smaller sizes than heretofore in general use.

BRITISH STANDARD ISSUED FOR STRUCTURAL CHANNELS AND BEAMS

A new list of British standard channels and beams has been issued by the British Standards Institution. The original lists were issued in 1903, the geometrical dimensions and properties being published in the section book (No. 6–1904).

A revision of the lists was subsequently undertaken, and a new edition of the Section Book appeared in 1924. Later, it was found that many of the original sections were still being ordered, and a further revision of the lists was decided upon, with a view to incorporate those of the original and revised sections most in demand and eliminating those which experience had shown to be little used.

There are now 41 standard channels; two new sizes have been introduced, namely, 11 by 3½ inches, and 13 by 4 inches. The standard beams now comprise 40 sections, and include a new 24 by 7½ inch section, weighing 95 pounds per foot, which takes the place of the 1904 and 1924 sections weighing 100 and 90 pounds per foot, respectively. Particulars of the profiles and weights per foot are given in the lists, together with moments of inertia, section moduli, and other properties.

KNIT SWEATERS AND BATHING SUITS

On May 24 the National Knitted Outerwear Association requested the cooperation of the Bureau of Standards in establishing on a national basis a commercial standard covering measurements, methods of measuring, and tolerances for men's, women's, and boys' 1 and 2 piece knit bathing suits and men's, women's, misses' and boys' knit sweaters and sweater coats.

RECOMMENDATION ON CARBONATED-BEVERAGE BOTTLES NOW IN PRINT

Simplified Practice Recommendation R123–30, entitled "Carbonated Beverage Bottles," is now available in printed form, and may be had from the Superintendent of Documents, Government Printing Office, Washington, D. C., for 10 cents.

This simplification program, which was proposed and developed by the industry, provides for capacities, heights, diameters, and weights of glass for stock varieties of carbonated-beverage bottles.

PROGRAM ON FLAX AND HEMP TWINE APPROVED BY INDUSTRY

Simplified practice recommendation R136–32, covering flax and hemp twine has been accorded the required degree of acceptance by the industry. The recommendation may be considered as in effect as of June 15, 1932.

Provision is made in this simplification program, which was suggested and developed by members of the industry, for the number, yardage, breaking strength, and put-ups of different grades of fine finished hemp twine; and for the ply,yardage, breaking strength, and put-ups of the various grades of fine finished hemp twine.

BRITISH STANDARD ISSUED FOR CAST-IRON DRAIN PIPES

The British Standards Institution has issued a specification for cast-iron spigot and socket drain pipes, which is the fifth specification of a series dealing with cast-iron pipes.

This new specification provides for straight pipes only, these being specified in standard lengths of 9 feet, exclusive of the depth of the socket. The standard weights, however, are inclusive, and satisfy the requirements of the London County council drainage by-laws. It is anticipated that the matter of drain fittings will be taken care of in a future revision of the specification.

PAPER WRAPS FOR APPLES

With the development of longer cold-storage periods for apples, increasing interest has been indicated in the development of oiled and plain paper wrappers to minimize the damage to the fruit caused by a condition known as apple scald.

Losses from this source have been felt very heavily by the large apple-packing federations, especially when the fruit is closely packed in the hold of a ship for export trade. The Bureau of Plant Industry of the Department of Agriculture has made some scientific and practical studies of the problem, as a result of which they have made definite recommendations for oiled paper wrappers to prevent the development of apple scald.

The apple packers in their desire to get high-grade wrappers sought the cooperation of the division of trade standards, Bureau of Standards, in the establishment of a commercial standard specification for this commodity.

A conference of the largest users of apple wrappers, together with the chief manufacturers, was held in Seattle on May 19 to discuss this problem. Intense interest was indicated by the manufacturers present in bettering the quality of apple wraps and definitely describing the requisites of a satisfactory wrapper in the form of a commercial standard specification.

The specification which embraces the suggestions of the Bureau of Plant Industry was unanimously approved by the conference, and was recommended for the general acceptance of those interested in the manufacture, distribution, and use of this product.

DIAMOND CORE DRILL FITTINGS

Announcement that the industry has accepted the first revision of the Commercial Standard for Diamond Core Drill Fittings was circulated on May 14.

The revision includes minor refinements which have developed as a result of experience with the standards and which do not change the important nominal dimensions as set forth in the first edition of this commercial standard.

Mimeographed copies may be obtained, without charge, from the division of trade standards, Bureau of Standards, Washington, D. C.

SURGEONS' RUBBER GLOVES

The establishment of two commercial standards requested by the American Hospital Association for surgeons' rubber gloves, CS40–32, and surgeons' latex gloves, CS41–32, were announced June 6 by the Bureau of Standards.

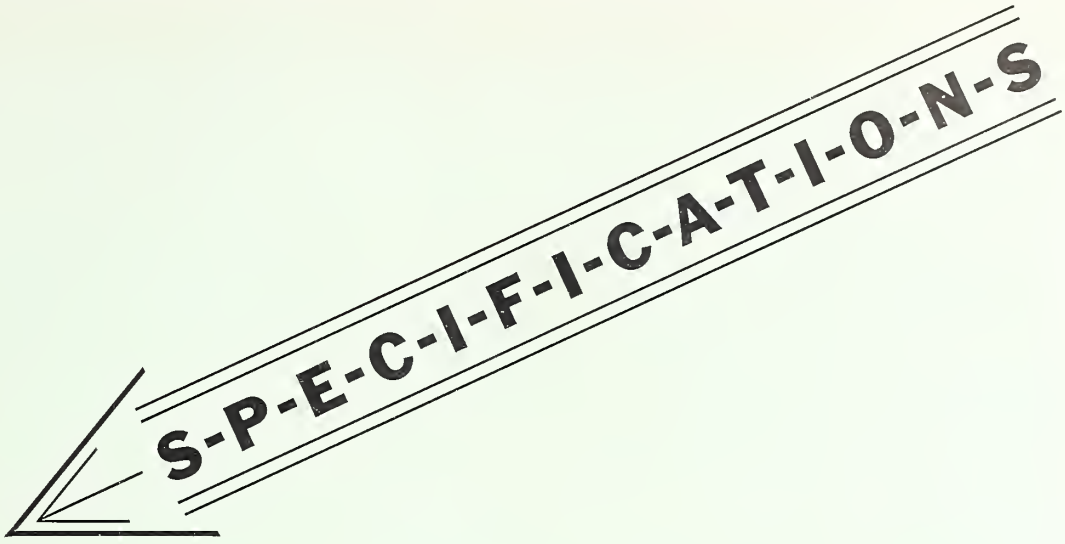
These specifications cover material and workmanship, sizes and dimensions, tensile strength, elongation, and resistance to steam sterilization. The requirements for latex gloves include aging tests in the Geer oven. Purchasers are to be protected by a guaranty of conformance issued by the manufacturer or supplier.

The Rubber Manufacturers' Association cooperated with the American Hospital Association in drafting the specifications. Both commercial standards became effective July 6, 1932.

SURGEONS' STEEL BONE PLATES AND SCREWS

A printed pamphlet on Steel Bone Plates and Screws, Commercial Standard CS37–31 is now available and for sale by the Superintendent of Documents at 10 cents per copy. The standard describes steel bone plates and screws for surgical use of the Sherman design with requirements for workmanship and material, together with a test for hardness on the Rockwell hardness tester. Each plate sold is to be tested for hardness and is sealed in a transparent envelope carrying the manufacturers guarantee.

The standard became effective November 16, 1931.



To determine whether an applicable specification exists for any commodity—consult—

National Directory of Commodity Specifications, 1932

which indexes the standards and specifications of trade associations, technical societies, and other organizations nationally representative of some branch of American industry, as well as those of governmental agencies that represent the Federal Government.

Uses the decimal system. Cross-references related specifications. Defines uses of commodities, if known, when not self-evident from the title. Contains comprehensive index.

The direct purpose of any wise cooperative effort in the adoption of specifications is to secure constructive application of scientific knowledge to service requirements; to coordinate similar demands and eliminate unessential differences; to balance increases in cost against probable service improvements, taking full advantage of existing commercial varieties; and to formulate adequate test or inspection methods—all this resulting in the development of greatly improved products, vital support to the national movement toward simplification of lines, processes, and business practices, and marked lowering of costs and prices.—*Herbert Hoover.*

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554 pages

Compiled by Bureau of Standards

Miscellaneous Publication No. 130

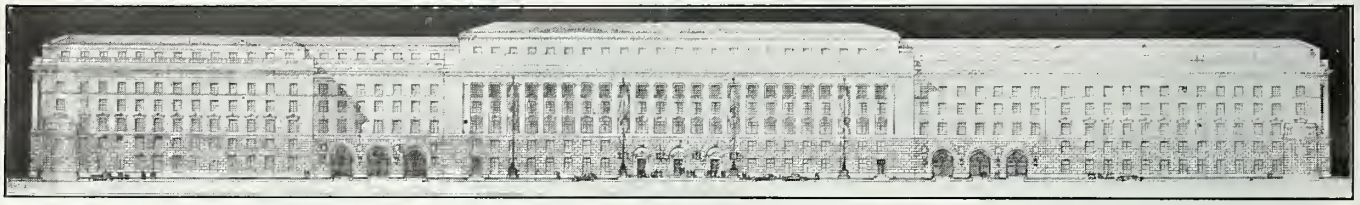
For sale by the Superintendent of Documents, United States Government Printing Office, Washington, D. C.

THE UNITED STATES DEPARTMENT OF COMMERCE

R. P. LAMONT, Secretary of Commerce

"* * * this department * * * is devoted solely to aiding and fostering the development of higher standards of living and comfort of our people * * * its ideals are clear: That by cooperation and not by compulsion it should seek to assist in maintaining and giving the impulse of progress to commerce and industry in a nation whose successful economic life underlies advancement in every other field."

—President Hoover, at the laying of the corner stone of the new building of the U. S. Department of Commerce, June 10, 1929.



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