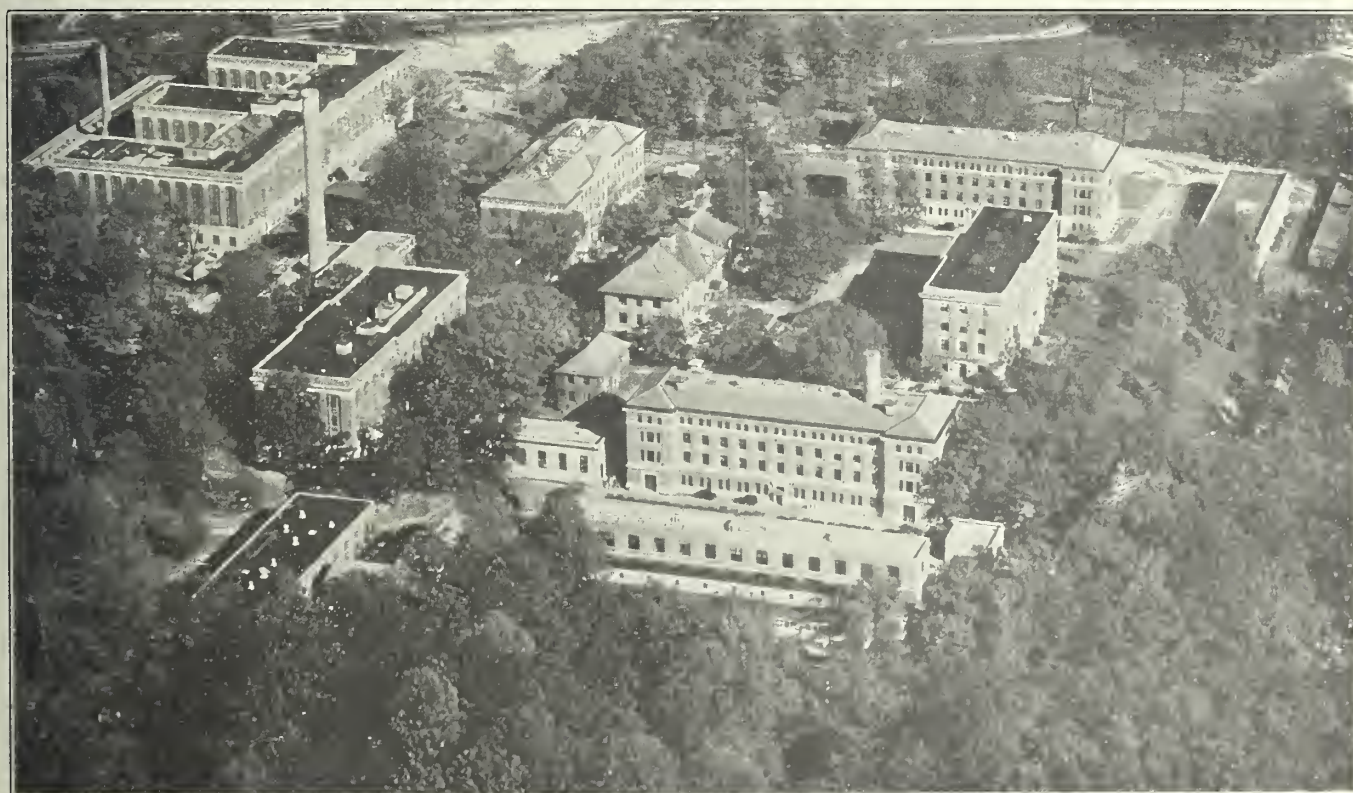


COMMERCIAL STANDARDS MONTHLY



*A Review of Progress in
Commercial Standardization and Simplification*



AIRPLANE VIEW OF NATIONAL BUREAU OF STANDARDS

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

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SEPTEMBER, 1931

The Commercial Standardization Group

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.

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 Non-metallic Minerals and their Products." It also aids in preparing the Standards Yearbook.

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

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.

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AN INVITATION TO VISIT THE NATIONAL BUREAU OF STANDARDS

A cordial invitation is extended to all interested in scientific progress to visit the laboratories of the National 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.

QUALITY STANDARDS FOR THE CONSUMER

(Reprinted from the July 25, 1931, issue of "Textile World")

The confusion of thought which has characterized the discussion of setting up quality standards on sheets and other textile products, for the guidance of the consumer, is exemplified by the remarks of Dr. P. G. Agnew, Secretary of the American Standards Association, before the American Home Economics Association.

Doctor Agnew is quoted as referring to the unwillingness of sheet manufacturers to supply data on yarn count, strength, and weight, as a "challenge," indicating a belief on their part that the consumer is not a factor in the agitation for sheet standardization. So far as we know, that has not been the point at issue.

Manufacturers have based their disagreement with the plan largely on the fact that this technical information would be of no value to a consumer, but would merely be confusing; that it would encourage faulty advertising programs exploiting minor and unimportant variations in the specifications; and that, by confining standards to these technical details and ignoring other less tangible but even more important factors of quality, a manufacturer is placed in the position where, as Ernest N. Hood stated, he "could honestly place the same specifications on his second quality as on his first quality."

The latter point is the significant one. The situation is analogous to the old proposal to identify the components of woolen goods as "virgin wool" or "reworked wool," when it was well known that many grades of the latter were superior to some grades of the former. A consumer wants facts—but he, or she, wants facts which mean something. However, we do not believe textile manufacturers can dismiss the subject on these grounds. The demand for consumer standards in all products will grow—and rightly so. A group of more intelligent buyers is being developed. This means, inevitably, protection not only for the purchaser, but for the honest manufacturer and the honest retailer.

Consequently, we recommend to mill men a different approach to the problem. Instead of being merely on the defensive against unsound plans, they should be on the offensive—and take the lead in development of standards which will really be helpful to the consumer, and, consequently, to the ethical concerns in industry and trade.

Certain branches of textile manufacture have made a start. Such activity should become one of the major phases in the programs of all divisions. If the right attitude were employed, it would seem probable that cooperation would replace antagonism, in the relations between manufacturers' associations and home economics organizations.

UNION OF SOCIALIST SOVIET REPUBLICS 1931 STANDARDIZATION PROGRAM

Program Calls for Reduction of Costs and Accelerated Tempo in Construction for the Year

By V. KISSELEV¹

The ratification of the Soviet's 5-year plan of national economy and the work initiated toward the development of concrete measures of reconstruction in separate branches have considerably broadened the basis of planning of production and particularly its qualitative scope. By this we understand the coordination of measures undertaken toward standardizing, grouping, normalizing, and simplifying of particular kinds of production, building and productive processes, and the exploitation of natural resources. The comprehensive study of these questions is not new to the Union of Socialist Soviet Republics.

SCOPE

The All-Union Committee on Standardization of STO (Council of Labor and Defense) was created in its original form at the end of 1925. The entire coordination of measures of organization from the nationalization of industry, directed toward the building of large industries or combined districts, and the working out of new, great projects along the lines of the most recent American and western European technical science came from these ideas. We already have lines of manufactures much more grounded in relation to the variety of product, and often more thoroughly planned than in any other country. Nevertheless, the unification of all measures for standardization in the given period in a single plan of national economy corresponding to all the other planned changes and combining all private efforts corresponding to the concrete tasks, facing the union, is a new, and to our regret, belated task.

MUCH TO BE DONE

Due to the various efforts of standardization in our early days and the absence of system, there is still a great deal to be done in this direction, not to mention the fields of industrial cooperation and the power industries about which there has been as yet no serious thought.

The first fundamental document of qualitative planning is the project of the prospective plan of standardization from the year 1929-30 to 1932-33, published by the Committee on Standardization.

Its undoubted deficiencies were due to the newness of very complicated matter and the absence at that time of sufficiently clear directives in particular branches of national economy and concrete measures of rationalization which logically should precede sound and uncontested lines of standardization. Besides, the project of the prospective plan could not assume significant proportions in fact, due to the above-stated reason and also because of delays in understanding between the various departments.

PLAN FOR 1931

A conclusive working document is the plan of standardization for 1931, which was worked out by the All-Union Committee of Standardization, based on the resolution by STO of August 6, 1930. Control figures for this plan were given in a decision of the Committee on Standardization on November 10, 1930. The character of these control figures for 1931 is given below in its basic indexes.

The general number of standards, including here the comparatively small number of norms and groupings in the building industry and productive equipment, which will be worked on in 1931, reach almost 6,000. It is proposed to complete and put into practice 4,562 of these projects in the current operating year on the ratification of VKS (All-Union Committee on Standardization) or of a corresponding scientific-technical council; the remaining 1,351 will go over to 1932, a considerable number already having been subjected to extensive criticism.

STATUS

These standards may be classified as follows: Those relating to industrial production, groupings of equipment, construction, horticulture and livestock breeding, and finally transport and its branches. The general number of standards worked out in 1931, relating to industrial production, is 3,031; on the ratification of VKS it was proposed to take 2,336 of these proposed in 1931, examining 142 of them for effective standards. The standards ratified and examined by VKS thus gives a sufficiently dependable figure by the end of 1931, exceeding 4,000 formulated standards. The level reached by the standardization of industrial production is as follows:

Standards	To Oct. 1, 1931	In 1931	In all	Percentage of total production		
	I	II	III	I	II	III
Ratified and accepted by VKS...	2,047	2,194	4,241	42.2	28.3	70.5
Obligatory.....	1,511	1,289	2,800	37.7	16.0	53.7

The percentages listed are undoubtedly conditional since they summarize production by standards independently of the importance of the latter and the completeness of the established characteristics of particular groups of production. Nevertheless, in so far as in the processes of standardization, first come the more essential manufactures from the economic point of view, and in a whole series of industries an entire system of standards will be created this year, defining from many sides production (quality, extent, etc.), the percentages acquire the character of an essential index for the dynamics of the processes of standardization as well as in particular for the comparative valuation of the success of standardiza-

¹ The author is chief assistant of the Standards Committee Planning Section, Union of Socialist Soviet Republics. His article appeared in the January, 1931, issue of Bulletin of Standardization published in Moscow. The English translation is presented for the information of readers of COMMERCIAL STANDARDS MONTHLY.

tion in definite branches of industry. It is interesting to note the rates of standardization in industrial production in these definite branches, fluctuating satisfactorily, as shown below, within important limits.

PROGRAM

A greater scope is set for the end of 1931 in coal mining which will be 100 per cent standardized; the leather industry follows with 95.2 per cent standardized; building materials with 91 per cent; glass and porcelain with 88 per cent; canned goods with 85.5 per cent; textiles with 83.5 per cent; ferrous and non-ferrous metallurgy with 75.6 and 70 per cent, respectively; chemical industry with 74.6 per cent, and wood with 73 per cent; the electrotechnical industry remains weakly developed in standardization with 53.7 per cent; machine construction with 28.7 per cent, and finally, packing materials with 26.9 per cent.

With regard to machine construction it should not be forgotten that the standardization of details and of the fundamental parameters is completed by the grouping of equipment for those branches of the consuming industry, particularly textile, coal, and petroleum. The general number of the latter kind is fixed at 485 for 1931, which will undoubtedly be raised somewhat by the standardization of machine construction; standardization of power plants is emphatically connected with this category.

EFFORT REQUIRED

Nevertheless, it is doubtful whether standardization as regards machine construction and the metal industries is sufficient from the point of view of the effective development of one of the leading branches of industry; and therefore during the working out of the plan, as well as during the entire year 1931, it will be necessary to take various extraordinary measures.

No less weak sectors on the standardization front are industrial cooperation, beginning to standardize for the first time, the polygraphic (engraving and printing) industry which must urgently consider the organization of its scientific research center, and the power industry, whose leaders could not establish clear cut lines of development of electrification.

It is clear from the above with what difficulty standardization may be concretely evaluated, since it is developed along all the industrial fronts. As concerns the basic course of standardization, it is necessary to state that the maximum attention is given in the plan to the qualitative standards which is clearly regarded by the Government as the problem of the day. It is important to note that the qualitative standards are not at all limited to subjects of wide consumption.

STANDARDS FOR PRODUCTION

At the same time a considerable number of standards, including those relating to quality, are concentrated on the solution of purely production problems as well as the corresponding revision of the selected fields, on the coordination of similar industries. An effort is made also to stimulate the transition to methods of production, more in conformity with current technical and organizational demands (as for instance, specialization, cooperation of factories, autogenetic welding, new building material, etc.), and with existing conditions in the Union of Socialist Soviet Republics.

The general number of original plans of standardization of production is calculated at about 650 (the conference which called for a thorough working out of the plan had not ended at the time the control figures were in the process of formulation); the result chiefly in establishing different types of construction, and in establishing obligatory norms and standards of production details.

The fundamental mass of data on production is to pass through two special institutes—the Institute of Norms and Standards of the All-Union VSNH (Supreme Council of National Economy), and the People's Commissariat of Agriculture of the Union of Socialist Soviet Republics, which guarantee the maximum inner typing up of the work and a uniform and competent approach to the solution of all special problems.

STANDARDS IN AGRICULTURE AND TRANSPORTATION

The standardization in agriculture is developed in two directions; in horticulture—by the standardization of selected varieties and of ordinary seeds; in stock breeding—by the standardization of stock and the breeding of domestic animals, and must serve in the very quick and successful solution of the grain, meat, and milk problems. Four hundred and twenty standards in all are intended for 1931 in horticulture and 89 in stock-breeding; 226 standards of horticulture and 70 of stock breeding will be submitted to the VKS for ratification.

The introduction of standards into agriculture proceeds, as is known, under specific conditions, since it is bound up with a long series of measures in connection with the accumulation of seed and the rearing of breeding animals. In this sense the 72 per cent of horticulture and 80 per cent of stock breeding to be standardized for 1931 are characterized only by their potential importance and require for their realization long and persistent work by stock breeding and seed cultivating stations and close cooperation with the very large kolhoz and sovkhoz centers.

The control figures for standardization in transportation and its branches must be noted first of all as a decisive step from the inertness which characterized NKPS (People's Commissariat of Transportation as well as Narkompocht (People's Commissariat of Post and Telegraph) until now with regard to rationalization in general and to standardization in particular.

The control figures on standardization for the above cited two departments are particularly interesting inasmuch as the attempt is there undoubtedly made to unite standardization with the fundamental lines of reconstruction and transportation and to guarantee the maximum effectiveness of rationalized undertakings by a uniform and centralized solution of the respective problems.

The inclusion of the Commissariats of Health and Education in the general system is comforting, although many of the control figures which they have presented make us wish for more reflection and breadth in the statements of the questions and though they are undoubtedly still far from the plans which must be fulfilled in 1931.

The big problem of control figures for standardization is the lack of work in the Commissariat of Labor, which has not yet coordinated and united by

general direction, the work of standardization of its separate institutions and has not given it a systematic and purposeful character.

The working out of control figures for standardization in the All-Union Committee on Standardization showed the necessity for a series of important undertakings of an organizational character, which must be anticipated by the corresponding commissariats so that the plan of standardization for 1931 may be successfully realized by the designated departments.

The distribution of standards worked out in 1931 according to commissariats, is listed below.

Commissariats or institutions	Standards norms and types	Chosen for ratification
1. VSNH of the Union of Socialist Soviet Republics (Supreme Council of National Economy).....	3,575	2,604
2. NKPS (Commissariat of Transportation).....	309	247
3. Narkomzem (Commissariat of Agriculture).....	746	538
4. Narkomtory (Commissariat of Trade).....	800	734
5. Narkompochtel (Commissariat of Post and Telegraph).....	97	97
6. Narkompros of the RSFSR (Commissariat of Education).....	120	116
7. Narkomzdrav of the RSFSR (Commissariat of Health).....	48	48
8. Institute of Technical Management.....	97	97
9. Central Bureau of Weights and Measures.....	121	86
Total.....	5,913	4,562

RECENT PROGRESS

The sharp increase in standardization during the current year, as compared with the preceding one, which doubtless will be multiplied as the proposals of the committee are fulfilled, requires a corresponding reinforcement of the organs of standardization in the commissariats and also the necessary attention to the organization of this work, particularly from the managing side. The present condition of the organs of standardization is not in any sense of the word satisfactory and is far from guaranteeing the fulfillment of the plan. The machine construction and chemical industries and the electric power centers scarcely offer the possibility of even applying the plans.

Therefore the successful accomplishment of the plan requires that the commissariats vigorously increase the bureaus for standardization in the trusts and organizations dependent on them, using properly qualified specialists to shake the managements of the trusts from their indifferent attitude toward standardization and to assign to them the requisite places for the planning of rationalization of the undertakings.

It is no less important to secure considerably greater active assistance for standardization through the scientific-research institutes by careful relation of their plans to the standardization plans. The scientific-research institutes must have members engaged in standardization work to map the correct direction and formulation of the scientific work and research.

Finally, the attention of the working masses must be directed to the standardization plans, that brigades of firm champions of the standardization idea may be rallied from their ranks. This is one of the most important prerequisites for the successful fulfillment of the plan during this year.

FOREIGN INTEREST

The following is a complete quotation from a recent letter from an important manufacturer of sanitary appliances in London, England, which illustrates the foreign interest in, and approbation for commercial standards:

The control figures on standardization were announced to the All-Union Committee on Standardization, November 10, 1930. After considering them the committee decided to continue the work and proposed to the departments that they accurately define by the beginning of December, the plan of standardization for 1931, laying down the following basic conditions: (1) The necessity of speeding up the socialist reconstruction of the national economy of the Union of Socialist Soviet Republics by reequipment in accordance with the most advanced technic; (2) the necessity of definite reduction in cost and of accelerated tempo in construction; (3) the necessity of a marked improvement in the quality of products; (4) the necessity of greater effort toward the reduction of losses and of the cost of production.

The recounted slogans are universally known and have been repeatedly given as fundamental directives to the commissariats. These directives however, acquire great significance in the standardization plans since the standards, properly directed, give an exhaustive and final decision on various concrete questions in the desired direction and establish a solid criterion for an estimation of the success of the plans.

COORDINATION

The exceptional importance of standardization plans for the more effective execution of rationalized undertakings naturally projected the question of guaranteeing the maximum coordination of the standardization of plans of various industries with the concrete demands of life. With these aims the All-Union Committee on Standardization considered it necessary to submit the departmental standardization plans to mass criticism. Conferences of the workers were to consider the undertakings and also to form brigades taking under their patronage the standardization apparatus which should assist the bureau of standardization to take its proper place in the system of the organs of rationalization and to guarantee them full contact with the factory.

Simultaneously VKS directed its attention to strengthening the work of the committees of the federated republics on standardization, entrusting them with the new duty of watching for the introduction of standards and also for the execution of the standardization plans. In addition, in order to strengthen the ties of the republics' committees with the Committee on STO (Council of Labor and Defense), VKS took measures to draw the representatives of the standardization committees of the federated republics into joint work on the plan and competition in the various sections.

Sweeping criticism from the workers and peasants and close cooperation with the standardization organs of the republics are the two basic methods of working out the standardization plan for 1931. After this the plan will again be considered by the All-Union Committee on Standardization and will be announced to the Government in its revised form.

Please accept my cordial thanks for your letter of 16th July with the accompanying two copies of the Recommended Commercial Standard for Colors for Sanitary Ware. These are of the greatest possible interest to us. The state of business generally throughout the world makes it necessary for manufacturers, whether at home or abroad, to use all possible means to reduce the cost of production, and standardization in all its forms is one of the best things to make this effective.

HACK-SAW BLADES REDUCED IN VARIETY

Industry Reports Excellent Benefits Derived from Simplification of Varieties of Hack-Saw Blades

By JAMES F. MCNEIL, *National Bureau of Standards*

It is recorded that the earliest saws known to mankind were made from flint flakes with finely jagged edges during the neolithic age. With the development of the art of working metals these flint implements were first displaced by saws made from bronze or copper, and in more recent times the softer metals were superseded by iron, and finally by steel. During the past few years various special steels have been developed for saw blades to provide for high working speeds, together with better wearing qualities.

In ancient times diversity in sizes and types of tools was of no moment, because the maker or user was concerned solely with performance. Under present-day industrial methods, however, a large number of industries have succeeded in curbing diversity by establishing simplification programs on a national scale. Among such programs is the simplified practice recommendation covering hacksaw blades.

In 1924 it was suggested to the division of simplified practice of the National Bureau of Standards that much waste was prevalent in the manufacture and distribution of hack-saw blades; hence, preliminary conferences of manufacturers were arranged, through the cooperative services of the division, and the suggested need for simplification was confirmed. A survey of production and demand was conducted, and a tentative list of sizes based on the findings of the survey was submitted to representatives of the industry at a general conference held on April 12, 1928. The simplified-practice recommendation which was subsequently adopted by the industry established sizes for hand and power hack-saw blades. This original program did not apply to what is known as high-speed blades, but was limited to standard tungsten and carbon blades. It was estimated that the simplified list of sizes represented an elimination of approximately 75 per cent of existing catalogued sizes.

The flexibility of the recommendation, which keeps it abreast with current practice, is shown by the revisions it has undergone since it was first approved. After a year's experience in the operation of the recommendation, a revision meeting was held by the standing committee of the industry to consider modification of the existing schedule. Four sizes of power hack-saw blades were eliminated and five new sizes were added. The successful operation of the tungsten and carbon blade program prompted the committee to include two tables of sizes for high-speed blades, covering both hand and power blades. On April 30, 1931, the recommendation was again revised by the addition of three sizes to the table of high-speed blades.

In practice, the recommendation has been satisfactory. This is evidenced by the results shown in the excerpts below, which are taken from letters to the

division of simplified practice from members of the industry.

"Handling charges, clerical work, reduction of investment, reduction in selling expense are all results of simplified practice," stated the vice president of one manufacturing concern. He further stated, "This reduction in investment and handling charges is also well enjoyed by the distributor, with the consumer getting a good product at a good value."

"The recommendation has eliminated the necessity of carrying 9" blades. We estimate that this has saved us an inventory of about \$2,000, which we would have to carry at all times," said a manufacturer of steel products.

Another manufacturer of hack-saw blades, who has requested that his name be withheld returned an unusually excellent statement of the benefits which were accruing to him, in which he reported a reduction of inventory over a period of three years of \$49,480. Continuing, he said: "Figuring interest on this amount at 6 per cent shows a saving of \$2,990 per year. Obsolescence, formerly brought about through our efforts to carry stocks of all sizes manufactured, cost us \$2,500 every year. A fair estimate in clerical work saved through simplified practice is \$1,000 yearly.

Simplified practice has also enabled us to standardize the sizes of wood shocks used in shipping hack-saw blades. We purchase fewer sizes in greater quantities, and thereby effect a saving in the unit price. It has also enabled us to make longer runs on certain sizes and to eliminate resetting our tools and readjusting of machines. This saving in dollars and cents would be fairly estimated at \$10,000 per year, under normal conditions. The fact that we make longer runs on certain sizes than before simplified practice was adopted, tends to give us a more uniform hack-saw blade.

Distributors of hack-saw blades are also receiving "dividends" through applying this recommendation. One distributor located in the State of Colorado wrote, "Simplified practice has enabled us to reduce our stock of hack-saw blades about \$1,000. This, of course, greatly increases our turnover."

Two other distributors report an inventory reduction of about 50 per cent, one of them stating that his turnover has been increased from three to six times a year.

A northwestern dealer, according to his letter, has increased his sales of blades from \$3,450 to \$3,600; he now carries a stock valued at \$720, as compared with \$1,260; has a turnover increase from $2\frac{3}{4}$ to 5; needs one-third less storage space, and carries 40 per cent less insurance.

The users of hack-saw blades, that have written to the division, are generally of the opinion that simplification has reduced inventories and expedited deliveries. Lower operating costs, improved quality, and uniformity of product on successive purchases are also enjoyed by them.

UNIFORM TRAFFIC LAWS

National Conference on Street and Highway Safety Urges Cities and Towns to Adopt Uniform Ordinances for Protection of Motorists and Pedestrians

By A. W. KOEHLER, *Secretary, National Conference on Street and Highway Safety*

With the sessions of the legislatures for the present year nearly all closed, attention of those interested in improvement of motor-traffic conditions is now being directed particularly to the adoption of the Model Municipal Traffic Ordinance and the Manual on Street Traffic Signs, Signals, and Markings¹ as published by the National Conference on Street and Highway Safety, by cities and towns. The following suggestions as to practical measures for adoption are made by the conference in response to numerous requests from organizations and individuals in all sections of the country interested in traffic matter.

The Model Municipal Traffic Ordinance first became available in August, 1928. Along with the uniform vehicle code and the reports of special conference committees dealing with various aspects of the traffic situation, it was revised in certain respects in 1930 by the third national conference on street and highway safety. After careful review by the conference in 1930 to ascertain whether it might be desirable to revise the ordinance it was found that in general little change was needed. The few changes which were regarded as desirable were made in the light of experience with the ordinance on the part of cities and towns which had adopted it prior to May, 1930. These changes were made in order that the ordinance as revised might meet present-day conditions more fully. The ordinance has been adopted to date in whole or in substantial part by numerous cities and towns both large and small throughout the country.

The essential part of the model ordinance consists of the sections dealing with matters strictly within the province of municipal traffic regulations, such as authority of police, designation of crosswalks, safety zones, traffic lanes, and prohibition of left turns, restrictions on loading or unloading in certain places, regulation of stopping and parking of busses and taxicabs, parking prohibitions and restrictions applying to all traffic, designation of through and 1-way streets, limitations on turning around and backing. All of the above need to be covered by ordinance or regulation in each municipality and are not generally suitable to be dealt with by State law. The foregoing sections are drawn up in such a manner as to be adaptable to particular local conditions by the insertion of names of streets or other details according to conditions in the locality.

Cities and towns in States which have adopted act IV of the Uniform Vehicle Code as revised by the

third national conference on street and highway safety and the American Bar Association in 1930, will find it very simple to adopt the remaining provisions of the model ordinance herein referred to and not already included in the State law. By so doing they will more completely insure their securing the maximum benefits to be derived from the operation of these modern and effective traffic measures. They may also wish to repeat in their ordinances certain State-law provisions for emphasis and educational purposes.

An appendix to the model ordinance contains a number of State-law provisions suitable for this use. These provisions are either identical with the Uniform Vehicle Code or adapted therefrom to meet urban conditions. It is also pointed out that in those States where repetition of State-law provision in municipal ordinances is necessary for purposes of local enforcement or in the event State-law provisions are inadequate, the provisions suggested in the appendix to the model ordinance or such portions as may be desired should be included in the ordinance.

To the extent that the motor vehicle law of a State has not been brought into full conformity with the Uniform Vehicle Code, as revised in 1930, cities and towns in the State will find it desirable to adopt suitable provisions by ordinance pending their adoption by State law.

In certain States still having State-law provisions, not in harmony with the national standards, it will be necessary to amend the State law bringing it into conformity with the Uniform Vehicle Code as revised in 1930 before cities and towns can put into effect the model ordinance in its entirety. Even in these States, however, early adoption, by the cities and towns, of all provisions of the ordinance consistent with the State law would be a long step toward uniformity.

The Manual on Street Traffic Signs, Signals, and Markings provides the technical details as to shape, size, color, location, etc., of devices essential to the safe and orderly conduct of traffic in cities and towns. Uniformity is obviously important as in the case of traffic laws and regulations which prescribe the conduct of motorists and pedestrians with reference to the signs, signals, and markings. These standards, which are already in effect in a large number of cities and towns, are designed for adoption by the traffic authorities without the need for legislation. They are in accord with the provisions of the Uniform Code and Model Ordinance and conform to the system of standard rural signs adopted by the American Association of State Highway Officials.

Taken together these standards provide the basis for nation-wide uniformity in motor laws, ordinances, and traffic-control devices.

¹ "Uniformity of Traffic Laws Urged," by Col. A. B. Barber, director, National Conference on Street and Highway Safety, in *COMMERCIAL STANDARDS MONTHLY*, July, 1930, contained a detailed explanation of these ordinances and codes.

VARIETY OF FOOD-SERVICE EQUIPMENT SIMPLIFIED

National Bureau of Standards Cooperates With Industry to Weed Out Excessive Varieties of Equipment

By W. E. BRAITHWAITE, *National Bureau of Standards*

In discussing some of the more important basic problems confronting the food-service-equipment industry, it was recently pointed out by a leader in this field that "waste in production and distribution, and the lack of cooperation in connection with the effort to solve this problem, have not only retarded progress but have resulted in reduced profits as well." He states further, "the small quantity buying policy and demands for unreasonable deliveries have had their effect on inventories, as jobbers are expected to carry a wide selection of items and quantities of merchandise that are beyond proportion to demand."

It is well recognized that rapidity of turnover is usually the life of business. If the normal rate of turnover is impeded or slowed up, business is either crippled or dies. It very frequently happens that leaks or impediments occur which are not readily traceable, yet which seriously interferes with progress and cut profits to the vanishing point. These hidden handicaps are due in many cases to too much variety in types, dimensions, patterns, sizes, styles, grades, etc., which results in needlessly large investments, lost motion, and wasted material.

Simplification, as developed by industries with the cooperation of the division of simplified practice of the National Bureau of Standards, has proved to be one of the most successful means of revealing such conditions. Sales analyses, based on actual demand, immediately identify the slow-moving, the obsolete, the freak or odd-size commodities which constitute some of the stumbling blocks in any line. Such analyses and surveys are the diagnosis of business conditions and trends and have helped tremendously to eliminate waste as well as to correct unethical practices. Simplified practice and simplification are the names applied to the collective effort on the part of an industry to reduce waste in the production and distribution of its products, through voluntary elimination of unnecessary varieties in sizes, dimensions, capacities, types, etc. Such effort is now a widely recognized and well-established association activity.

Through the cooperative efforts of the industries concerned and the division of simplified practice of the National Bureau of Standards, more than 120 simplified-practice recommendations have been promulgated and accepted by manufacturers, distributors, users, and others interested. A considerable number of these recommendations are of direct interest to the manufacturers, jobbers, and users of food-service equipment. For example, at a general conference of representatives of the industry, held under the cooperative auspices and procedure of the National Bureau of Standards, in May, 1931, a simplification program was adopted reducing the variety of hotel chinaware from 700 to 214 recognized stock types and sizes.

The promulgation of the hotel chinaware simplification program prompted the National Restaurant Association and other associations to avail themselves of the services of the bureau in working out a similar

recommendation for cafeteria and restaurant china-ware.

One simplified practice recommendation of interest, which was acted upon at a general conference in March, 1926, is that for tinware, galvanized, and japanned ware. The recommendation, as subsequently adopted by the industry, reduces the number of stock items to certain definite sizes and varieties.

In October, 1929, a general conference of producers and users of restaurant guest checks approved a recommendation which established a simplified list of sizes and varieties. The adoption of this recommendation resulted in the reduction of grades of cardboard checks from 4 to 3; widths from 12 to 5; lengths from 16 to 14; grades of paper checks from 7 to 4; widths from 10 to 8, with no change in lengths.

In June, 1929, a conference of representative manufacturers, distributors, and users of refrigerators drafted a simplified practice recommendation, which the industry has since accepted, for capacities and dimensions of ice compartments for two types of domestic refrigerators, known as side icers and front icers.

The Food Service Equipment Association has recently recognized the importance of this work by organizing a simplification and standardization committee to cooperate with various interested groups in the common effort to eliminate waste through the development of simplified practice recommendations.

On April 21, 1931, a resolution was adopted at the convention of the Food Service Equipment Association approving a recommendation of their simplification and standardization committee covering gages and weights for sheet metal and pipe, also dimensions for sinks, shelves, tables, table tops, counters, openings for steam tables, and sizes of steam-table insets, etc.

Some of the other items to be given further consideration by the committee include heavy-duty ranges, baking ovens, refrigerators, coffee urns, dish-washing machines, pots, pans, etc.

In addition to the Food Service Equipment Association, such organizations as the Food Service Equipment Clubs of the different cities, the American Hotel Association, the American Hospital Association, the Texas Hotel Association, the American Home Economics Association, the National Restaurant Association, the American Gas Association, Metalware Institute, and other groups have indicated their willingness to cooperate. Also, a number of manufacturers of equipment used in the preparation and serving of foods have indicated their active interest in this program.

It has been said by an expert in restaurant management that "the most successful restaurateurs have certain characteristics, among which are a strong sense of economy and a brain that seeks constantly to learn more and more." In line with this thought, the managers of restaurants, cafes, cafeterias, lunch rooms, and dining rooms have discovered that much time and money can be saved by buying standard

products. Of course, one of the most important steps preliminary to standardization is simplified practice. It offers a short cut to benefits for the manufacturer, the distributor, or the consumer. With cooperation by producer, distributor, and user, as well as technical groups, to weed out excessive, obsolete, and unnecessary varieties, types, patterns, and dimensional differences in food-service equipment, a long step forward has been taken.

The division of simplified practice of the National Bureau of Standards has been requested by various manufacturers and others interested to cooperate in the development and promulgation of simplified-practice recommendations covering sizes and dimen-

sions for such items as openings in steam tables, steam-table insets or vessels, baking ovens, trays, enamel kitchen-table tops, sinks, lunch counters, linen napkins and table cloths, banquet tables, baking ware, etc.

An unusual opportunity has thereby been opened up for the application of simplified practice in the food-service equipment field and it is expected that a number of simplified-practice recommendations will be developed and promulgated under the procedure of the National Bureau of Standards in cooperation with the various groups concerned. Such a program will in no way interfere with the use of patented or distinctive individual designs and should make for progress in this field.

THE AMERICAN STANDARDS ASSOCIATION

Scope of Current Standardization Projects Reviewed

The following current information concerning the developments in standardization projects under the auspices and procedures of the American Standards Association has been furnished by that association:

Radio.—A 44-page draft booklet containing standard definitions of terms used in radio; standard tests of broadcast radio receivers; standard vacuum tube base and socket dimensions; and manufacturing standards applying to broadcast receivers, has been issued by the ASA sectional committee on radio. The committee, sponsored by the American Institute of Electrical Engineers and the Institute of Radio Engineers, was reorganized in September, 1929, and has been actively at work since its reorganization, the present draft standards being the result of its activity.

The definitions of terms used in radio which are included in the booklet cover the following nine headings; general, wave propagation, transmission, reception, antennas, direction finding, vacuum tubes, electroacoustic devices, circuit elements, devices, and instruments.

The purpose of the draft is to place various standards proposed therein before the members of the sectional committee for final letter ballot. After the ballot has been completed, the standards will be submitted to the American Standards Association for approval.

National code for elevators, dumbwaiters, and escalators approved.—A new national safety code for elevators, dumbwaiters, and escalators, developed under the technical direction of the American Society of Mechanical Engineers, the American Institute of Architects, and the National Bureau of Standards, has just been approved by the American Standards Association. Approval of the revised code by the association followed nearly four years of research on elevator safety devices at the National Bureau of Standards¹ and extensive investigation by a technical committee composed of 38 representatives of architectural, engineering, governmental, and other organizations.

In the tests conducted during the research work, the suspended elevators were fully loaded and released

from their cables, allowing them to fall freely in the shafts. Motion-picture apparatus fixed under the elevators and clicking off pictures at the rate of 3,600 per minute, revealed the precise operation and trustworthiness of the safety devices. Loaded elevators were also dropped onto the buffers at the bottom of the shaft and especially designed apparatus measured the forces involved during the fraction of a second before the plunge was completely stopped. This research led to the redesign of almost all elevator buffers.

For the first time the national elevator code permits the operation of more than one elevator in a single shaft, thus removing one of the obstacles to the erection of skyscrapers—the excessive space required for elevators. The code provides rigid safeguards to eliminate any possibility of collision between two elevators in the same shaft. The code also provides for 2-story cars which consists of two separate cages, one above the other, to serve two floors simultaneously from the same shaft. These will not be “1-man cars,” however, an operator for each of the two cages being required by the code. Safety devices will prevent the 2-story car from moving until the safety gates of both cages are closed.

Further provision is made for a new type of express-local system in which the master express elevators will stop at only 3 or 4 express or plaza floors, 10, 15, or even more stops apart, at which points passengers will transfer to local elevators starting from the plaza floors rather than all from the first floor, the present practice in skyscrapers.

The code insists upon fireproof elevator shaft enclosures and fire-proof housing for the elevator machinery so that elevator evacuation of a fire-swept skyscraper will be possible.

Although the framers of the code found that present safety devices would permit safe elevator operation at any speed, it is believed that the limit of speed will not go much beyond 1,200 feet per minute because of the discomfort to passengers resulting from rapid change in air pressures in ascent or descent. Any speed above 700 feet per minute requires automatic operation with automatic floor leveling devices because of the difficulty of stopping more rapidly moving cars at floor levels. It was also found that

¹ Standard Elevator Regulations, by J. A. Dickinson, Research Fellow of the National Bureau of Standards, appeared in the October, 1930, issue of COMMERCIAL STANDARDS MONTHLY.

at speeds of more than 800 feet per minute an operator could not read floor numbers 4 feet high.

The code also includes provisions for the safe operation of freight and other types of elevators, the passenger-operated lifts, escalators, and dumb-waiters.

Amendments to American Standards Association constitution.—Amendments to the constitution of the American Standards Association, changing the number of members on the American Standards Association board of directors from 9 to 15, providing for the election of an executive committee of the board of directors to which the board may delegate its authority ad interim, and outlining more fully the procedure to be followed in submitting amendments to the constitution, have been ratified by the member bodies of the association. The increase in the number of members on the board of directors will give a larger number of member bodies opportunity to become more closely associated with the direction of the American Standards Association.

CERTIFYING THE INSULATION JOBS

Asbestos Bureau Established Along the "Certification Plan" of National Bureau of Standards

To promote the interest of the industry in selling, erecting, and installing insulating material for buildings and other structures, the Asbestos Bureau (Inc.) has been organized under the auspices of the asbestos firms (contractors) of the Pacific Northwest. The bureau maintains offices in Seattle, Wash., Tacoma, Wash., and Portland, Oreg.

The program of the Asbestos Bureau (Inc.) is based largely on the certification plan developed by the National Bureau of Standards, according to its announcement, in which it points out that "the abuses resulting from excessive competition have become so great that good insulation is frequently sacrificed to the detriment of the job." One of the bureau's objectives is to promote the industry's growth through co-ordination of effort in rendering more extensive and efficient service to the public; to reform its abuses; to procure uniformity in its customs and usages and to collect and disseminate information relating thereto.

The need for such cooperative service is pressing, the announcement further points out, adding that "initial cost savings are made at the expense of either the quality or the quantity of insulation. In theory these savings are passed on to the owner, but whether they are or not, it is an expensive process for him. He has to pay for the omitted or reduced insulation not once but every year, again and again in increased fuel bills, reduced capacity and increased maintenance and labor costs. This condition is admittedly bad for the owner, the architect, the engineer, the reliable plumber and fitter, and the reliable asbestos firms. It can be corrected only through collective cooperation. Certified insulation jobs offer the solution to this problem. Through them the owner, the architect, engineer, and contractor can be assured of getting what is specified, and of maximum return per dollar spent."

Changes in the by-laws to put into effect the enlargement of the board of directors also become effective with the ratification of the constitution amendments. In addition to the above changes in the constitution and by-laws, revisions to the American Standards Association procedure, in the nature of refinements intended to facilitate the administration of the procedure, have just been approved by letter ballot of the standards council.

*Electrical standards committee.*²—Approval of the new electrical standards committee, which supersedes the present electrical advisory committee of the American Standards Association, was completed on July 18, 1931, with final approval by the 11 organizations which will compose the committee. The new committee will serve as a central agency in the furthering of the standardization work of the electrical industry under American Standards Association procedure.

² See Electrical Industry Organizes for Standardization Work in the July, 1931, issue of COMMERCIAL STANDARDS MONTHLY.

When an asbestos firm accepts an order to install a "certified insulation job," the bureau is immediately advised and the job is registered. During installation the bureau has full access to the work and carries out the inspection necessary to protect the owner's interests. Upon completion of the job, the contractor makes application to the bureau for the Asbestos Bureau surety bond covering this work. He certifies that the work is completed in strict accord with the owner's specifications and addendas thereto, which must be listed. Performance is assured through a continuing bond to the bureau guaranteeing his "C-I" jobs. The job being satisfactorily completed, the bureau obtains from a national surety company the required bond in favor of the owner. This bond is delivered to the contractor who turns it over to the owner or his representative, and then receives his final payment. The cost of this doubly underwritten surety is all borne by the bureau. As a further protection the bureau recommends that copies of any intended "C-I" specifications be submitted to the bureau to be checked before issuing the call for bids.

Added to the specifications is the following paragraph:

The foregoing asbestos insulation specification shall constitute a "certified insulation job" guaranteed by the Asbestos Bureau (Inc.). The Standard Asbestos Bureau code dated March 16, 1931, shall be a part of this specification, but in case of any conflict the specifications shall have precedents. Before final payment on this work is made the contractor must deliver to the owner or his representative an Asbestos Bureau surety bond in the full amount of the insulation contract, but not exceeding \$5,000, guaranteeing during the life of the bond to replace any and all insulation not installed in strict accordance with these specifications, together with any addendas or changes authorized in writing by the owner or his representative.

The announcement of the Asbestos Bureau (Inc.), in explaining benefits to be had from "certified insulation jobs," points out that the asbestos firms are recompensed through the increased volume of work and through having their costs of doing business reduced. The consumer benefits through lower ultimate costs, and thus benefits more than anyone else because he gets more for his money on certified work.

COAL SELECTION AND CLASSIFICATION

Standards for Classifying Coal Have Proven Their Worth to Consumers—Cheapest Coal Sometimes Proves Most Costly

By HAROLD J. ROSE, *The Koppers Research Corporation*

Coal is a complex and variable material which is commercially produced in this country from about 7,000 mines, located in more than 30 States. The coals produced from these different mines vary so greatly in chemical composition and physical behavior under different conditions of use, that, so far as most producers and consumers are concerned, coal is perhaps the least understood of all our important raw materials.

Most coal-consuming industries are, and always have been, handicapped by an inadequate knowledge of the potential value, to them, of the many different coals that are available for purchase. Fortunately, this situation is improving rapidly, and the purpose of this article is to describe some of the changes which are now in progress.

In the year 1931 we have come a long way from the old days when only two kinds of coal were recognized, namely "hard" and "soft," and when impurities were considered to be an act of God, so why worry about them? This simplicity has gone forever. Fuel chemists and combustion engineers have proved their worth to the mining companies, and some of the principal coal producers now have large, well-equipped laboratories and make hundreds or even thousands of chemical and physical determinations each month on the coal which they ship to the consumers. They rightly consider their coal to be a manufactured product, since it is mined and prepared under strict technical supervision and is kept up to rigid standards by constant laboratory control.

Some years ago, when proximate analysis and heating value determinations first began to be made as a regular thing, it was hoped that coal could be successfully purchased on the basis of these simple tests alone. However, early experiences were often disappointing, and few purchasers are willing to buy coal solely on analysis specifications. While the proximate analysis and B. t. u. figures are extremely valuable when properly used, it has been found that coals of similar analysis may behave quite differently under certain conditions of use.

During the past 10 or 15 years it has been the particular ambition of coal-research men and technologists to explain these puzzling differences in behavior. An enormous mass of data bearing on this subject is now available. In fact, the present problem is to digest and systematize this mass of technical information, to separate the good data from the worthless, to verify doubtful conclusions, to fill in the gaps which still exist in our knowledge, and most important of all to make the new information available for the benefit of the producers and users of coal.

This ambitious program of making the best technical information available to the consumer has now been under way for three years. I refer to the committees of national scope which are working on the classification of coal. A brief history of the organi-

zation and work of these committees is necessary at this point.

During the first International Conference on Bituminous Coal, which was held at Pittsburgh, Pa., in 1926, an informal meeting was held to decide whether or not the time was ripe to organize a national committee which would systematically study the whole problem of coal classification. It was decided that this should be done. A sectional committee on coal classification was soon set up under the sponsorship of the American Society for Testing Materials. This committee is organized according to the rules of the American Standards Association which provide that the membership shall be authoritatively and adequately representative of the various interests concerned.

It is impossible to describe in a short paper the work already accomplished by these committees, but the following résumé will give an idea of their aims and accomplishments.

The technical committee on scientific classification was instructed to prepare, if possible, a satisfactory classification based primarily on chemical, physical, and geological consideration. "Scientific classification" does not mean merely a classification for scientists, but rather a classification based on facts, and arrived at by scientific methods. It is to be as simple, fundamental, and permanent in character as possible and based upon the systematic arrangement and study of facts. Such a classification is not expected to reflect all of the present usages and matters of business expediency, some of which are doubtless transient in character. The work of this committee was found to be so extensive that three subcommittees have been formed.

The subcommittee which is studying the nature and location of types of American coals has recommended that for scientific classification purposes, coals be first divided according to progressive changes which they have undergone in their transformation from peat to anthracite. It has been suggested and tentatively approved that the coal series be first divided according to rank, into four very broad groups, each of which would then be subdivided into the necessary number of classes. For example, the broad group of anthracite rank might be subdivided into classes such as semianthracite, anthracite, and those coals which have been still more highly modified by pressure and heat. Unfortunately for the purpose of classification, nature has not provided any breaks in the coal series. The division lines between different groups and classes of coal must of necessity be more or less arbitrary, and some overlapping of properties can not be avoided. It is fully recognized that in such an important matter, decisions should be made on the basis of established facts, and this subcommittee is co-operating with many agencies on problems such as the following:

1. What are the best criteria for separating the different groups. The division of bituminous coal from coal of next lower (subbituminous) rank is especially puzzling, since heating value, slacking characteristics, coking properties, and moisture content as well as chemical analysis have all been proposed for separating these two groups.

2. How many distinct classes of bituminous coal need to be recognized? There is decided lack of agreement in the trade as to just what is included by terms such as "low-volatile," "medium-volatile," and "high-volatile" coal.

3. We do not yet have sufficient information on the rank, practical slacking characteristics, etc., of some of our important coal deposits.

Extensive field-work and laboratory investigations are now under way, which it is hoped will yield the answer to most of such questions. The members of this subcommittee have presented various papers on the subject recently, in the nature of suggestions and progress reports. The effects of differences in the original plant constituents which make up coal are not being overlooked. Such differences are considered to explain the character of canned, bog-head, splint coals, etc.

The subcommittee on composition, physical properties, and methods of analysis has also been very active. A report has been printed describing all changes in coal analysis methods since 1899, which affect the significance of published analyses. The same paper tabulates the normal variations which may be expected when two different laboratories test the same coal sample. Much experimental work has been done and reports prepared on the various methods of calculating or preparing pure coal substance, as recommended by various investigators.

The slacking characteristics of certain coals greatly affect their commercial value. By slacking is meant the tendency of many low-rank coals to break up rapidly or crumble when exposed to the weather, especially with alternate wetting and drying. A laboratory test method has been developed by the Bureau of Mines of the United States Department of Commerce, and has been applied to a large number of coals of all ranks with very promising results. The same bureau is investigating the agglutinating properties of coal, coal softening temperatures, and other physical characteristics which affect the behavior of coal in various uses. The gas and coke making properties of American coals are also being investigated by the Bureau of Mines under a cooperative agreement with the American Gas Association. This latter association is at present investigating the characteristics of coals used for the manufacture of water gas. These are merely examples of the great variety of research which is daily adding to our stock of accurate information concerning coal and its behavior in practical use.

The subcommittee on present and proposed scientific classification has studied and reported on the many classifications which have been proposed. The situation is exceedingly involved owing to the large number of existing classifications, the many bases suggested for dividing coals into classes, and the fact that almost every investigator has recommended a different moisture or purity basis, which means that all analysis data used has to be recalculated for each system. A long mathematical and graphic study has

made it possible to bring order out of this chaos. A new form of graph, the multibasis coal chart, has been devised by the writer to permit the simultaneous comparison and study of proximate analysis, heating value, ultimate analysis and physical properties of coal, on any moisture and purity basis. With this new form of graph, the coal classification committees are in a position to study the most involved relationships in a comprehensive and uniform manner.

The technical committee on the use classification of coal is charged with developing a classification (if possible and desirable), based principally on the uses of coal and commercial practices. This is to be correlated as closely as found desirable with the system devised by the scientific committee. Individual members, or groups of members, have published reports dealing with the requirements of coal for such purposes as gas manufacture, railroad fuel, and stationary steam generation, while reports on the requirements of coal for other purposes are in the course of preparation.

The technical committee on marketing practice collects information on the character and distribution of commercial coal shipments for the benefit of the scientific and use committees. The phases of marketing practice with which this committee is concerned relate only to data for classification purposes.

Through the cooperation of the American Institute of Mining and Metallurgical Engineers, it has been possible to publish a large number of papers relating to coal classification. These papers are not as yet official committee reports, but represent the results of investigations or views of the individual authors. They are presented for the information of the public, and for the purpose of securing constructive criticism.

The whole project of coal classification is of great magnitude, and of the highest importance. Uniform classification should be a great aid to a better understanding between seller and buyer, and should result in directing each class of coal into the use for which it is most valuable.

The United States and Canada together possess two-thirds of the world's known coal supply. It is indeed fortunate that coal classification work on lines similar to that described above, is in progress in Canada. It is sponsored by the National Research Council of Canada, the Alberta Research Council and the Dominion Department of Mines. By the interchange of representatives and reports, the committees in the two countries are kept informed of each other's progress, in order to further the purpose of working out systems of classification applicable to coals of the North American continent.

So much for coal classification. The solution of these problems will do much to improve marketing practices, and to eliminate conditions which have too often resulted in "the blind leading the blind" in the sale and purchase of coal. Improved methods of evaluation will enable purchasers to reduce costly "cut-and-try" experimentation to a minimum.

How is the purchaser to take advantage of the latest and best technical information relating to coal? There are two ways of doing this, both of which are in successful use. The first method is for the coal consumer to maintain an expert technical staff which makes extensive full-scale tests of competitive coals,

and conducts thorough laboratory investigations of the scores or hundreds of varieties which are available. Of course, only the largest buyers can afford to follow this practice. If extensively followed, it would lead to enormous duplication and waste of effort, and needless expense.

The other method is for the coal producer to collect comprehensive and reliable data on the chemical analysis, physical properties, and behavior in use of each of the various products which he offers for sale, and to make this information available to prospective customers through well-qualified combustion engineers, who also act as service men when the coal is put into use. Any purchaser, large or small, can take advantage of this service by dealing with mining or distributing companies who are progressive enough to offer it. Naturally, the quality of the technical service that is offered varies, but many would be astonished to learn what has been accomplished during the last five years by some of the leading coal producers in learning the facts about their coal. From analyses and tests made in their own and consulting laboratories, and by systematic observations of their coal under conditions of actual use, they have learned how to prepare coal that is best suited for a particular condition, and they will furnish experts to help the individual get the most economical results. Many consumers have already found that the ingenious new ideas and discoveries in fuel technology can be put to profitable use.

Perhaps some purchasing agents still believe that the coal which costs least per ton is always the cheapest coal to use. However, cheap coal often proves very dear in the end. At a certain plant where a particular coal had been used for one year with very good results, a contract was given (without the knowledge of the technical department), for another coal "close by, close to, and approximately the same," which could be bought for 15 cents less per ton. Before they could get rid of this latter coal it has caused operating difficulties and inferior products resulting in a net loss of more than four million dollars.

The by-product coke and gas plants, which next to the railroads are the largest industrial users of coal, found long ago that it paid them well to buy on quality first, and price second. As a result of careful investigations, they are becoming more exacting in their requirements each year. There have been many instances where combined coke-oven and blast-furnace plants have found that they could make cheaper iron by paying 50 cents to \$1 more per ton for their coal.

This situation is by no means limited to the coal carbonizing industry. A slight change in the character of coal used at boiler plants which are forced to run at full capacity or over capacity, may cause a profound effect on the balance sheet of the entire plant. The type of coal to be used in a new boiler plant, determines to an important degree the size and investment in plant, the kind of equipment and operating costs. There are no lack of concrete examples to prove that price per ton is not always the most important factor in buying coal. This does not mean that the highest-priced coal is necessarily the best to buy. Combustion engineers and competent salesmen often recommend a size and grade of coal which costs less per ton and at the same time gives better results than coal previously used. The important thing is for buyers and sellers to go into the matter of quality and performance of coal as thoroughly as they consider its price per ton.

One of the recent and outstanding achievements in the coal industry is the maintenance of high and uniform quality, in shipments, month after month. This has been made possible by many conditions, such as better mining methods, improved labor conditions, closer inspection, and the increased use of coal-cleaning equipment. Last year, about forty million tons of coal were cleaned by wet and dry processes, and this figure is increasing rapidly. In such plants the purity and size of coal is subject to particularly close control. It should not be necessary to enlarge upon the value of uniformity in coal or any other material. Uniform raw materials permit standardized and economical operation.

SIMPLIFIED PRACTICE AIDED THROUGH COOPERATIVE ACTION BY INDUSTRY

The American Institute of Architects and the Associated General Contractors of America have arranged with the National Bureau of Standards to supply each of their members with pertinent material on simplified practice recommendations.

The American Institute of Architects has been active in supporting the simplification movement since the Government first sponsored simplified practice in 1921. Each member architect is being supplied with a complete list of simplified practice recommendations, and is being informed of the opportunities to obtain complimentary sheet form copies of any of the recommendations listed. This service, established for consumers or users of commodities simplified, has proven very popular and effective.

The Associated General Contractors of America has been active in supporting simplification, and has officially recorded the acceptance of 24 of the simplified practice recommendations. In a recent letter to

the National Bureau of Standards, E. J. Harding, managing director of the Associated General Contractors of America, pointed out that acceptance and adherence to these recommendations would go far toward the elimination of much waste in production, and would result in a saving to the consuming public.

Time is an essential factor in all construction enterprises. In order to keep his costs down, the contractor must be able to count on quick deliveries from spot stocks of building materials. Simplified lines enable the building material dealer to render such service without increasing his inventories. The benefits of simplification may be measured in direct savings, not only to the contractor and the dealer, but to everyone else concerned in a construction enterprise, including the final owner.

The cooperative assistance outlined above has already been extended to the National Association of Purchasing Agents, the American Railway Association, the National Electric Light Association, the American Gas Association, the American Electric Railway Association, and the American Water Works Association.

PURCHASING BY SPECIFICATION

Since Interpretation is a Broad and Variable Factor, Purchase Specifications Must Be Clearly Defined to Avoid Confusion

By G. M. RICHARDSON¹

A specification is a word photograph of the material you wish to purchase. Like a photograph, it must be in focus. It must be clear—not only in general, but each detail must be made to stand apart from the rest. In short, it must be understandable and must clearly convey your meaning.

One must bear in mind that interpretation is a broad and variable factor in the use of specifications. One person's interpretation may be entirely different from the way others might interpret. Local conditions, local terms, local trade practices, and local requirements may cause a meaning different from what was intended, and a meaning which might not be desirable.

The effect a specification is intended to produce on a manufacturer, or a supplier, or a contractor, is to make clear to him just what is wanted. It is desired to convey to him that the material specified is suitable for the purpose intended, assuming, of course, that the specification has been so designed as to permit only suitable material.

If the specification is one which will be used frequently it will have the effect of making the material easily available—obtainable on short notice, because the supplier knows what is wanted and will generally have a supply available. It will have a decided effect on price, for the supplier knows exactly how the purchaser wants the material made and knows he wants it made that way every time items are purchased; consequently he can adjust his prices to suit those conditions.

If the specification is clear in all its details it is a good one; it is fair to all bidders. But if it is not clear in every detail it is decidedly unfair, for in his interpretation, each bidder may form a different picture of what is wanted. The differences may vary just enough to cause him to overbid, by which he may lose the order; or, to underbid, which will be disastrous to him and which may cause him to cheapen the material just enough to prevent him from losing money. This the purchaser may never detect and trouble is apt to develop in the use of the material later on.

There are several types or kinds of specifications in general use. One of them is a design or dimensional specification, another is a performance specification, and yet another which accompanies a drawing or set of drawings, is a material specification.

I believe that it is impractical and a dangerous procedure for the average user to prepare design specifications covering standard articles of commerce; such as rubber hose, hack-saw blades, auto tires, window glass, fire brick, brooms and brushes, bed springs, and paint. It is much better, generally, to let the design alone and make purchases of this sort on a performance basis. One merely has to tell their supplier

for instance, that there is desired an air hose for a certain purpose, and that it must successfully withstand pressures of a certain number of pounds, that the air will contain oil, is of a certain maximum temperature, and will be used on board ship or in a coal mine. This procedure will not hamper initiative on the part of the manufacturer but will, on the other hand, encourage development and assure the purchaser of sharing in those developments, whereas if the purchaser designs the material himself he can not hope to benefit by the experience of others.

A performance specification will generally result in considerable economy; for example, the readers of this magazine have probably read what Timothy J. Keleher and Frank M. McGeary of the United States Navy have said about buying supplies on a utility basis. For instance, among 13 samples of hack-saw blades for hand frames, they found that the number of cuts per blade varied from 8.33 to 22.33, and that the number of strokes per cut varied between 4,602 and 8,523. They found that the best set of samples gave 167 per cent greater service than the poorest set, whereas the price of the best blade was only 10 per cent greater than the price of the poorest. A similar condition existed in the hack-saw blades for machine use.

They also found a like condition in valve-grinding compounds. By measuring the work done by the valve-grinding compounds of three suppliers, it was found that the compound of one bidder cost 1.17 times that of the other bidder, but, the cost of removing a pound of metal with the compound of the first bidder cost approximately 74 cents as compared with \$1.47 for removing a pound of metal with the compound of the other bidder.

They say further:

One way to determine differences in service is to test samples of the articles under consideration in a manner which simulates service conditions. For a person equipped with knowledge based on experience, it is practicable to select the most important factors which enter into the service of articles, and in many cases it is possible without prohibitive expense to test these articles in a way that will insure reasonably accurate results.

Specifications as commonly understood must of necessity be statements of minimum acceptable requirements. When competition becomes keen this tends toward the delivery under contracts of material which will be no better than the very lowest quality acceptable under the specifications. Materials of the same kind, but of different manufacture, will always vary as to quality; hence if any way can be developed of determining these differences in quality, which means determining the differences in service to be expected, such development is surely desirable. It would appear reasonable, therefore, to work up specifications which would describe in detail the minimum acceptable requirements, and then to develop around each specification the work factor basis which would give the maximum service for the minimum cost.

At first thought this may appear to involve a highly scientific investigation, during which cross currents may develop and lead in so many directions that no conclusive results will be possible. Further consideration, however, will show that it is entirely feasible for a consumer to develop, for many kinds of material, work factors based on actual service use of the material.

¹ Purchasing engineer for the Southern California Edison Co. (Ltd.), Los Angeles, Calif.

The problem is to select the variable factors entering into the service of a given material under its normal condition of use and to reduce these factors to a simple mathematical formula in conjunction with an easily duplicated test, which shall simulate—in a test laboratory, let us say—actual service conditions.

While it might be possible in time to evolve a scientifically correct work value for every brand of material, it is not believed that this is necessary, or even desirable, since a correction would have to be applied for each consumer and for each use to overcome differences in operating conditions. As the one who pays the bill, each consumer should decide what grade of material he desires to purchase, develop a specification as to minimum quality, in order to identify the material and established work factors of a number of brands of the material, based on the kind of service expected. When the material is to be used for different kinds of service, the work value should be based on the most important service from the operating standpoint.

To remain serviceable, specifications must always be in a state of revision, as the state of the art of production improves, as the quality of raw materials available for a given product changes, and as new limitations are imposed on the use of a product. They should be revised at least once a year or oftener. The balancing of all these complex, constantly changing factors entails oftentimes a heavy burden of experimental research without which the numerical values and tolerances (both chemical and physical) inherent in all quantitative specifications can not, in general, be fairly stated.

When it becomes necessary to use a specification in the purchase of materials it is best to use a standard specification—one which is recognized and understood by users and manufacturers generally and which follows good principles of design. This means that the standardized article will represent good engineering. Its design will then be such as will stand the criticism of technical men everywhere. Already there are many specifications which have been tried and tested for long periods of time, such as those of the American Society for Testing Materials, of the United States Navy, and other Government agencies. Again we must be careful and not let the means become the end—let the tail wag the dog. Specifications are only useful when they will bring the right material to the job at a reasonable cost, and when written with that in view will answer an admirable purpose; but when written to be a monument unto themselves—something to look at in wonder and awe—specifications will hinder rather than help the purchasing agent and the company he serves.

The preparation of a specification involves a most careful survey in order that it cover all the requirements, and that it will not impose unreasonable demands upon the manufacturer. Thorough research is necessary before the specification should be adopted as a standard. Manufacturers should be conferred with and other possible users consulted. Often home-made specifications are found to cover articles which can not be manufactured economically, which are not generally available. While a special article might be suitable in a particular case, it would be preferable to use a standard article of a similar shape and size which is stocked in the community, is quickly available, costs less, and is equally as satisfactory.

Among the many benefits derived by the consumer through the use of standard specifications, are the following:

1. He can secure truly competitive bids on the same quality of material—a condition that is greatly to his advantage.

2. The details of purchasing are simplified and standardized, a matter of especial importance in large organizations, such as the modern public utility.

3. Standard methods of test and inspection are of particular value in establishing a routine procedure for acceptance of material.

4. The greater uniformity and reliability of material purchased under standard specifications and the fact that its properties are more thorough understood, make possible its more economic use.

Of course standardization has corresponding advantages for the producer which are, naturally, indirectly of advantage to the consumer. Among these may be mentioned:

1. He is not compelled to supply for essentially the same purpose materials ordered to a variety of specifications that may differ by just enough to require separate production under each specification, involving many classifications in production, in stock files, and the like, with no commensurate benefits to the user.

2. Under standardization with respect both to dimensional and quality standards, the manufacturer in times of general business depression when his orders are low and buying is practically at a standstill, can continue to produce "standard" materials, knowing that when business picks up there will be a market for it. In this way he can keep his plant running and his organization intact, avoid excessive labor turnover, prevent large increases of overhead expense in relation to output, and can frequently take advantage of favorable market conditions in purchasing raw materials, and in general maintain the efficiency of his operation. Such considerations as these are of great importance in that they substantially reduce the waste in industry which is an economic burden upon the entire community.

3. The producer knows exactly what he is expected to furnish and how the material will be tested and inspected by the consumer, thus reducing to a minimum the possibility of misunderstandings, which are both vexatious and expensive.

There are many recognized specifications, or standards, as they are called, so that the selection of a good specification when it is not practical for the purchaser to prepare one himself is comparatively easy. Such bodies as the United States Government, the American Society for Testing Materials, and the American Standards Association, which probably are the largest specification producing bodies in the world, are always very willing to help. For many articles, the best specification is the general reputation of the manufacturer for honesty and diligence, and the purchaser's experience with the actual service rendered by the material or apparatus purchased from that supplier.

Inspecting and testing deliveries when purchasing materials according to specification, one should be equipped to inspect and test the material received. Good inspectors and testing laboratories are as essential in the purchase of supplies and equipment as are good specifications. In fact, one is of little value without the other. A good inspector should have the

qualities of a diplomat, together with the characteristics of a Sherlock Holmes. His training should be thorough, and he should know his materials. He must have self-assurance, and also the backing of his superiors. His decisions must be final. He is a veritable traffic cop of quality production.

In the matter of inspection, I have in mind a company that purchased cedar poles upon certain specifications which differed considerably from the standards used by most producers and consumers. A number of the producers had never been able to get any of the business of this concern on account of higher prices due to the fact that in order to meet the specifications, it was necessary to classify the poles rigidly. The unsuccessful bidders often wondered how the successful ones got by at the prices quoted, but later found the answer to the riddle in the fact that while the purchasing company had these rigid specifications, it never tested or measured one pole received, and the suppliers knowing this simply figured the price on woods run poles and shipped those. Such information travels fast, and undoubtedly suppliers in other lines knew the habits of this corporation and paid as much attention to meeting the specifications as did the pole producers. In my opinion, that company would have been better off without any specifications.

A certain tolerance, however, must be exercised in the matter of inspection. We should not lean over backward and expect the manufacturer, to produce an article so perfect in every detail that it exceeds in this respect the general run of factory output. To do so invites higher prices and sharp practices with which the inspector finds himself powerless to cope.

Each specification used should describe or refer to a standard method of testing. Obviously no two methods of tests will give the same results, and we must get the whole picture from the test report. Tests and investigations unless completely and carefully made, do not tell the whole story of the performance of the object under test, and are valueless. Tests and investigations of this sort can be likened to a case in court; the prisoner can be made to appear guilty or innocent, depending upon the evidence brought out by the lawyers for the prosecution or defense.

The purchasing agent who knows his standards, his specifications, also knows his materials and is again benefited. He has a broadened knowledge of the commodities he buys and the fitness of the different varieties of materials purchased for specific purposes.

SIMPLIFICATION FOR CARBON BRUSHES AND BRUSH SHUNTS REVISED

Slight modifications in the simplification program for carbon brushes and brush shunts have been recommended by the standing committee in charge of the recommendation. This committee met July 28 in Cleveland, Ohio, and reaffirmed all items in the present program with the exception of brush dimensions.

In the opinion of the committee, a further simplification of dimensions could be agreed upon by all parties concerned, within the next few months. The committee therefore voted to hold in abeyance the publication of a revised recommendation until the

A certain large public utility has recently formed a material standards committee composed of members selected by the management from the different departments of the company. The representative from the purchasing department is secretary. The secretary keeps and publishes the minutes of all meetings and carries on all correspondence relative to the work of the committee. The chairman is an engineer, and the other members are representatives of the operating, construction, and other departments. The object of the committee is to establish official standards for the purchase of materials and equipment. After a standard has been issued covering an article, the stores department may stock only this standardized article. No other agency of the company may authorize standards or standard specifications covering the same field as this committee, nor revise any of the existing standards.

The work of preparing the specification is carried on much the same as in other organizations, except that before a standard specification, or standard, as it is called, is adopted even tentatively, the various manufacturers of the article covered are consulted and other users of similar materials for similar purposes are asked for comments and criticisms, keeping the idea in mind that the standard or a similar one may some day be generally adopted by all the users in the district. This plan has not only met with the entire approval from within the organization, but has been enthusiastically accepted by the dealers and manufacturers, and other users of similar materials have signified their approval. It has provided one point of contact between the user and the seller, that being the purchasing department. It simplifies purchasing and reduces the items carried in the general stores stock. It insures suitable articles and makes them available almost 100 per cent.

The important thing is that the specification should actually fill the need; no more, no less. To set requirements at a higher level than necessary will add to the cost with no return on the added investment. A few individuals may argue that the requirements should be high in order to obtain better average quality in production runs. However, definite maximum and minimum limits should be set, for a good specification is not built on averages. The specification becomes a part of the contract with the manufacturer or dealer, and if properly written and properly enforced should afford complete information and protection to all concerned, and insure suitable materials at a suitable price.

new list, showing a smaller number of brush dimensions, had been approved by manufacturers of brushes, and of motors and generators. This revision will result in largely reducing the number of stock items catalogued by all manufacturers.

The committee further voted to include in the revised recommendation certain additional definitions, together with a table showing the nomenclature recently adopted by the brush manufacturers to indicate the various standard types of shunt connections. It is also expected that a further reduction can be made in the number of shunt lengths. Some of the manufacturers have already reduced the number of lengths from six to three.

THE NATIONAL BUREAU OF STANDARDS AND ITS COOPERATION WITH INDUSTRY

Governmental and Nongovernmental Organizations Cooperate with Bureau Unofficially, Semiofficially, and Officially

By A. S. McALLISTER, *National Bureau of Standards*

Although it is well known that, in carrying on its activities, the National Bureau of Standards cooperates effectively with numerous organizations both governmental and nongovernmental, it is to be doubted if many persons realize the magnitude of this cooperation, and the extent to which the success of the bureau's enterprises can be attributed to it.

The cooperation referred to might well be classified as unofficial, semiofficial, and official. The first two of the classes will be touched upon briefly, major attention being given to cooperation which may properly be referred to as official.

A certain amount of information concerning the unofficial and semiofficial contacts between the members of the bureau's staff and various organizations is contained in the bureau's card file of membership of individuals on committees of various kinds. Because of the semiofficial nature of a large part of the committee appointments, the card file is never quite up to date or complete as of any date. Nevertheless, it furnishes a well-worth-while indication of the scope of the activities carried on by members of the bureau's staff in cooperation with other organizations.

Six months ago a detailed analysis was made of the information set forth in the card file. After eliminating all cards relating to membership on the bureau's own committees there remained a total of 1,112 listings, which is in excess of an average of one listing for each individual employee of the bureau. These listings related to the membership of 155 individuals on the committees of 117 organizations, of which 16 were governmental and 101 nongovernmental.

The accompanying table gives a summary of the listing of individuals on committees of seven of the more important organizations, and of those for the other 110 organizations.

Records of bureau personnel on committees of various associations

Name of organization	Listings	Individuals	Maximum listing of any individual
American Standards Association.....	181	63	22
Federal Specifications Board.....	120	61	8
American Society Testing Materials.....	304	55	24
National Fire Protective Association.....	13	6	3
American Institute Electrical Engineers.....	45	19	7
National Research Council.....	74	26	22
American Society Mechanical Engineers.....	46	30	4
Miscellaneous Societies (110).....	329		
Total.....	1,112	155	24

The above summary relates to the membership of the personnel of the National Bureau of Standards on committees of other organizations, and includes official, semiofficial, and unofficial appointments, but does not include records of the appointments made by other organizations of individuals to cooperate in activities

carried out under the auspices of the National Bureau of Standards.

On a recently compiled list of the organizations now cooperating officially with the National Bureau of Standards, which have designated one or more representatives to serve on committees, board, etc., functioning under the auspices of the National Bureau of Standards, there appears a total of 167 technical societies, trade associations, and consumer groups.

Meaning of "trade association."—When one attempts to distinguish between trade associations and other organizations with which the National Bureau of Standards is cooperating, he is confused no little by the fact that a very broad interpretation of the term "trade association" has been given by the American Trade Association executives. Such an association may be an organization of producers or distributors of a commodity or service, and in its service to the public may be engaged in "the compilation and distribution of information; the establishment of trade standards; and the cooperative handling of problems common to the production or distribution of the commodity or service" with which it is concerned.

A fair idea of the real significance of the above-noted interpretation can be gained from the fact that the 1935 executive committee of the American Trade Association Executives, consisted of representatives of 12 organizations, not more than 6 of which are associations of manufacturers.

That the National Bureau of Standards is vitally interested in the activities of American trade associations is shown conclusively by its several periodicals, the Standards Yearbook, the Research Journal, Technical News Bulletin, and Commercial Standards Monthly, and by the plans utilized by it in cooperating effectively with these associations in both its research and commercial standardization work.

In the Standards Yearbook for 1930 there are given outlines of the activities of 375 associations which make standardization one of the important features of their services to their members. A recent survey showed that 107 associations have placed in operation certain definite plans for facilitating the use of their own or other standards and specifications by manufacturers, and the identification of goods made according to those standards.

Both the research and testing, and the commercial standardization groups of the bureau look upon their cooperation with trade associations as essential to their success.

Research associate plan.—The bureau inaugurated the research associate plan in order to enable such organizations as trade associations to conduct specific researches on important problems affecting their industry or specialty. In accordance with this plan, the bureau supplements the facilities of organizations concerning research and affords facilities for those

who have none. When requested to do so, it makes research possible for an organization by loaning equipment, providing quarters, and affording facilities, data, and supervision, giving training and experience in research under bureau auspices, and cooperation to qualified workers—the research associates being selected for the purpose and financed by trade associations or similar groups.

A recent survey showed that 68 research associates at the National Bureau of Standards were maintained by 31 organizations which would be classified as trade associations by the American Trade Association Executives. Other organized groups, committees, and firms maintain 30 additional research associates at the bureau.

Elimination of waste program.—In carrying forward its elimination of waste program, the bureau cooperates with many organizations desirous of eliminating excess sizes, varieties, grades, and qualities of commodities of common consumption. Eighty trade associations are sponsoring simplified-practice projects involving sizes and varieties, and 33 trade associations are sponsoring commercial standards involving grades and qualities. These facts are set forth in the accompanying table.

Trade associations and technical societies sponsoring standardizing activities

	Total
Scheduled in 1931 Standards Yearbook.....	375
Mentioned in yearbook, additional.....	38
Research associates (68) at bureau.....	31
Sponsoring commercial standards.....	33
Unorganized sponsoring groups.....	4
Sponsoring simplification projects.....	80
Unorganized sponsoring groups.....	17
Making standards effective ¹	107
Using or advocating labels.....	75
Using labels.....	55

¹ Making Standards Effective, by R. A. Martino, National Bureau of Standards, appeared in the January, 1931, issue of Commercial Standards Monthly.

Activities of trade association department.—That the Chamber of Commerce of the United States of America attaches great importance to trade associations is attested by the rapidly growing activities of its trade-association department. Under date of June 30, 1930, the then manager of that department, Dr. Hugh P. Baker, wrote the National Bureau of Standards as follows:

We are very much interested in the matter of certification of product, particularly as it is developed through the trade association. In contacts in the field with a number of associations during the past few months we have urged that consideration be given to developing means of certifying product and, of course, have emphasized in this connection the necessity for standardization and development of means of checking or policing the certification. The work which you are doing is of great value in furthering the idea of certification and because of our interest in the subject, we will appreciate your keeping us informed of developments.

More than eight years ago, Julius H. Barnes, the then president of the Chamber of Commerce of the United States, expressed the desire of the chamber to cooperate in establishing standards of quality. On January 10, 1923, President Barnes stated:

Business is facilitated and the ground for commercial disputes between buyer and seller is narrowed down if sales are made on the basis of standard grades of merchandise, perfectly familiar to both buyer and seller. This is a phase of business of particular importance in international trans-

actions where different trade practices and different conditions exist. In a good many foreign countries there has been loss of good will for particular American dealers as well as some lingering prejudice to the good name of American business generally, which can be traced to the lack of understanding and agreement between buyer and seller as to the qualities entering into transactions, or to the absence of standards of quality and performance. When such standards exist, backed by the moral force of a trade association or a trade group in the United States, the promotion of the sale of American merchandise of a given kind and the building of good will toward American trade abroad are made easier and rest upon a sound foundation.

In lines of merchandise where conditions warrant the adoption of representative trade associations of certain definite standards of quality or performance, the associations can hold to account any member failing to make delivery up to the standards adopted and incorporated in sales contracts. Disputes arising in connection with such transactions readily lend themselves to settlement by the parties themselves or by commercial arbitration.

A good many association executives, and a good many manufacturers who at first have been skeptical of the possibility of setting standards in their particular lines, have gone to Washington and sat in with the members of the Federal Specifications Board, and participated in the drafting of workable specifications for all Government purchases in their lines. In the case of some commodities the Federal specifications thus adopted are actually becoming used in private trade. The National Bureau of Standards of the Department of Commerce has at all times shown a disposition to go as far as it can with the business men in working out technical specifications. There are laboratory and testing facilities here, provided by the taxpayer, which may be available for this purpose. The director of the Bureau of Foreign and Domestic Commerce, of the Department of Commerce, has expressed the willingness of the chiefs of the commodity divisions in that bureau to work with the associations in this matter of standards of quality, particularly as they bear on foreign trade. Our department managers in the different departments of the staff of the Chamber of Commerce of the United States are desirous of cooperating with any organization undertaking or extending this class of work.

That the present manager of the trade association department of the Chamber of Commerce of the United States, Philip P. Gott, is working in harmony with the ideas expressed by his predecessor, Doctor Baker, and by former President Barnes is shown by the interest manifested by him in collecting and exhibiting certificates and labels now being used by many trade associations to indicate or guarantee compliance with their standards or specifications. These certificates and labels, which were collected in cooperation with the National Bureau of Standards, were exhibited at the 1931 annual convention of the Chamber of Commerce at Atlantic City, N. J., and are now being shown at the headquarters in Washington, D. C. There has also been prepared a loan exhibit to be sent from time to time to trade associations contemplating the use of certificates or labels.

When he was Secretary of Commerce, President Hoover listed among the successful services of the trade associations in the public interest, scientific and economic research, and the simplification and standardization of commodities, in which associations have made a most valued contribution to our economic progress. He said:

Trade associations, like many other good things, may be abused, but the investigations of the Department of Commerce show that such abuses have become rare exceptions. Within the last few years trade associations have rapidly developed into legitimate and constructive fields of the utmost public interest and have marked a fundamental step in the gradual evolution of our whole economic life. * * * They are the safeguards of small business and thus prevent the extinction of competition. They are the alternative to capital consolidation. * * * With wisdom and devotion these voluntary

forces can accomplish more for our country than any spread of the hand of Government.

In response to a request for an expression of opinion concerning the legality of the work in standardization being carried on by trade associations and similar organizations under the auspices of the Department of Commerce, the Federal Trade Commission stated, under date of March 12, 1931, that it has re-

garded the promotion of standardization of commodities among the members of an industry as peculiarly the work of the Department of Commerce.

In no matter has the commission ever held the standardization of commodities by the members of an industry to be violative of any of the statutes it has the duty of enforcing. * * * The commission regards the work of the Department of Commerce in encouraging the standardizing of commodities as important and beneficial to the public.

THE PERFORMANCE TYPE OF SPECIFICATIONS

Relative Merits of Performance and Material Specifications for Rubber Insulation

By CHARLES R. BOGGS, *Vice President, Simplex Wire & Cable Co.*

In order to take advantage of improvements that have been made in late years in rubber insulation it is important for a consumer who must purchase under specification to have a fair idea of the relative merits of the several kinds of specifications.

There are two general types of specifications. The older type is known as a "materials" specification, as it describes in detail the materials to be used. It generally includes tests to be passed at time of purchase but requires no future performance from the wire. This type of specification is based on the theory that the purchaser knows the best design, materials, and manufacturing practice for his needs; that he has had satisfactory service from such before; and that he desires to purchase exactly the same thing again, regardless of improvements. He would rather buy what he knows to be only fairly good, even at greater cost, than run the supposed risk of accepting something bad.

The newer type of specification is the "performance" type. It is based on the principle that the product ought to pass tests which indicate the performance in service. In the case of rubber insulation it calls, in general, for physical and electrical tests, and an aging test to insure that the characteristics will remain approximately constant with time. It includes additional tests for special requirements, for example; in submarine cables, a water absorption tests; in multi-conductor cables, rigidity tests; in high tension wires, tests for breakdown strength and resistance to ozone or freedom from tendency to form it; and other tests showing resistance to flame, to high temperatures, to the action of oil, and so on as the case may be. To meet this kind of specification the product must be capable of rendering a definite service and by such tests the purchaser so assures himself. He is not concerned with the materials or the method of manufacture as long as the product accomplishes the desired results. The manufacturer, on the other hand, is left free to make the best product at the lowest cost to suit the service. He can take advantage of all modern technical knowledge and methods of manufacture.

There is yet a third type of specification. Some purchasers have shown a disposition to compromise by adopting the necessary performance tests while still retaining the old requirements as to materials, except that they sanction the inclusion of one or more new ingredients—say some particular accelerator or

anti-oxidant—which may be needed to modernize the compound. In this way the product is improved and for the moment brought fairly up to date.

Let us consider the relative merits of the three types. The "materials" specification assures the purchaser only that goods accepted in the future will not be any worse than those considered satisfactory in the past. It is an equally effective obstacle to improvement, for it restricts the manufacturer to certain prescribed materials and the service of the product is necessarily limited by this choice. New ingredients which would improve the electrical properties or prolong the life of the wire or cable in service can not be utilized.

The "mixed" or "compromise" type is undoubtedly an improvement over the strict materials type in that the performance tests insure the required service and the new ingredients included permit a better compound. On the other hand, still better materials which are soon made available by progress in the art, are excluded until the materials requirements have again been revised. Thus, while the performance part of the specification insures a certain quality, the materials requirements effectually block any further improvement. Periodic revisions of the specifications are only a partial remedy; for no matter how quickly made they are always lagging behind the art. To make proper revisions the purchaser would have to keep himself informed on all the advances of the art. This is impractical and experience shows that he has not done so in the past. It is strictly the province of the manufacturer.

The performance type of specification is free from these objections. While it fixes the lower limits of availability to render service, it does not in any way prevent or delay the making of better products. Improvements due to new materials and methods do not necessitate any revision whatever, for surely no one objects to getting something better than he demands. Unrestricted by any prescriptions as to materials and processes, the manufacturer is free, by the proper choice of them, to exceed the requirements or to satisfy them at lower cost. If the purchaser desires to raise the limits, it can be easily and quickly done without any fundamental revision. This type of specification is an insurance, not an obstacle.

The way to take advantage of modern progress and to do it automatically is to purchase on performance specifications.

STANDARD FORECASTS FOR AIR AND MARINE NAVIGATION

Résumé Explains Working Procedure of United States Weather Bureau

By C. F. MARVIN, *Chief, Weather Bureau, United States Department of Agriculture*

The standard forecasts and warnings of the Weather Bureau are based chiefly on simultaneous observations of local weather conditions taken and telegraphed from a network of representative stations in the continental United States. They are supplemented by weather messages obtained from ships at sea and by interchange with other national services.

The standard observations are taken at 8 a. m. and 8 p. m., seventy-fifth meridian time, and the general forecasts of the bureau for aerial and marine navigations are based upon weather maps prepared by charting these reports. Observations at intermediate hours form a basis for special forecasts and warnings.

On May 1, 1930, the Weather Bureau began on 20 selected vessels the use of the International Code for reports from ships at sea. This code was adopted at a conference of the International Meteorological Organization at Copenhagen in September, 1929. It is a figure code in standard forms and when in general use, it will make possible transmission of reports from ships of any nationality to the meteorological service of any country party to the agreement.

Adoption of this code is an important advance in the development of forecasts for marine navigation and will obviate the necessity of numerous code books for translation of reports received, and the vessel master will be asked to send only one message in the standard form in place of several messages in a variety of codes.

The standard forecasts of the bureau are issued for fixed areas or districts. Since the forecasts are issued to cover a definite period in the near future, speed in transmission is essential. They are distributed over considerable areas and to be useful must arrive at destination in advance of the period of time covered in the forecasts. Brief messages are handled more

rapidly, hence the standard forecast contains the essential features of weather expected for a given area in the smallest number of words in which it can be effectively presented.

Standard forecasts for marine navigation are of two types; general forecast and standard form. General forecasts, based upon the 8 a. m. and 8 p. m. reports, are issued for certain coastal and adjacent ocean areas. They embody in general terms the outlook for the weather during 24 hours in those regions. Hurricane, storm, and small craft warnings are based upon the principal observations or special observations obtained for the purpose. In the standard form they give the location of the disturbance, its probable direction of movement, intensity, and advise caution in certain regions when the disturbance is of such proportion as to endanger shipping.

Forecasts for air navigation are of three types: (1) The general flying forecasts are based upon the 8 a. m. and 8 p. m. observations and give the weather outlook at the surface and in the free air during a 12-hour period in the standard aviation zone; (2) route or trip forecasts are issued for the benefit of air navigation along designated routes; (3) there are standard 3-hourly summaries for designated airways which contain information as to weather existing along the airways and forecasts for brief intervals ahead along comparatively narrow and limited air lanes.

Occasional forecast and informational service is furnished for transoceanic flying and the standard service for this type of air navigation consists of weather forecasts and summaries from the meteorological service of the country from which the flight originates, supplemented by advices from the meteorological service of the country in which the flight terminates.

ACTION OF FEDERAL TRADE COMMISSION RELATING TO FALSE BRANDING AND ADVERTISING

Prominent among the trade-practice conference rules receiving the official approval of the Federal Trade Commission are those relating to false marking or branding, false advertising of grade, quality, or quantity of products.

In 22 of the 26 groups of rules recently revised and approved by the commission, there were included one or more rules relating to marking, branding, or quality of the goods. The following industries have accepted these rules: Bituminous coal, common brick, concrete mixers and pavers, concrete reinforcing steel, crushed stone, cut stone, face brick, greeting cards, jewelry, kraft paper, milk and ice cream cans, mixed feeds, paper bags, range boilers, steel office furniture, solid sectional steel windows, structural-steel fabricators, vulcanized fibers, wall paper, watchcases, and woolstock.

Typical of the trade-practice conferences referred to is that of the wall-paper industry.

Under date of August 21, 1931, the commission announced that modifications recently made by the commission in certain of the resolutions dealing with business practices in the wall-paper industry have been accepted by the industry. Ninety per cent of that industry was present or represented at the trade-practice conference of the industry held under the auspices of the commission, at which 13 resolutions were formulated and adopted by the industry.

Among the rules pertaining to practices held to be violative of law are two relating to false marking and deceptive advertising, as follows:

The false marking or branding of products of the industry, with the effect of misleading or deceiving purchasers with respect to the quantity, quality, grade, or substance of the goods purchased, is an unfair trade practice, and the marking or causing or permitting to be made or published any false, untrue, or deceptive statement by way of advertisement or otherwise concerning the grade, quality, quantity, substance, character, nature, origin, size, or preparation of any product of the industry having the tendency and capacity to mislead or deceive purchasers or prospective purchasers, is an unfair trade practice.

ARTIFICIAL RESPIRATION

Shaffer Prone Pressure Method of Resuscitation Approved by Various Organizations

By DR. L. R. THOMPSON, *United States Public Health Service*

Along with the campaign for accident prevention there has been developed in industry various types of what are known as medical departments. This term may roughly be applied to departments varying in proportions from the simplest first-aid station to the modern medical plant which is prepared to treat the employee on the job, or at home, or even hospitalize him if necessary.

Regardless of the type of medical department, in fact whether or not the particular industry has one, an occupational group should be familiar with some standard method of resuscitation to be practiced in case of emergency. To the person responsible for health conditions about the establishment goes responsibility of seeing that this group has an opportunity to learn a method of resuscitation.

To date no one standard method has been approved by those interested in the practice of resuscitation. However, in a broad way the Schaffer prone-pressure method, with slight modification, when correctly performed, has been approved by the follow-



Resuscitation position 1

ing: American Telephone & Telegraph Co., American Red Cross, American Gas Association, Bethlehem Steel Co., National Electric Light Association, National Safety Council, the Bureau of Medicine and Surgery of the Navy Department, the Surgeon General of the Army, the United States Bureau of Mines, the National Bureau of Standards, and the United States Public Health Service. Following is the procedure for giving artificial respiration by the prone-pressure method:

1. Lay the patient on his stomach, one arm extended directly overhead, the other arm bent at elbow, and with the face turned outward and resting on hand or forearm, so that the nose and mouth are free for breathing.

2. Kneel straddling the patient's thighs with your knees placed at such a distance from the hip bones as to allow you to assume the proper position. Place the palms of the hands on each side of the small of the back with fingers resting on the ribs, and extending around the sides of the body, the little finger just touching the lowest rib, with the thumb and fingers in a natural position, and the tips of the fingers just out of sight (thumb should be nearly against the fingers).

3. With arms held straight, swing forward slowly, so that the weight of your body is gradually brought to bear upon the patient. The full weight of the body should not be brought down on small or frail patients. The shoulder should be directly over the heel of the hand at the end of the forward swing. Do not bend your elbows. This operation should take about two seconds.



Resuscitation position 2

4. Now immediately swing backward, so as to remove the pressure completely.

5. After two seconds, swing forward again. Thus repeat deliberately 12 to 15 times a minute the double movement of compression and release, a complete respiration in four or five seconds.

6. Continue artificial respiration without interruption until natural breathing is restored; if necessary, four hours or longer, or until a physician declares the patient is dead.

7. As soon as this artificial respiration has been started and while it is being continued, an assistant



Resuscitation position 3

should loosen any tight clothing about the patient's neck, chest, or waist. Keep the patient warm. Do not give any liquids whatever by mouth until the patient is fully conscious. (Be certain all foreign materials such as tobacco, false teeth, etc., are removed from the mouth and pull the tongue forward. A fairly even area should be selected if possible, but in case the surface is sloping be sure the victim is placed with his head at a lower level than his feet.)

8. To avoid strain on the heart when the patient revives, he should be kept lying down and not allowed to stand or sit up. If the doctor has not arrived by

the time the patient has revived, he should be given some stimulant, such as one teaspoonful of aromatic spirits of ammonia in a small glass of water, a hot drink of coffee or tea, etc. The patient should be kept warm.

9. Artificial respiration should be started immediately. Resuscitation should be carried on at the nearest possible point to where the patient received his injuries. He should not be moved from this point until he is breathing normally of his own volition and then moved only in a lying position. Should it be necessary, due to extreme weather conditions, etc., to move the patient before he is breathing normally, artificial respiration should be carried on during the time that he is being moved. (The alternate application and release of pressure on the sides of the patient where the ribs are flexible will result in artificial breathing.)

10. A brief return of natural respiration is not a certain indication that artificial respiration will no longer be needed. Not infrequently the patient, after a temporary recovery of respiration, stops breathing again. The patient must be watched and if natural

breathing stops, artificial respiration should be resumed at once.

11. In carrying out resuscitation it may be necessary to change the operator. This change must be made without losing the rhythm of respiration. By this procedure no confusion results at the time of change of operators, and a regular rhythm is kept up.

When equipment is available and the services of a physician are possible, further action may meet with success. In case the victim has been exposed to some poisonous gas or fume, it may be considered advantageous to administer oxygen or oxygen and carbon dioxide to hasten removal of the toxic substance from the blood.

In certain industries where known hazards exist and where there is danger of employees becoming asphyxiated, it is a duty of that industry to formulate rules and regulations for resuscitation methods and take extra precaution to see that a key employee in each occupational group is well versed in the art of applying resuscitation methods. Because of the importance of starting artificial respiration immediately, every employee of the group should have some instruction in this subject.

WIRE CLOTH FOR PAPER-MAKING MACHINES

Under date of August 22, the success of the commercial standard for Fourdrinier wire cloth was announced by the National Bureau of Standards to interested manufacturers and users of this commodity, which is a replaceable part of paper making machines. The standard will be considered effective as of November 1, 1931, for new production with a period of six months thereafter for clearance of existing stocks.

The chief purpose of the industry in the voluntary establishment of this commercial standard is to provide a better understanding between buyer and seller as to nomenclature, physical requirements, methods of inspection, labeling, handling, storage, and installation so as to secure a more intelligent application and use; to promote a longer life with fewer shutdowns; to provide a nationally-recognized basis for guarantees; and to increase the general assurance in procurement and satisfaction in the use of Fourdrinier wire cloth.

Printed copies of the commercial standard will be available in due course.

CENTRALIZED PURCHASING FOR CHICAGO

Steps have been taken by Mayor A. J. Cermak, of Chicago, to organize a mayor's advisory commission to study the city government and make recommendations concerning contracts, specifications, and purchasing methods. One of the specific purposes of the commission is:

To standardize, so far as possible, contracts and specifications for municipal work and supplies so as to invite a much wider competition than has heretofore existed in the letting of such contracts and thus obtain fairer prices for the city; to improve the city's central purchasing administration, by providing approved safeguards in the purchase, handling, delivery, and accounting for supplies, materials, and equipment, and to encourage by every proper means a feeling in the business community that the city of Chicago is entitled to the same consideration in its contracts and purchases as are large private businesses, and that the city of Chicago on its part will

deal fairly and honestly with the business public in its purchases of supplies and the letting of contracts.

Mr. John R. Whitehead, past president of the National Association of Purchasing Agents, has been appointed a member of the commission, and is also a member of the executive committee appointed by the commission.

CERTIFICATION PLAN INAUGURATED BY THE UNDERWRITERS' LABORATORIES

The establishment of a new plan of inspection and certification has just been announced by the Underwriters' Laboratories. At present the plan is being applied to structural clay tile only, but it is so designed that it can be applied to other materials which may be listed by Underwriters' Laboratories. The purpose of this service is to assist the industry in maintaining a product of standard uniform quality and to supply such information as may be needed by regulatory and insurance-rating bodies throughout the country concerning respective manufacturers of material certified.

Individual certificates of inspection are issued to cover specific lots of material and do not apply to the total production of a plant and it is not required that a manufacturer certificate his total production in order to become eligible for listing. These certificates are countersigned by the laboratories' representatives and can be transmitted to the owner or other interested persons as evidence that the material in question is of a uniform quality conforming to the laboratories' requirements and as determined by factory and field operation.

This new plan of certification is not to be confused with the scheme that has been adopted in connection with automatic electric irons. The latter plan is one which involves the use of a printed tag carrying a simple statement made by the Underwriters' Laboratories referring to the merits of automatic irons; manufacturers of listed automatic irons are given the privilege of attaching such a tag to their product.

INCREASING THE PURCHASING POWER OF THE CONSUMER

Marketing Research and Mass Distribution Necessary to Maintain Mass Production

By EDWARD A. FILENE¹

Let us understand at the outset clearly what mass production is and what it implies. The word "mass" is used to bring out the idea that these new methods of production and distribution are for the masses. Mass production is not merely large-scale production. It is scientific production, so planned, organized, and carried on as to make possible a very high rate of production per man.

Large-scale production in itself reduces costs. But if the economies are not passed on to the consumer in lower prices, it is not mass production, because it does not help the masses to buy what is being produced. Their buying power is the essence of mass production. And if wages are not raised about in proportion to the increase in production, it is again not mass production, for it has not done the utmost possible to raise purchasing power and so put its products within the reach of the masses. Given larger mass buying power, the total profits of business increase, although the unit profit is kept low so as to keep prices as low as possible and thus increase buying. Business in the past, before this point of view was adopted, endeavored to profit by catering to the "classes," the comparatively well-to-do. But 100,000 or 500,000 or even a million multimillionaires can not possibly make a market for the enormous output of mass production.

I do not want you to get the idea that I say categorically that everything used can be made to sell at 5 or 10 cents apiece. But to emphasize my point I shall exaggerate thus: If everything the masses need and reasonably want could be sold for 5 or 10 cents each, there would not be enough working people in the world to supply the demand. That sounds like an impossible, fantastic dream. But here is the point: Between 5 or 10 cents and the prices now demanded there is a price which is within reach of the masses to pay for a vast output and so keep everyone at work. To achieve that price would bring social and political stability nationally and internationally.

Mass production and distribution are not to be regarded as purely American practices which for some nefarious reason American business men wish to force on Europe. Mass distribution is a business fact to which modern invention, independent of national divisions, has brought us. It is the next step before all industry, except, perhaps, that 15 per cent or so which is concerned with producing what may be called de luxe products. Nevertheless, because of the stage of development of American industry and for other reasons, perhaps, which need not be elaborated, American business men have quite generally subscribed to the gospel of high wages and low costs through mass production.

The masses in America who are benefited by mass production do not join in the complaint made by a few quite uninformed idealists that mass production

is evil—that it is filling the world with automobiles instead of with oil paintings; that it is getting the workers of America interested in modern plumbing rather than in sunsets and flowers and quaint old customs; that the masses are going in for good dentistry and such material luxuries rather than the bad teeth and nice, respectful manners which once seemed so becoming to them. Mass production is a fact and the only demonstrated method of raising standards of living.

Innumerable instances of so-called mass production in America are in reality only large-scale production. They have attempted to increase output without paying the absolutely necessary attention to increasing the buying power of the masses, without which the increased output could not be sold. Those who clung to traditional methods could not produce at low cost, and therefore could not pay high wages. They blocked the maintenance and growth of purchasing power. Factories using successful methods could not sell because employees of inefficient companies could not buy.

To sell the growing surplus of goods for which there was no market, high-pressure salesmanship was adopted. The advantages of low-cost production were offset by introducing high-cost distribution. Consumers who yielded to this lure to buy at too high prices had so much the less to buy the goods of other industries. Thus even genuine mass-production industries suffered—not because their competitors were employing better methods, but worse. The high cost of selling, which in turn seems to require so-called high-pressure salesmanship, is thus seen to be due not only to wastes in distribution, which are high, but to lack of purchasing power occasioned by too high prices and too low wages. Given the proper balance of wages and prices, truthful advertising, by making large sales possible for mass production, instead of being a wasteful expense, actually saves money for the consumer.

Mass production had its inception without being planned on any larger scale than for the individual establishment. Its spread has been unplanned, consequently slow and uneven. Planning demands fact finding.

Methods of reducing wastes in distribution is the first outstanding problem for fact finding. To seek out the best methods of producing or distributing in use anywhere and to make those best methods quickly available to business men everywhere is a task for research in this field. The actual working out of better methods, the invention of better machines and processes can doubtless best be done in the factories or on the selling front. Once worked out, however, this knowledge should be made part of a general pool of information for the benefit of competitors and non-competitors alike.

Closely allied with research into methods is investigation of markets. At the recent meeting of the

¹ Abstract of paper by Mr. Filene read before the World Social Economic Congress of the International Industrial Relations Association, Amsterdam, Holland, August 27, 1931.

International Chamber of Commerce in Washington a report on distribution, while bringing together significant facts, had as its most significant result the showing of how limited are the facts available and how great is the need for further investigation. It has led to action by the International Chamber of Commerce, looking toward the formation of a committee on distribution which will utilize the research services of the International Management Institute

and other bodies to stimulate the gathering of facts on distribution for business men in all countries.

Mass production and mass distribution have become a business fact—the inevitable next step before industry. It is a step that must be taken if we are to have peace, profits, prosperity and stable governments, and a step that must be planned on a world scale and a groundwork of facts rather than of opinions and guesswork.

RADIO STANDARDS

Rapid Growth of Radio Prevents Rigid Standards of Performance and Operation

By C. B. JOLLIFFE, *Chief Engineer, Federal Radio Commission*

The use of radio frequencies for any type of radio communication depends primarily on the standard of radio frequency. It is because of the fact that it is possible to maintain a radio transmitter on its assigned frequency with a very high degree of precision, that the large number of licensed radio stations and services can be operated simultaneously in the limited radio spectrum. This precise frequency control, however, would be useless except for the fact that the standard of radio frequency has been accurately determined and maintained. The orderly operation of radio stations depends entirely upon the use of a single standard of frequency, and in the reduction of interference between stations and services the Federal Radio Commission is dependent on the existence of this single standard.

In broadcasting, the allocation has been standardized by the assignment of stations to channels 10 kilocycles wide; stations in the same geographical area being separated by 50 kilocycles. This separation is based on the selectivity of the average receiving set in use to-day. Changes in this standard of 50-kilocycle separation may be made as receiving-set design improves and improved sets come into use by the public. The standard of the channel width of 10 kilocycles, however, is determined by the frequency space necessary to carry good quality speech and music, and improvements in receiving equipment will not change this separation.

Allocation to broadcast stations is made, among other things on the basis of power. Interference is a function of power, but service to the public is a function of power and modulation. In order that the allocation of power may mean the same to all localities, the Federal Radio Commission has applied uniform methods of measuring power output and specified a minimum degree of modulation capability for all broadcast stations. This standardization is necessary in view of the fact that the law has specified the proportional distribution of radio facilities.

The regulation of public-service commercial communication has not been in the direction of specific standards of performance of equipment. In these communications, because of competition, the standards of good service and efficient operation are imposed by the public. A standard system of assigning radio frequencies has been adopted, the amount of frequency space depending on the frequency and the type of service.

In all types of radio communications, equipment and service are developing rapidly and it is difficult to apply rigid standards of performance and operation. To meet this development and to insure most efficient use of radio frequencies and the best service to the public, the general obligation is on all classes of radio services to maintain service and equipment up to the general standard of the "present state of the art."

ILLUMINATING ENGINEERS TO DISCUSS AIR SAFETY

Plans for the twenty-fifth annual convention of the Illuminating Engineering Society to be held at the William Penn Hotel in Pittsburgh, Pa., October 12 to 16, indicate that the convention program will include several outstanding features in addition to the customary technical items, according to an official announcement of the society. Interest in the forthcoming convention will be heightened by a special program commemorating the society's silver anniversary.

Recognizing the importance of safe night flying to the advancement of aviation and particularly the part which fog plays in the safety of air travel, the society has set aside one entire session for the discussion of

aviation lighting. Experts in each field will present important data on the lighting of airports, airways, lighting of the plane, and the all-important subject of the transmission of light through fog will be discussed.

Monday, October 12, will be devoted to morning and afternoon preconvention sessions of central-station lighting service engineers from all parts of the country. The lighting service meetings facilitate the exchange of information on a wide scope of fundamental questions of interest to lighting service engineers relating to the sale of electrical energy, the merchandising of electrical equipment, proper and comfortable home lighting, safe industrial lighting, and general lighting practice.

TOBACCO GRADING

International Trade in Tobacco Is Conducted Mainly on the Basis of Samples

By CHARLES E. GAGE, *United States Department of Agriculture*

The application of the principle of standardization to leaf tobacco is new only in method. The idea itself is nearly as old as the history of the white man in America. Almost as soon as the growing of tobacco for export developed into a craze in the Virginia colony three centuries ago, restrictions were imposed upon the exportation of low-grade tobacco, and therein were set up the first rudiments of tobacco

1. *Group*.—Embracing grade groups as follows: (a) Wrappers, certain very high grades of leaf; (b) lead, or heavy leaf; (c) thin leaf or cutters; (X) lugs. The definitions of groups vary somewhat for different types.

2. *Quality*.—Gradations within the groups numbered from 1, highest quality, down to as low as 7 for lowest quality.



A Lexington, Ky., auction warehouse. The auctioneer and buyers proceed up and down the rows, the tobacco being sold at a rate of 300 to 400 piles an hour

standards, and tobacco inspection service. The tobacco inspection warehouses established during colonial times at points from the James River landings to as far north as Georgetown (now Washington, D. C.), have long since crumbled away, with a few exceptions, but the principle involved in their operation has had a rebirth in the establishment of United States standard grades and the operation of the tobacco-grading service.

Federal tobacco standards represent the first approach to the rather elusive subject of tobacco grades by a systematic separation and gradation of the major factors involved. These major factors are three:

3. *Color*.—A further separation of grades, the color range for any given type of tobacco being separated into: (l) Light; (f) medium; (d) dark.

The combination of symbols representing these three factors affords a description of grade, and is used in connection with the name or number of the type according to the United States classification of leaf tobacco. Thus, type 11, A1L, represents Old Belt flue-cured tobacco, wrapper, first quality, light or lemon color. C2F is a cutter, second quality, of medium or orange color. There are from 60 to 100 grades in each of the 26 recognized types of tobacco grown in the United States, exclusive of the subgrades provided for finer distinctions.

The primary functions of standard grades of tobacco are similar to those pertaining to standard grades of other commodities. They provide a measuring stick for quality which may be instrumental in solving important problems encountered by growers in marketing tobacco and by affording a descriptive nomenclature for grade and quality may become a significant aid in transacting international trade.

Fully 80 per cent of all American tobacco is sold by the grower at auction markets where the buyers are representatives of the large manufacturers, dealers, and exporters. Through the official tobacco-grading service and a market-news service farmers may now have their tobacco officially inspected and classified as to grade and thus be apprised of its approximate value previous to sale. The conditions surrounding the sale of tobacco at auction are such as to promote inequalities of price for tobacco of similar quality, and a knowledge of grade and grade prices is therefore a material safeguard to the grower, who has the right to reject unsatisfactory sales.

The operation of the tobacco-grading service is simple. Trained graders are stationed at certain markets (the organization is young and the service not yet widespread) under the employment of the United States Department of Agriculture and, usually, the State department of agriculture jointly. The farmer delivers his tobacco to the auction warehouse, places it in trays, has it weighed, and puts it in line for sale. (See illustration.) At the scales a warehouse ticket is placed on the tobacco stating the name of the grower and the number of pounds. Blank spaces are provided for inserting the name of the buyer, the price per pound, and the official grade of the tobacco if the grower wishes to have it graded. Grading is not compulsory. The official grader, who is selected only after rigid investigation and tests as to his qualifications, examines the pile and certifies to the grade. When the sale reaches that pile of tobacco the auctioneer or a representative of the warehouse announces the Federal grade and the bidding commences. Buyers are under no compulsion to take cognizance of the Federal grade, but inasmuch as a sale may be made every 8 to 12 seconds and the buyers have scant time for examining the tobacco, the grader's judgment is usually welcomed.

Rapid selling promotes errors of judgment on the part of buyers, and such inequalities of price as may at times inflict severe hardship on growers whose tobacco is knocked down for less than its real value.

In all markets, therefore, the farmer has the right to reject the sale and call for another. He is materially aided in deciding whether to reject by a knowledge of the official grade of the tobacco coupled with information as to current average prices for each grade.

That is where the market news service comes in. In the past two years of operation weekly summaries of average prices paid for each grade have been mimeographed and distributed, and chalked up on large blackboards. Knowing the grade of his tobacco and the average selling price for that particular grade, the grower is in position to make an intelligent decision. This year the market news service will be expanded to provide daily reports on a few selected "key" grades, followed by weekly reports presenting summaries for all grades and general market information.

Grading service costs the grower a small fee, never more than 10 cents per 100 pounds, but careful investigation shows definitely that by calling attention to the actual grade and removing some of the uncertainties of buying, the average price is enhanced more than \$1 per 100 pounds.

International trade in tobacco is conducted mainly on the basis of samples. This costly process has numerous defects and disadvantages which it is believed will be materially lessened by the use of Federal standard grades. As foreign buyers become familiar with the grades and learn to specify their wants accordingly, and as American exporters adopt the practice of making quotations on that basis and make delivery of tobacco bearing the department's certificate of grade, it is reasonable to assume that this branch of the trade in leaf tobacco will be facilitated and stimulated. A beginning along the line of making quotations according to United States standard grades has already been made, and at least one foreign tobacco monopoly has instructed its buying agents in this country to purchase offerings of certain such grades.

An important application of Federal tobacco standards and grading service which developed during the past year is the official grading of all tobacco received by tobacco growers cooperative marketing associations. Two such associations now have their tobacco officially graded. This supersedes the former system by which associations employed their own graders and which was found unsatisfactory.

Literature dealing with this subject more in detail may be obtained upon request from the United States Department of Agriculture.

CLAY TILES FOR FLOORS AND WALLS

The revised simplified-practice recommendation on clay tiles for floors and walls (formerly entitled "White glazed tiles and unglazed ceramic mosaics") is now available in printed form.

A recently held revision conference recommended that the scope of the recommendation be enlarged, and, this recommendation was subsequently approved by the industry. The program was enlarged to (1) include all clay tiles for floors and walls, with a corresponding change in the designation of the recommendation to "clay tiles for floors and walls"; the complete elimination of the commercial grade of tile and the adoption of "standard grade" and "sec-

onds" as the only grades of tile to be manufactured and marketed; (2) to discontinue the package grade certificate; (3) to include new minimum grade specifications for colored glazed tile; (4) to revise the minimum grade specifications for ceramic mosaic.

It was also decided to eliminate from the revised edition of the recommendation the figures showing the style, patterns, etc., for trimmers in glazed tiles, as they are now in process of further simplification. Other minor corrections necessary to conform with this major revision were effected.

Copies of this pamphlet can be obtained from the office of Superintendent of Documents, Government Printing Office, Washington, D. C., for 10 cents each.

INTERNATIONAL HYDROGRAPHIC BUREAU

Monaco Common Meeting Ground for Comparison of Publications, Instruments, and Methods of Hydrographic Surveying

By G. W. LITTLEHALES¹

Although the subject of international cooperation in maritime affairs was raised at various times during the latter half of the last century, it is not known to have been seriously dealt with until the sitting of the International Marine Conference at Washington in the year 1889. The proposal then discussed was to establish a "permanent international marine commission," but it was decided that such an establishment at that time was not expedient.

The delegate of Denmark, however, did not agree with this conclusion, as his country had previously decided definitely that such a commission was required. The objects of the proposed International Commission did not, however, specifically refer to hydrographic work, although it would appear that hydrography must have been intended to be included in its activities since its proposed work was to deal with maritime affairs of every description.

At the international congress of navigation which was held in 1908 at St. Petersburg (now Leningrad), a resolution was passed that it would be advantageous if an international conference of seamen and surveyors could be arranged with the object of introducing uniformity in conventional signs and abbreviations on charts; in drawing up sailing directions, regulations for navigation, and the lighting and buoyage of coasts. However, no definite proposal for the permanent establishment of a bureau to deal with such subjects was made. The purpose of this resolution was greatly advanced during the succeeding international maritime conference held at St. Petersburg in 1912 by the advocacy of Monsieur J. Renaud, ingénieur-hydrographe en chef of the French Hydrographic Service, who enlarged upon the advantages that would be conferred upon the seamen of the world if an understanding was reached on questions of uniformity of method in the production of mariners' charts and hydrographic publications.

It was in England that these aims were revived as soon as the World War was over, by the issuance of invitations from the British Government to all maritime countries with which political relations had been resumed to send representatives to an international hydrographic conference to be convened in London on June 24, 1919.

The subjects brought before the conference were divided into 10 sections as follows:

1, Charts; 2, sailing directions; 3, lists of lights; 4, notices to mariners; 5, time signals, distance tables, and other miscellaneous hydrographic publications; 6, tide tables; 7, surveying instruments for use on land and sea; 8, time-measuring instruments; 9, interchange of publications; and 10, establishment of an international bureau.

The formal proposal for the creation of an international hydrographic bureau was made to the international hydrographic conference by the French dele-

gation. Although this matter was brought forward under the name of the French delegation as a whole, there is no doubt that the project practically emanated from Monsieur Renaud, the director of the French Hydrographic Service, and that he must therefore be considered as the originator of the aim for the creation of an international hydrographic bureau.

The delegates at the international hydrographic conference were unanimous in their opinion that it was desirable that some form of an international hydrographic bureau should be established. It was obvious that the arrangements for the establishment of such an institution could not be carried out during the proceedings of the international hydrographic conference, and, accordingly, an interim committee of three members of the existing conference was appointed to take all the necessary steps to achieve the desired end.

During the proceedings the attention of the international hydrographic conference was called to article 24 of the Covenant of the League of Nations, which definitely states that any international bureau constituted after the establishment of the league shall be placed under its direction. This pronouncement was discussed at some length, as several delegates were of the opinion that the affiliation of the international hydrographic bureau to the League of Nations would not meet with the approval of their respective governments.

It may be here stated that eventually all opposition in this connection was withdrawn, and though at the time of the establishment of the International Hydrographic Bureau, the league had not expressed its agreement, the council of the league formally placed the International Hydrographic Bureau under its direction on October 5, 1921. In the best interests of the associated States it appeared desirable that the International Hydrographic Bureau should be attached to some larger international organization, and in the present case the jurisdiction of the league in the auditing of the finances of the International Hydrographic Bureau is obviously beneficial.

There are also certain matters which are, more or less, common to both the league and the International Hydrographic Bureau, and the former is frequently referred to for advice. Fear was originally expressed in certain quarters that affiliation to the league might bring the affairs of the International Hydrographic Bureau into international politics, but there does not appear to be any justification for this supposition.

In order to enable the various associated States to understand the general progress of the work of the International Hydrographic Conference Committee and the attitude of other States, statements were drawn up monthly and forwarded to those concerned; the first of these was issued on November 1, 1919, and they were continued without interruption until May 1, 1921.

¹ Hydrographic Office, U. S. Navy.

On May 16, 1921, the delegations of the 10 States concerned were informed by letter that the election of the three directors and the selection of the candidates for the secretaryship of the International Hydrographic Bureau would take place, and the fullest instructions concerning every detail for voting accompanied this letter; and on the completion of these proceedings, announcement was made to the associated States of the formal establishment of the International Hydrographic Bureau, and of the dissolution of the International Hydrographic Conference Committee.

While the national hydrographic offices of the associated States have retained their complete liberty and initiative, the International Hydrographic Bureau, supported by subscriptions from the associated States, has kept itself in direct and close communication with each of the national offices, distributing useful information in relation to the works in course of prosecution by them and inspiring a community of interest by assembling their representatives in periodical conferences at Monaco and by its study and comparison of their publications, their instruments and appliances, and their methods of hydrographic surveying.

The works which are thus brought within the scope of standardization by international cooperation and study are the mariner's charts and nautical books relating to and required in navigation. No cargo is ever exported or brought home without the fostering aid of the mariner's chart. It is a miniature representation upon a plane surface, in accordance with a definite system of projection or development, of a portion of the navigable waters of the globe, generally including the outline of the adjacent land together with the surface forms and artificial features that are useful as aids to navigation, and always setting forth the depths of the water, especially in the near approaches to the land, by soundings that are fixed in position by accurate determinations. Except in charts of localities so limited in extent that the curvature of the earth is inappreciable on the scale of construction, a nautical chart is customarily framed over with parallels of latitude and meridians of longitude, in relation to which the

features to be depicted on the chart are located and delineated, and the mathematical relation between the meridians and parallels of the chart and those of the terrestrial spheroid determines the method of measurement to be employed on the chart and the special uses to which it is adapted.

From a deep-rooted origin in the maritime world the Mercator chart—resulting from the development upon a plane surface of an enveloping cylinder tangent along the Equator on which the features of the earth have been projected in such a manner that the track of a ship as long as she pursues the same true course will appear upon the chart as a straight line—has become the universal standard in nautical usage, rendering mutual understanding in the use of charts in navigation among mariners comparable to that which is realized with respect to numbers by having universally in current use a certain character to represent a given number of units.

International usage has not yet attained to the stage of strict uniformity in regard to the conventional signs and symbols employed in charts to portray natural forms and artificial structures, but rather has it reached a stage of similarities among these conventional signs recognizable for the purpose of reading the information represented by the chart.

Mariners' charts all have the fundamental characteristic of indicating the hidden dangers to be avoided by mariners and the channels where safety is to be sought in the guidance of shipping. Their numbers reach thousands and thousands, and they are all graded in their design and execution to tell the seafarer when there is a favoring tide and by how much his compass declines from the true meridian and where his safety is beset.

The data gathered in the marine hydrographic surveys from which charts are made, serve also to supply supplementary descriptive information of advantage in piloting and the practice of navigation, which is embodied in manuals of sailing directions to accompany the charts, together with the descriptive lists of lighthouses and beacons and the register of radio stations and seamarks maintained in aid of navigation.

BRITISH STANDARD FOR INDICATOR-COCK CONNECTIONS

The British Engineering Standards Association has issued a specification, designated No. 412-1931, dealing with the dimensions of indicator-cock connections and diagram sheets. This was prepared in view of the desirability of being able to attach indicators of any make to an engine without the necessity of having to change the cock, which would involve the shutting down of the engine.

It should, therefore, be of direct interest to all engine builders and those engaged in engine testing.

The indicator end of the cock has been standardized with an external thread and an internal cone. The cylinder end of the cock has been standardized with a $\frac{7}{8}$ -inch Whitworth thread, with the usual $\frac{3}{4}$ -inch Whitworth thread as an alternative. It was decided to adopt the $\frac{7}{8}$ -inch Whitworth thread in view of the fact that the $\frac{3}{4}$ -inch thread has not given universal satisfaction, and there is a growing demand for a

stronger thread. Three standard sizes of diagram sheets are recommended.

BRITISH STANDARD FOR MOHAIR VELVET

The British Mohair Association has fixed a minimum quality standard for mohair velvets used in the theater and cinema trade. This quality standard is known as B. M. A. standard and is fixed as the minimum quality capable of giving good wear, leaving each manufacturer to construct his own cloth above the minimum standard and permitting free competition between individual members.

The minimum standard of quality is lodged with the City of Bradford Conditioning House, which is under the control of the corporation of the city. Details of the minimum standard are not disclosed, but buyers may obtain official certificates from the City of Bradford Conditioning House indicating whether or not a given sample bearing the B. M. A. mark conforms with that standard.

NATIONAL GRADES FOR FARM PRODUCTS

Shipments of Food Facilitated by Common Language

By CHARLES M. WHITE, *Chief, Division of Markets, State of Maine*

The American consumer in this day demands a varied menu as compared with a decade ago. The consumer is no longer satisfied with fruits and vegetables kept in common storage or canned from the previous crop. To-day increasing quantities of fresh lettuce, spinach, citrus fruit, tomatoes, or other out-of-season fruits and vegetables are needed to satisfy this changed demand.

Shipments of lettuce have increased from 7,000 to 51,000 cars, green peas from 691 to 5,000, carrots from 1,630 to 8,800 cars. In fact, the last decade shows an increase in total shipments of fruits and vegetables from 502,527 cars to 693,531 cars.

This commerce involves lettuce growers in California, consumers in New England; tomato growers in Texas and Mexico, consumers in Chicago and New York; potato growers in Maine, consumers in Detroit, Cleveland, and Florida; apple growers in Maine, consumers in all parts of the eastern United States, as well as England, Germany, Scandinavia, and Argentina.

With producers and consumers so far distant from each other, one may well ask the question, How is such far-flung trading possible? The answer is, A common language with the proper means for expressing this common language. So far as the fruit and vegetable industry is concerned this takes the form of national standards or grades for farm products which have multiplied during the last decade from only a few to grades covering 43 different fruits and vegetables and representing 57 different sets of standards.

These standards find their official expression in certificates issued by either Federal inspectors at receiving markets or Federal-State inspectors at shipping points. These inspectors acting as disinterested parties are able to analyze samples from shipments of perishable fruits and vegetables, using this data to write up official certificates which are recognized as *prima facie* evidence in both State and Federal courts.

These certificates are used by the trade in preventing unfair rejections, securing more prompt adjustments, and preventing unnecessary loss through demurrage charges and deterioration of the product itself. The certificates are based solely on the actual observations of the inspectors, describing accurately where the inspection is made, the products which are inspected, and such distinguishing marks as may be on the packages.

The product itself is then described, including the pack, size, the quality and condition; this latter takes into account maturity, cleanliness, color, defects, and decay. On the basis of the findings under "Quality and condition," a definite grade statement is made showing whether the lot in question is or is not in grade.

The certificate may also be adapted to special uses such as stating whether a lot of apples will meet the factors of condition which are necessary for undergoing an ocean voyage without undue waste. This special requirement is known as the United States Export Standards for condition. Another special use during the past season was to meet the requirements of embargo regulations of foreign governments. This feature of the certificate covered the freedom of the lot of apples from insect injury and spray residue, thereby enabling exporters to dispose of large quantities of apples in foreign markets which otherwise must have been dumped on the domestic market.

Thus has receiving market and shipping point inspection service provided a common language with a practical means of expressing it so that commerce in fresh fruits and vegetables has been largely extended during the last 10 years. The shipping point inspection service has grown from nothing in 1920 to a total of 243,699 inspections in 41 States during the year 1930 and from 6,069 inspections in receiving markets in 1918 to 37,632 in 1929, which is indeed a striking indorsement of the value of this service.

EXCESSIVE VARIETIES STILL BURDEN ELECTRICAL INDUSTRY

Boiled down to maximum economic concentration, standardization in engineering development means the elimination of excess varieties, states the editor of *Electrical World* in an editorial on "Excess Varieties Still Burden the Electrical Industry."

According to the editorial:

Manufacturers are for it [standardization] and operators of plants should be enthusiastic supporters of the process. Endless debate could be held over the definition of what an excess variety in electrical equipment design is, but the fundamental principle can not be safely overlooked in future engineering. In a word, it is an economic crime to demand needless variety in apparatus built for utilitarian service, and the ultimate test is whether existing products can be counted upon to meet the problem in hand well enough to satisfy the reasonable requirements of leading professional and business judgment.

As pointed out by the editorial writer:

Departure from proved standards can no longer be justified on the grounds of individual pride in having something different or on the basis of technical whims. Only where the benefits of leaving the broad highway of swift and efficient manufacture and distribution are clearly defined and of due weight should there be a change of route to pioneering pathways. Research, development, and the cultivation of new markets will go on because the variety of human necessities is a dynamic movement and a challenge; but let there be an end of trivial modifications of first-class material to please somebody's ego.

There is room for diverse talents to find expression in satisfying both routine and special requirements. Routine needs demanding standard designs and construction will always employ the majority of men, and the elimination of excess varieties can never stop progress warranted by the creation of new necessities and opportunities. The final justification of the engineers' cost to society lies in his capacity to make the choice between the old and the new in equipment, materials, and methods, but to-day the presumption favors standardization, since by giving it weight often denied in the past costs can be reduced all around and earnings increased with resulting benefits to research as well as to consumers and investors.

INSPECTION OF WEIGHTS AND MEASURES NECESSARY

Establishment of Confidence in Commercial World, Through Accurate Weighing and Measuring Instruments, of Primary Importance to State and Consumer

By COMMISSIONER HAROLD A. WEBSTER, *Department of Weights and Measures, State of New Hampshire*

The satisfaction that consumers feel by reason of the accomplishments of their department of weights and measures should also be shared by the honest dealer who ought to realize that his own business is, in all probability, on a more equitable basis due in some degree to the protection furnished by the State. Such would not have been true had previous competition continued with the dishonest competitor who frequently used fraudulent devices and sold commodities which were under weight.

It is evident that our ethical standards are on a higher plane than ever before. It costs severely sometimes not to maintain certain standards, and notwithstanding the vigilance of the commissioners, inspectors, and sealers there have been incidents where men have thought it shrewd and smart to be dishonest with their customers, only to be apprehended and pay the penalty, the chief sting of which has been the loss in sales.

The good will of the purchasing public is a great asset and it depends entirely upon the desire and ability of business men to serve their patrons satisfactorily. In short, there is no problem affecting the commercial relations of the public upon which all agree with greater unanimity than that the giving of short weight or measure is fundamentally wrong and detrimental to sound business principles.

The commissioner spends a great deal of time in requiring manufacturers of weighing and measuring devices to conform to the specifications and tolerances adopted by this department of the State of New Hampshire. Two of the most notable have had to do with those applying to grease-measuring devices and visages on gasoline pumps. It has required much diligence to bring about a satisfactory compliance with these regulations; although it ought to be stated in fairness to several gas and oil companies that they have shown a fine spirit of cooperation.

A visi-gage constructed of glass enables, as its name implies, the motorist to see if the gasoline is passing through the pipe line. The enforcement of this regulation is one of the most important with which the commissioner has had to deal, as it not only safeguards the public but it protects the honest dealer. I doubt if a single pump used in the State of New Hampshire

in dispensing gasoline to the public is not equipped at present with one of these very important instruments.

The new code of specifications for grease-measuring devices makes it compulsory, after January 1, 1931, to sell lubricants from such machines by volume rather than by weight. Detailed specifications applying to these devices have been promulgated.

The use of the 14-quart basket for fruits and vegetables has been prohibited in the State of New Hampshire. This is a result of the passage of the United States standard container act which permits the use of hampers and round stave baskets of the following capacities: One-eighth, one-fourth, one-half, five-eighths, one, one and one-quarter, one and one-half, and two bushels.

Splint baskets, which include the peach baskets, are limited to the following sizes: 4, 8, 12, 16, 24, and 32 quarts. Section 5 of the controlling act states that it shall be unlawful to manufacture for sale or shipment, to offer for sale, to sell, to offer for shipment, or to ship hampers, round stave baskets for fruits or vegetables, either filled or unfilled, or parts of such hampers, round stave baskets or splint baskets that do not comply with this act.

The usual activities of a State department of weights and measures, such as testing all scales, including railroad track, weights, measures, and gasoline pumps, are carried on in New Hampshire. The reweighing of commodities in the various stores, inspection of coal and wood deliveries, enforcement of net weight laws applying to the wrapping and stamping of bread, wrapped ham, bacon, and butter, are of great importance and frequently disclose violations of the law to which the commissioner gives very careful consideration. Inasmuch as it has always been the policy to make a distinction between carelessness and a criminal intent, hearings are often granted to the persons involved to decide whether or not a prosecution is warranted.

Broadly expressed, the application and underlying principles of the weights and measures laws affect more people than do any others on the statute books. In all respects they definitely establish a link between law and commercial life. The producer, the distributor, and the consumer are the three factors and their systems of doing business are dependent upon sound principles.

STANDARDIZATION AND ITS RELATION TO SCIENTIFIC MANAGEMENT

The principles and most of the technique pertinent to stabilization of the shop are identical with those pertinent to standardization of an individual workshop, according to Dr. H. P. Person, managing director of the Taylor Society.

Speaking before the world social economic congress of the International Industrial Relations Association,

at Amsterdam, Holland, August 27, 1931, Doctor Person said that "early scientific management did its work in the first unit area so thoroughly that it discovered the principles and devised and assembled the parts of an integrated technique for stabilization of any area of purposive effort, whatever its nature and size.

Touching on the subject of standardization, Doctor Person pointed out that standardization means simply the publication of the results of research in the form of specifications which serve as a guide to action.

Inasmuch as research should be continuous and continuously fruitful of new knowledge, standardization does not imply a static situation but regulated change. The rates, increments, and times of change are themselves subject to determination by research involving primarily the balancing of the costs of change—not measured only in money—against the value of change. A close-up cross-section of a scientific management situation should disclose an apparent static relationship of coordinated “bests in the present state of the art.” But a scientific management situation in perspective over a period should disclose predetermined and regulated change in these “bests” and their relationships—a moving equilibrium of internal readjustments like that of a ship at sea.

Doctor Person said:

If there were more of genuine standardization of this sort, including particularly standardization of the methods and rate of standardization, what is called technological unemployment would tend to be reduced to that caused by periodic basic and revolutionary discoveries and inventions, and thus brought to a humanly irreducible minimum. Technological unemployment appears to be caused generally by periodic adaptations and utilization, stimulated by changes in economic conditions, of well-known rather than new basic discoveries and inventions.

Most enterprises follow the line of least resistance and manage to get along with equipment and methods which gradually become too obsolete to be operated in the face of the competition of new progressive plants. This situation forces periodic sudden widespread and radical technical changes. Technologically too many employees are released at one time to be reabsorbed economically. But in a plant in which research, standardization, and restandardization are continuous, technological improvement can be introduced by such small increments that employees may be adjusted and reabsorbed.

Under such circumstances the older workers, with their accumulated fund of skill and understanding, become an asset instead of a liability.

TESTING TIMEPIECES

A new circular prescribing the tests for pocket watches, stop watches, and chronometers (Bureau of Standards Circular No. 392, entitled “Testing of Timepieces”) has just been announced by the National Bureau of Standards. This supersedes Circular No. 51, published in 1914. The new circular gives detailed descriptions of the bureau’s regular tests for timepieces, as well as other information on watches and time. Many of the tests have been developed within the last few years.

Illustrations showing the variation from isochronism and the results of temperature changes on the daily rates of timepieces make the value of the test apparent. The tests themselves are divided into periods of several days each to cover the various specifications which the timepieces are required to meet.

Four tests are provided for pocket watches. These are known as: Class A, class B, railroad precision, and business precision. The class A and the railroad precision tests are intended for high-grade watches and include tests in five positions and at three temperatures. The class A tests also include a test for isochronism. The class B and the business precision tests are the corresponding tests for 3-position watches. All of these tests furnish excellent means of judging the workmanship and performance of the watch.

In the tests of stop watches, each watch is run several times for intervals of 30, 45, 60, and 300 seconds,

the mean error for each interval being used in judging the performance. Combination watches (watch and stop watch) are also submitted to an additional test to determine the daily rate in the vertical and horizontal positions.

The chronometer test was developed to supply a short test for the ordinary type of chronometer used by many jewelers and on board ship. The instrument is tested at three temperatures, each temperature being repeated several times, and for isochronism for 36 hours. The results allow a study of the recovery of the chronometer after each temperature change.

Besides the descriptions of the tests, this circular also gives definitions of terms used; some helpful suggestions on the use and care of a watch; a list of official stations sending out radio time signals, with information regarding the same; a brief statement concerning standard time and standard-time zones; and information and directions governing the submission of timepieces for test. There are also several illustrations of the bureau’s equipment for testing timepieces.

Copies of the circular may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., for 15 cents each.

FEDERAL SPECIFICATIONS

Twenty-eight Specifications Acted On By Board

Twenty-eight specifications were acted on by the Federal Specifications Board during the month of August. Of this number 5 were submitted for consideration as proposed new specifications and the remaining 23 were Federal specifications submitted for revision. Copies of these specifications (in mimeographed form) and further information can be obtained from the Federal Specifications Board, National Bureau of Standards, Washington, D. C.

The specifications submitted for revision bear the new designation in accordance with the system used in the Federal Standard Stock Catalogue.

New designation	Specifications proposed	Federal Specification No.
-----	Tubing; electrical metallic.....	-----
-----	Hash; corned beef, canned.....	-----
-----	Paper; photographic blotting, white.....	-----
-----	Stop watches.....	-----
-----	Noodles.....	N-N-591
N-M-648.....	Macaroni, spaghetti, and vermicelli.....	648
T-R-571.....	Rope, cotton.....	447
GG-M-191.....	Measuring devices; liquid (retail type).....	362
PP-B-81.....	Bacon; smoked.....	560a
PP-B-201.....	Beef; canned, corned.....	561a
PP-B-211.....	Beef; canned, dried, sliced.....	563a
PP-B-221.....	Beef; fresh.....	619a
PP-D-351.....	Liver.....	568a
PP-H-71.....	Hams; sweet-pickled cured, smoked.....	565a
PP-H-201.....	Hearts; beef.....	566a
PP-K-351.....	Kidneys; beef.....	567a
PP-M-791.....	Mutton.....	570a
PP-T-571.....	Tongue; beef, canned.....	562a
QQ-I-651.....	Iron; gray, castings.....	141
QQ-I-656.....	Iron; gray, high-test (semisteel) castings.....	140
QQ-M-161.....	Metal, antifriction; castings and ingots.....	536
QQ-S-681.....	Steel; castings.....	170
ZZ-S-751.....	Stoppers; rubber.....	383
AAA-S-101.....	Scales; railroad track.....	314
AAA-S-121.....	Scales; weighing (general specifications for).....	473
CCC-O-351.....	Oilcloth; table, white.....	498
GGG-F-671.....	Frames; hack-saw.....	479
GGG-S-291.....	Shears, tinners', hand (snips).....	451

STANDARDIZATION BRIEFS

Norwegian Standards Federation.—In Norway the organization of the standardizing body has been changed from a committee to a federation of industrial and technical organizations and Government departments. It will now be known as Norwegian Standards Federation.

Standard forms.—Four standardized report forms were officially adopted by the Natural Gasoline Association of America, one recommendation of the association's standard forms committee, by the board of directors July 7, 1931. The forms are: Orifice meter test report, charcoal test reports, physical test report, and fuel, gas, electricity, or water ticket.

Paper fruit wraps.—Apple growers of the Northwest, through the Wenatchee-Okanogan Cooperative Federation, have indicated their desire to the National Bureau of Standards for assistance in the establishment of a commercial standard covering the paper "wraps" used in packing apples and other fruits. The size, strength, weight, and oil content are of particular importance in providing satisfactory packing and to prevent a defect known as "apple scald" which develops in storage under certain conditions.

Test methods for liquefied gas.—Initiation of formal specifications and preparation of official test methods for liquefied gas will be undertaken within the near future by the Natural Gasoline Association of America. A subcommittee on the testing methods and specifications has been appointed to work on the formal specifications for liquefied gas, particularly propane, butane, and pentane, and will prepare official test methods for submission to the association. A subcommittee has also been appointed on research and education. This latter subcommittee will canvass the industry to determine what problems confront it now with reference to liquefied gas, and will attempt to work out solutions for those problems.

British association to change name.—The British Engineering Standards Association is at present petitioning for a supplementary charter to widen its scope and may possibly adopt a new name, the word "engineering" being dropped. It is proposed to form four divisional councils, functioning under the direction of the British Engineering Standards Association, and representing engineering, chemistry, building industry, and textiles. When all these councils are formed, British industry will be able to fix British standards by mutual agreement and in association with similar bodies in the Dominions. This movement is the result of resolutions on standardization presented at the last imperial conference in London.

Alloy castings.—Recommended standards of practice relating to alloy castings supplied for use in industrial furnaces were approved at a meeting of the

heat and corrosion resistant alloy founders' division, Steel Founders' Society of America (Inc.), held recently in Pittsburgh, Pa. In some instances through carelessness or from other causes, material supplied for that use was subjected to conditions of fuel, atmosphere and temperature not set forth in the original specifications and requirements. Standards of practice, as adopted and approved by the Pittsburgh meeting, will clearly define the liability of the producer in such instances.

British standard steel flanges for pipes, valves, and fittings.—The British Engineering Standards Association has published part 4 of their specification No. 10. This is designated No. 10—Part 4—1931, and deals with steel flanges for pipes, valves, and fittings, for land use, for working steam pressures from 600 to 900 pounds per square inch, and for temperatures up to 800° F. (427° C.). With these temperatures it is necessary to pay special attention to the steel for the stud bolts, and a specification is given, in this connection, of a typical steel suitable for the purpose, as a guide to users. The specification, however, permits of the use of any other steel with free-cutting properties, which has a resistance to embrittlement greater than that specified.

Rules adopted for safer travel by air.—Changes in the airworthiness requirements of Federal air commerce regulations for aircraft, calling for more careful attention to design and construction with the view of providing increased safety in commercial air transportation, were agreed upon by the Department of Commerce and the aircraft manufacturers at a conference July 31 between the aeronautics branch of the department and the industry. The changes, largely of a technical nature, were accepted by the manufacturers for the most part without comment. The remainder was held over for further consideration by the branch which approved many of the industry's recommendations regarding these changes either fully or in principle. Other recommendations were taken under advisement as a result of objections on the part of manufacturers.

British standard for wood saws.—The British Engineering Standards Association has issued specification No. 411—1931, which deals with the attachment of circular saws for woodworking. The pamphlet gives the dimensions for the diameter of the center hole, the diameter of the pin and pin-hole, and the distance of the pin from the center hole, for saws of four different ranges of diameter. Tolerances on the more important dimensions are also specified. In fixing these dimensions, the committee responsible has endeavored to keep in mind the desirability of accommodating worn saws on smaller machines, and interchangeability can be obtained over quite a wide range of saw diameters. The specification also includes recommended methods by means of which saws made to British standard dimensions may be used on existing saw benches, or whereby more than one range of saws can be accommodated on the same machine.

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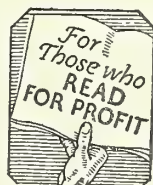
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—President Hoover, at the laying of the corner stone of the new building of the U. S. Department of Commerce, June 10, 1929.



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UNITED STATES PATENT OFFICE, THOMAS E. ROBERTSON, Commissioner.

The granting of patents and the registration of trade-marks, prints, and labels after technical examination and judicial proceedings.

Maintenance of library with public search room, containing copies of foreign and United States patents, and trade-marks. Recording bills of sale, assignments, etc., relating to patents and trade-marks. Furnishing copies of records pertaining to patents. Publication of the weekly Official Gazette, showing the patents and trade-marks issued.

RADIO DIVISION, W. D. TERRELL, Chief.

Inspection of radio stations on ships; inspection of radio stations on shore, including broadcasting stations; licensing radio operators; assigning station call letters; enforcing the terms of the International Radiotelegraphic Convention; and examining and settling international radio accounts.